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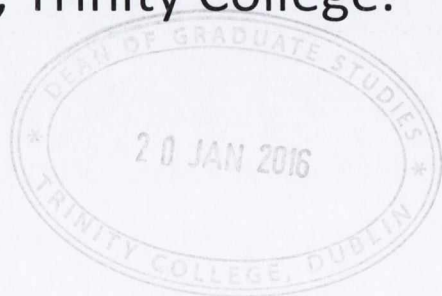
Moral Reasoning Competencies
Development in Community Pharmacists in
Ireland: A repeated measures crossover
study.

A thesis submitted to the University of
Dublin, Trinity College, for the Degree of
Doctor of Philosophy.

2015

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Summary

Background: Research suggests that higher levels of moral reasoning competencies increase the probability that community pharmacists will make decisions in the patient's 'best interests'. Professional ethics education incorporates the Four Component Model (FCM) of morality, namely moral sensitivity, reasoning, motivation and implementation, as interactive elements in the development of a professional. Moral reasoning is the component specifically considered in this Ph.D. study. The Defining Issues Test (DIT2) is a psychometric measure that has been validated for use as a measure of moral reasoning competencies development. Research with other professions indicates that DIT2 scores correlate positively with improved professional behaviour, improved patient care and/or the likelihood that a practitioner will report errors. However, literature also indicates that community pharmacists are a rare exception to the expectation that moral reasoning competencies increase with age or 'tenure' in a profession. Both the FCM and the DIT2 derive from Neo-Kohlbergian theory, and the expectation that there is potential for an educational intervention of an appropriate design to make a measurable impact on moral reasoning competency/-ies development as measured by the DIT2 has been supported by the literature reviewed.

Objective: The main objective of this research was to investigate whether a profession specific educational intervention, as designed, developed and delivered during this study, impacted on the development of moral reasoning competencies in community pharmacists in Ireland. A second objective was to investigate whether the context of the study group, community pharmacists working in Ireland, precluded comparison of DIT2 results with outcomes from other studies.

Methodology: This research used a repeated measures 'pre-post-intervention' design, as a quasi-randomised, controlled, crossover study, in order to evaluate changes in the moral reasoning scores of community pharmacists in Ireland as measured by the DIT2. The educational intervention was designed by the researcher, and developed and delivered specifically for the purpose of this study. It incorporated a series of five newly developed pharmacy-specific Intermediate Concept Measures (ICMs) and the adaptation of the theory to include an online group discussion and peer review stage for each ICM cycle. Participants (n=27), all working in community pharmacy in Ireland for a minimum of three years directly prior to the study, volunteered following invitation through the pharmacy press. Participants were randomly

assigned to one of two groups to engage with the educational intervention, and each group acted as the control to the other. This facilitated comparative analysis between similar populations at more than one point in time (pre and post engagement with the intervention) and afforded the study the opportunity to also compare different groups. Demographics and other background information potentially relevant as indicators of influences on the reasoning process were also collected at the beginning of the educational intervention.

Results: Results indicated that this short intervention impacted on moral reasoning competency/ies development of community pharmacists in Ireland as measured by the DIT2. In addition, interaction effects were observed, between developmental scores on the DIT2 and whether or not participants were determined to be consolidated in their reasoning pre and post engagement with the educational intervention, as is consistent with the literature. Other results indicated that there were interactions between age and commercial roles held and changes in developmental scores on the DIT2, although the small sample size of the pilot study precluded comprehensive secondary analysis. Comparison with the international database held at the Center for the Study of Ethical Development in Alabama indicated that scores for community pharmacists in Ireland were comparable with the database, and study outcomes therefore have the potential to be compared with other studies.

Conclusions: Short educational interventions, of the design that was delivered during this study, have the potential to impact on the development of moral reasoning competencies. The DIT2 is an appropriate measure of moral reasoning competencies in community pharmacists in Ireland. It is likely that these findings are generalizable to other contexts, jurisdictions and professions and provide a framework through which interdisciplinary CPD might be meaningfully progressed.

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Table of Contents

Contents

Declaration	iii
Summary.....	iv
Acknowledgements	vii
Table of Contents	ix
Index of Figures	xvii
Index of Tables.....	xviii
Index of abbreviations.....	xx
Publications and presentations	xxiv
Preface.....	xxvii
Chapter 1 - Introduction.....	1
1.1. Introduction.	2
1.1.1. Introduction to the DIT2.....	2
1.1.2. The pharmacy profession and the community pharmacy setting.....	2
1.1.3. Moral reasoning competencies development.....	3
1.2. Research question and hypotheses.	4
1.3. The educational intervention.	5
1.4. Thesis outline and structure.	6
1.5. Summary.	7
Chapter 2 - Context: Regulation, education and practice of pharmacy in Community Pharmacies in Ireland.....	9
2.1. Introduction.	10
2.2. Overview of community pharmacists and community pharmacy: The Irish context.	10
2.2.1. Community Pharmacy in Ireland.....	11
2.2.2. Community Pharmacy revenue sources: a commercial dilemma.....	13
2.2.3. Community Pharmacy - the working week.	15
2.3. Rules, Codes and Norms governing the practice of community pharmacy in Ireland.	16
2.3.1. Overview of Professional regulation: 'Rules' governing the practice of pharmacy in Ireland.....	16
2.3.1.1. Professional regulation of pharmacists.....	17
2.3.1.2. Professional regulation of community pharmacies.....	20

2.3.2. Overview of the 'Codes' governing the practice of pharmacy.....	21
2.3.2.1. The Code of Conduct for Pharmacists (CoC).....	21
2.3.2.2. The Core Competency Framework (CCF).....	22
2.3.3. The Profession's Social Contract with the public.....	25
2.4. Overview of national policy: 'Norms' governing community pharmacy (2011-12).....	27
2.4.1. Healthcare policy governing community pharmacy (2011-12).....	27
2.4.2. Education policy governing community pharmacy (2019-12).....	32
2.4.3. Services delivery: norms governing community pharmacy.....	34
2.5. Rules, norms and codes: potential influences on advice from the pharmacist.....	35
2.5.1. Professional influences.....	36
2.5.2. Commercial influences.....	36
2.5.3. Personal influences.....	37
2.6. Summary.....	39
Chapter 3 - Moral reasoning competencies development: The Minnesota approach and the Neo-Kohlbergian model.....	41
3.1. Introduction.....	42
3.2. Moral Development Overview.....	42
3.3. Kohlberg's Theory of Moral Development.....	45
3.4. An overview of the Minnesota approach and associated Neo-Kohlbergian theory.....	52
3.5. Applied (Minnesota) Approach: Key Considerations.....	54
3.5.1. The DIT1 (Appendix 7).....	54
3.5.1.1. What does the DIT measure?.....	55
3.5.1.2. DIT: Validity criteria adopted by the Minnesota group.....	56
3.5.1.3. The DIT: sensitivity to educational interventions.....	59
3.5.2. Schema Theory.....	60
3.5.3. P-Score Index: postconventional schema score.....	64
3.5.4. Intra-individual measures: Consolidation, Transition and Types.....	64
3.5.5. The Four Component Model (FCM) of professional education.....	67
3.5.6. The utiliser score (U-Score).....	72
3.5.7. The N2-Score.....	73
3.5.8. The DIT2.....	74
3.5.9. Reliability checks included in DIT2 analysis and scoring.....	77
3.5.10. Development of ICMs.....	78
3.6. Summary.....	81
Chapter 4 - Moral reasoning competency development: the impact of educational interventions as measured by the Defining Issues Test (DIT2).....	83

4.1. Introduction	84
4.2. Moral reasoning competency development assessment using the DIT: the literature.	85
4.2.1. A meta-analysis of intervention studies using the defining issues test.	85
4.2.2. Teaching ethics – a direct approach.....	86
4.2.3. Moral development in the professions: psychology and applied ethics.....	87
4.2.4. The Journal of Moral Education ‘Special Issue’ 2002 Entitled: ‘Critical appraisal of the DIT and its overall impact on moral theory’.....	89
4.2.5. Muriel Bebeau: the DIT as a measure of moral development in dental students and dentists.	90
4.2.6. Pharmacy specific research publications that influenced the design of this research study	92
4.2.7. The DIT as used in educational interventions: review of contemporary research.	94
4.2.7.1. The use of the DIT: pharmacy specific research.....	94
4.2.7.2. The Irish context: beyond the world of pharmacy.	96
4.2.7.3. The DIT as a pre-post measure of educational interventions.	98
4.2.8. Summary.....	100
4.3. The Neo-Kohlbergian influence on the design of the educational intervention.	102
4.4. Summary.	103
Chapter 5 - Methods.....	105
5.1. Introduction.....	106
5.2. Overview of methodology.	106
5.2.1. Methodologies in social and behavioural sciences and in education.	107
5.2.2. Study design.	107
5.2.4. Outcome measured.....	117
5.2.5. Data Management.....	117
5.2.6. Objective.....	117
5.3. Cognitive moral reasoning development and assessment: The research paradigm.	118
5.4. Method(s) used to test the null hypotheses.	122
5.4.1. The study variables.....	124
5.4.1.1. The DIT2 format used in this study.....	124
5.4.1.2. Educational intervention design and development.	124
5.4.2. Development of profession-specific Intermediate Concept Measures (ICMs).	127
5.4.2.1. Development of draft ICMs.	128
5.4.2.2. Expert group validation of draft ICMs.	130
5.4.3. Accommodation of Virtual Learning Environment (VLE) criteria.	131
5.4.3.1. Suitable VLE identification and adaptation for ICM usage.....	132

5.4.3.2. Materials and activities for scaffolding and systems for recording activity.....	133
5.4.4. Ethics approval.....	134
5.4.4.1. Ethics application and approval process.....	135
5.4.4.2. Risks to participants: The use of pseudonyms.....	136
5.4.5. Participant recruitment and randomisation to groups.....	137
5.4.5.1. Recruitment process.....	137
5.4.5.2. Randomisation process.....	139
5.4.6. Volunteers other than participants in the interventions: The pre-group and the controls.	140
5.4.6.1. Pre-group: face-to-face day and resulting amendments to VLE access.....	140
5.4.6.2. Pharmacist volunteers designated as controls.....	141
5.4.7. Educational Intervention delivery.....	141
5.4.7.1. Educational Intervention delivery to group 1: April 2011 to August 2011.....	142
5.4.7.2. Educational Intervention delivery to group 2: August 2011 to December 2011.....	142
5.4.8. Data cleaning, scoring and collation.....	143
5.4.8.1. Format DIT2 data for processing at the Center for the Study of Ethical Development.	143
5.4.8.2. Collate data on the VLE: Responses, engagement and activity records.....	144
5.4.9. Data review and analysis.....	144
5.4.9.1. Data review.....	145
5.4.9.2. Analysis plan: SPSS as an analysis tool.....	145
5.5. Summary.....	148
Chapter 6 - Results and analysis.....	149
6.1. Introduction.....	150
6.2. Analysis of the sample of community pharmacists recruited to the study.....	150
6.2.1. Demographics: analysis of the sample(s).....	152
6.2.1.1. Level of education completed by participants.....	152
6.2.1.2. Sex of participants.....	152
6.2.1.3. Age of participants.....	153
6.2.2. Demographic data collection and analysis – professional, commercial and personal influencers.....	155
6.2.2.1. Professional influencers on the pharmacist.....	155
6.2.2.2. Commercial influencers on the pharmacist.....	156
6.2.2.3. Personal influencers on participants in the study.....	157
6.2.3. Validity of control groups: managing potential confounds.....	159
6.2.4. Summary.....	160

6.3. Variables derived from DIT2 questionnaires completed by participants prior to engagement with the educational intervention in the study.....	160
6.3.1. Variables derived from the DIT2.	161
6.3.1.1. Developmental indices.	161
6.3.1.2. Developmental profile and phase indices.	170
6.4.1. Review of participant engagement with the educational intervention.	173
6.4.2. Summary.....	175
6.5. Effects of engagement with the Educational Intervention.	176
6.5.1. Control group: changes in developmental indices pre-post time spent as a control.	176
6.5.2. Effect of the educational intervention on participant developmental indices (schema scores).....	178
6.5.2.1. Changes in participant developmental indices (schema scores) during the educational intervention.	178
6.5.2.2. Overview of changes in participant developmental indices (schema scores) during the educational intervention as compared with Baseline figures (Dong, 2011).....	180
6.5.2.3. Summary.....	180
6.5.3. Effect of the educational intervention on developmental profile and phase indices.....	181
6.5.3.1. Developmental phase: Contrans.	181
6.5.3.2. Developmental profile: types.	184
6.5.3.3. Utiliser score: U-Score.	186
6.5.3.4. Summary.....	187
6.6. Investigation of potential interaction effects on changes in primary developmental indices during engagement with the educational intervention.	188
6.6.1. Is there an interaction effect between gender and changes in developmental indices during the educational intervention?	188
6.6.2. Is there an interaction effect between age/age-groups and changes in N2-Score and P-Score during the educational intervention?.....	189
6.6.3. Are there interaction effects between professional (SIP or other), commercial (owner or other) and/or personal influencers (rural, town or city setting for primary school education) and changes in developmental indices during the educational intervention?	191
6.6.4. Is there an interaction effect between developmental phase indices (Contrans) changes during the educational intervention and changes in developmental indices (N2-Score and P-Score) during the educational intervention?	194
6.6.5. Are there interaction effects between high/low levels of engagement with optional activities in the educational intervention and changes in N2-Scores and P-Scores during the educational intervention?	199
6.6.6. Summary.....	200
6.7. Summary of findings in the results and analysis chapter.....	201

Chapter 7 - Discussion.....	203
7.1. Introduction.	204
7.2. Key Findings.....	204
7.2.1. Engagement with the educational intervention impacted on participant developmental indices derived from the DIT2 and changes observed were found to be significant.	206
7.2.1.1. Increases in post-conventional reasoning scores.	207
7.2.1.2. Changes in 'Maintaining Norms' and 'Personal Interest' schema scores.	208
7.2.1.3. The decrease in participant preference for the 'Maintaining Norms' schema.....	209
7.2.1.4. Comparison of summary scores: N2-Score or P-Score.	211
7.2.1.5. Consideration of the pattern of schema scores.	213
7.2.2. The impact on participant developmental profile and phase indices (Contrans, type and U-Score) during engagement with the educational intervention.....	213
7.2.2.1. Developmental phase (Contrans) pre-post engagement with the educational intervention.....	214
7.2.2.2. Types pre-post engagement with the educational intervention.	215
7.2.2.3. U-Scores pre-post engagement with the educational intervention.	216
7.2.3. Interactions were observed between developmental phase indices changes (during engagement with the educational intervention) and changes in N2-Scores and P-Scores during engagement with the educational intervention (Section 6.6.4).....	218
7.2.4. N2-Scores and P-Scores were lower for the 46 year or older group than those for younger age-groups; crossed interactions were observed between the 26 to 35 year old and 36 to 45 year old age-groups, and changes in N2-Scores (Section 6.6.2).....	220
7.2.5. Crossed interactions were observed between some of the professional, commercial and personal influencers self-reported by participants and changes in N2-Scores and P-Scores (Section 6.6.3). Trends associated with sub-groups of participants, as categorised within each 'influencer' and as related to changes in N2-Scores and P-Scores, were also observed.....	222
7.2.5.1. Professional influencers and the impact of the educational intervention.	223
7.2.5.2. Commercial influencers and the impact of the educational intervention.....	225
7.2.5.3. Personal influencers and the impact of the educational intervention.	226
7.2.5.4. Summary.	227
7.3. The educational intervention.	230
7.3.1. Potential adaptations of the intervention design and method of delivery.....	231
7.3.2. Evaluation of the educational intervention: potential approaches.	234
7.4. Summary.....	237
Chapter 8 - Conclusions and Recommendations.....	239
8.1. Introduction.....	240
8.2. Study conclusions.....	240
8.3. Study contributions.....	242

8.3.1. Theoretical contributions of this research.	243
8.3.2. Contributions to the practice of community pharmacy.....	244
8.4. Recommendations.....	244
8.5. Limitations of this study.....	245
8.6. Suggestions for further research.....	247
References.....	253
Appendices.....	273
Appendix 1: Competence/competency/competencies.....	274
Appendix 2: Systematic literature research.....	275
Appendix 2a: Databases and search engines (searched in following order), and records identified through 'other sources', to December 2014.....	276
Appendix 2b: Database search inclusion criteria.....	277
Appendix 2c: Numbers of records identified during database searches (to December 2014).	278
Appendix 2d: Exclusion criteria applied to review of collated list of full articles.....	279
Appendix 3: PSI Continued Registration 2012, Section II – Declaration.....	282
Appendix 4: Pharmacy Act, 2007 (No. 20, Pt 6: Complaints, Inquiries and Discipline.....	283
Appendix 5: Pharmacy Act, 2007 (No. 20, Pt 4: Pharmaceutical Registration System).....	284
Appendix 6: S.I. No. 488/2008 - Regulation of Retail Pharmacy Businesses Regulations 2008.....	285
Appendix 7: DIT Instruction Booklet.....	287
Appendix 8: Calculation of a P-Score and an N2-Score.....	291
Appendix 9: The Four Component Model (FCM) of professional education: Educational remediation in dentistry.....	293
Appendix 10: DIT2.....	296
Appendix 11: Calculation of New Checks Score.....	301
Appendix 12: Communication to expert group at draft stage of ICMs (sample – ICM 3).....	303
Appendix 13: Critical appraisal of the DIT and its overall impact on moral theory: The Journal of Moral Education 'Special Issue' 2002.....	308
Appendix 14: Pharmacy specific moral reasoning research that references the DIT.....	309
Appendix 15: Educational Intervention: Welcome and programme objectives outlined to participants.....	311
Appendix 16: Moodle homepage for the educational intervention.....	312
Appendix 17: Participant (online) questionnaire completed when face-to-face with the researcher on day 1 of the educational intervention.....	313
Appendix 18: Potential confounds in this study.....	315
Appendix 19: Schedule for the 16 week educational intervention as outlined to group 2.....	317
Appendix 20: The five ICM scenarios used in the study.....	318

Appendix 21: ICM3 : example of expert group ‘most’ and ‘least’ preferred action options (collated).	323
Appendix 22: Profession-specific ICM development – review of contemporary sources of dilemmas examples.....	324
Appendix 23: ICM 3 – example of Expert Group ‘action option’ feedback October 2010.	325
Appendix 24: ICM 3 as used in the study (VLE screenshot).	326
Appendix 25: Welcome message on Moodle.	334
Appendix 26: Participant Information LEAFLET.	335
Appendix 27: Special interest topics raised by participants for which further discussion was facilitated online.	338
Appendix 28: Podcasts and youtube clips: Moral theories in support of decision-making.....	339
Appendix 29: Activities (doses) presented the educational intervention: ‘compulsory’ and ‘optional’.	340
Appendix 30: Ethical Approval.	341
Appendix 31: Participant consent form.	342
Appendix 32: Results (P-Score and N2-Score) to participants: Format and explanation.	344
Appendix 33: Letter of invitation to participate.	346
Appendix 34: Agenda for face-to-face day(s) at the beginning of the programme.....	348
Appendix 35: Agenda for face-to-face day(s) at the end of the programme.	349
Appendix 36: Variables included in the dataset following scoring by the Center for the Study of Ethical Development.	350
Appendix 37: Professional, commercial and personal influencers on decision-making.....	351
Appendix 38: Experimental indices.....	352
Appendix 39: Raw and processed data pertaining to the work conducted in this thesis from the Centre for the Study of Ethical Development.	353

Index of Figures

- Figure 2.1: Key stakeholders influencing the practice of pharmacy in community pharmacies in Ireland 2011-2012.
- Figure 3.1: The Four Component Model of professional education.
- Figure 5.1: Research design philosophy.
- Figure 5.2: Outline of the 16 week educational intervention.
- Figure 5.3: Enrolment to the study and the randomisation process: Consort Flowchart.
- Figure 6.1: Study sample age profile compared with national statistics.
- Figure 6.2: Professional influencers on participants in the study.
- Figure 6.3: Commercial influencers on participants in the study.
- Figure 6.4: 'Personal' influencers on participants in the study.
- Figure 6.5: Participant preference(s) for moral reasoning schemas prior to engagement with the educational intervention. (Baseline = Dong, 2011: Graduates).
- Figure 6.6: Participant preference(s) for moral reasoning schemas prior to engagement with the educational intervention.
- Figure 6.7: Participant optional engagement in all activities in the educational intervention. (0-31 'doses').
- Figure 6.8: Participant optional engagement in dilemma discussion activities in the educational intervention. (0-16 'doses').
- Figure 6.9: Developmental phase pre and post engagement with the educational intervention.
- Figure 6.10: Changes in participant developmental phase during the educational intervention.
- Figure 6.11: Participant 'Types' pre and post engagement with the educational intervention (EI).
- Figure 6.12: Schema scores pre and post engagement with the educational intervention.
- Figure 6.13: N2-Score changes, during the educational intervention, for each of the phase-change groups (C-C, T-C, C-T and T-T).
- Figure 6.14: P-Score changes, during the educational intervention, for each of the phase-change groups (C-C, T-C, C-T and T-T).

Index of Tables

Table 2.1:	Pharmacist Age profile.
Table 2.2:	Pharmacist Area of Practice.
Table 2.3:	Pharmacy by Ownership.
Table 2.4:	Changes in structure of community pharmacy in Ireland - 2009 to 2011.
Table 2.5:	PCRS payments - cost of prescription drugs to community pharmacies in respect of GMS, DPS and LTI PCRS schemes - 2009 to 2011.
Table 2.6:	Code of Conduct for Pharmacists (CoC).
Table 2.7:	Core Competency Framework (CCF) for Pharmacists (PSI, 2013a).
Table 2.8:	National Strategy – key influencers.
Table 2.9:	Key potential influences on the community pharmacist when deliberating what advice is in the ‘best interests’ of the patient.
Table 3.1:	Stages in the Concept of Cooperation (Kohlberg).
Table 3.2:	The development of the Minnesota approach to moral development.
Table 3.3:	Measures of moral reasoning - validity criteria adopted by the Minnesota group.
Table 3.4:	Model of moral status. NeoKohlbergian schemas - description and features.
Table 3.5:	Developmental profiles and phase indices - Type levels.
Table 5.1:	Methods used in the research study.
Table 5.2:	Development of profession-specific ICMs for inclusion in the educational intervention.
Table 6.1:	Pharmacist age profile compared with national statistics.
Table 6.2:	Norms (Dong, 2009) of developmental indices derived from the DIT2 for graduates.
Table 6.3:	Participant developmental indices scores compared with Baseline scores (Dong, 2011).
Table 6.4:	Group 2 ‘Pre time spent as a control’ developmental indices score(s) compared with Baseline scores (Dong, 2011).
Table 6.5:	Comparison between group 1 and group 2 developmental indices scores pre engagement with the educational intervention.
Table 6.6:	Male and female N2-Scores and P-Scores, combined group 1 & 2, compared with Baseline scores (Dong 2011).
Table 6.7:	Comparison between male and female N2-Scores and P-Scores pre engagement with the educational intervention.
Table 6.8:	Types, Contrans and U-Score(s) pre engagement with the educational intervention.

- Table 6.9: Summary of participant preferences for developmental indices pre (PreCn) and post time spent as a control (Post Cn).
- Table 6.10: Participant preferences for developmental schemas pre (PreEI) and post (PostEI) engagement with the educational intervention.
- Table 6.11: U-Scores pre and post engagement with the educational intervention.
- Table 6.12: N2-Score and P-Score changes and sex/gender interaction effects (RMA).
- Table 6.13: N2-Scores and P-Scores grouped by gender: descriptive statistics.
- Table 6.14: N2-Score and P-Score changes and age-groups (26-35 years, 36-45 years and 46-65 years) (RMA).
- Table 6.15: N2-Scores and P-Scores grouped by age-groups: 26-35 years, 36-45 years and 46-65 years: descriptive statistics.
- Table 6.16: N2-Score and P-Score changes and age-groups (26-35 years, 36 years and older) (RMA).
- Table 6.17: N2-Score and P-Score changes and professional, commercial and personal influencers (RMA).
- Table 6.18: N2-Scores and P-Scores grouped by professional, personal and personal influencers: descriptive statistics.
- Table 6.19: N2-Score and P-Score changes and changes in participant developmental phase status during engagement with the educational intervention (RMA).
- Table 6.20: N2-Scores and P-Scores, pre and post the educational intervention, grouped by participant developmental phase status changes during engagement with the intervention.
- Table 6.21: Comparison of demographics, influencers reported and levels of engagement with the educational intervention: (T-C) compared with (T-T + C-T + C-C).
- Table 6.22: N2-Score and P-Score changes and level of engagement in optional activities in the educational intervention (RMA).
- Table 6.23: N2-Scores and P-Scores grouped by engagement with 'Doses' of the educational intervention (Doses EI-HL/Doses DD-HL): descriptive statistics.

Index of abbreviations

A-Score	Antisocial Score
ACPE	Accreditation Council for Pharmacy Education
AERA	American Education Research Association
ANOVA	Analysis of Variance
APA	American Psychological Association
ATHRI	Attitudes Towards Human Rights and Civil Liberties
CCF	Core Competency Framework
CCP	Council on Credentialing in Pharmacy.
CDS	Community Drug Schemes
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CoC	Code of Conduct for Pharmacists
CONSORT	Consolidated Standards of Reporting Tools
CPD	Continuing Professional Development
CSED	Center for the Study of Ethical Development
CSO	Central Statistics Office
DEST	Dental Ethical Sensitivity Test
DIT1	Defining Issues Test 1
DIT2	Defining Issues Test 2
DoE	Department of Education
DoH	Department of Health, from 2012
DoH&C	Department of Health and Children, up to 2012
DPA	Data Protection Act
DPS	Drug Payment Scheme
ERIC	Education Resources Information Centre USA
FCM	Four component model
FEMPI	Financial Emergency Measures in the Public Interest
FIP	International Pharmaceutical Federation
FREC	Faculty Research Ethics Committee
GMS	General Medical Services

GP	General Practitioner
HEI	Higher Education Institution
HIQA	Health Information and Quality Authority
HPRA	Health Products Regulatory Authority
HSE	Health Service Executive
ICCPE	Irish Centre for Continuing Pharmaceutical Education
ICM	Intermediate Concept Measure
IloP	Irish Institute of Pharmacy
IMB	Irish Medicines Board
INTO	Irish National Teachers Association
IPJ	Irish Pharmacy Journal
IPU	Irish Pharmacy Union
IT	Information Technology
LTI	Long Term Illness Scheme
M-Score	Meaningless items Score
MEDLine	U.S. National Library of Medicines (NLM)
MeSH®	NLM Medical Subject Headings (database)
MFQ	Moral Foundations Questionnaire
MHA	Mental Health Act
MJI	Moral Judgement Interview
MN	Maintaining Norms schema
MN-Score	DIT MN-Score
MoC&YA	Minister of Children and Youth Affairs
MoH&C	Minister of Health and Children
MUR	Medicines Usage Review
N2-Score	DIT N2-Score
NCBI	National Centre for Biotechnology Information
NCPE	National Centre for Pharmacoeconomics
NHST	Null hypothesis significance testing
NLN	National Library of Medicine's®
NPIP	National Pharmacy Internship Programme

P	Post conventional schema
P-Score	DIT P-Score
PC	Post-conventional
PCRS	Primary Care Reimbursement Service
PDF	Portable Document Format
PEARS	Pharmacy Education and Accreditation Review
PI	Personal Interests schema
PI-Score	DIT PI-Score
PIL	Patient Information Leaflet
PPGM	Pharmacy Practice Guidance Manual
PRE	Professional Registration Exam
PRISMA	Preferred Reporting Items for Systematic Review and Meta-Analyses
PSI	Pharmaceutical Society of Ireland
PsycINFO	American Psychological Association database, linking to the following two full text collections: PsycARTICLES and Psychology & Behavioral Sciences Collection
PubMed®	US National Library of Medicine National Institute of Health
RCE	Role Concept Essay
RCSI	Royal College of Surgeons in Ireland
RCT	Random(ized) Controlled Trial
RMA	Repeated Measures ANOVA
RPB	Retail Pharmacy Business
SCOPUS	SCOPUS database
SIP	Superintendent Pharmacist
SOP	Standard Operating Procedure
SPSS	Statistical Package for the Social Sciences
SVP	Supervising Pharmacist
SPC	Summary of Product Characteristics
TCD	Trinity College Dublin
U-Score	Utiliser Score
UCC	University College Cork
VLE	Virtual Learning Environment

WebCT

Web Course Tools

WHO

World Health Organisation

Publications and presentations

Roche, C., Thoma, S. & Wingfield, J. (2014). From Workshop to E-Learning: Using Technology-Enhanced “Intermediate Concept Measures” As a Framework for Pharmacy Ethics Education and Assessment. *Pharmacy. Special Issue – Online Learning*. 2(2), 137-160. Available online: <http://www.mdpi.com/2226-4787/2/2/137> (accessed on 19th May 2014).

Roche, C. & Kelliher, F. (2014). Giving “Best Advice”: Proposing a Framework of Community Pharmacist Professional Judgement Formation. *Pharmacy. Special issue- rural development*. 2(1):74-85. Available online: <http://www.mdpi.com/2226-4787/2/1/74> (accessed on 7th June 2014).

Roche, C. (2013a). Development and assessment of moral reasoning competencies: a blended learning approach to dilemma review and resolution. *The International Pharmaceutical Federation (FIP) World Congress*. Dublin, September. Poster Presentation.

Roche, C. (2013b). In Pursuit of Excellence: Facilitating 'Right Advice' in Retail Pharmacy Practice. Irish Academy of Management Conference Proceedings, Sept 2-4. Poster Presentation. [Best Poster Award (Irish Management Institute)].

*'It is better to light a small candle than to
leave a dark hole'.*

Unknown

Preface.

'As community pharmacists collectively gain tenure in the setting, their moral reasoning scores decline'. Latif, 2001a:137

Latif's (2001a) findings, as articulated in the above quotation, fuelled my initial curiosity in this topic. I have enjoyed 30 years practising as a community pharmacist. It has been my experience that clinical and professional guidelines, underpinned by the 'evidence base' and legislation governing the practice of pharmacy, form the framework within which most of my professional decisions were made. However I have also experienced countless situations where the guidelines available did not enlighten me as to an obvious 'right' way to proceed. In each situation, my aim was to use whatever 'tools' were available to me to reason through such 'dilemma' situations with the patient's 'best interests' foremost, as I believed/perceived that is what any professionally focused pharmacist would do. I anticipated that my 'reasoning' was both conscious and controlled, and had been improved by my long experience as a pharmacist, and professionalism would be maintained.

Exploration of Latif's (2001a) reference to 'moral reasoning' led me to Neo-Kohlbergian theory (Rest et al, 1999a, 1999b). Its evidence base indicated that community pharmacists were a rare exception to the expectation that moral reasoning competencies increased with age (Latif, 2001a; Rest et al, 1999b; Latif & Berger, 1997). Neo-Kohlbergian theory maintained that '*an individual processes or interprets experience according to organising, conceptual structures in the mind*' that have developed from and/ or are influenced by experience (Narvaez & Bock, 2002:298), a concept with which I could identify. However, the theory also opined that these conceptual structures, referred to as 'schemas', activate automatically without awareness (Narvaez & Bock, 2002; Rest et al 1999b). I accepted that this would mean that pharmacists make (at least some) decisions unconsciously and/or in a less controlled manner than I might have previously believed.

Underpinning Latif's claim regarding the decline in community pharmacists' 'moral reasoning scores' (2001a:137) was a well validated measure of moral reasoning from within Neo-Kohlbergian theory, i.e. a psychometric measure known as the defining issues test (DIT). The maintenance of professional ethics, it seemed to me, had a heretofore unused supporting 'tool' available - at least with respect to moral reasoning competencies development in Irish community pharmacists. When considering Latif's claim, my reaction was to question whether the development of community pharmacists' schemas might be positively influenced by an educational intervention, as measured by the DIT. This contemplation was the starting point of this research study.

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**Chapter 1 -
Introduction.**

1.1. Introduction.

Professional ethics education as proposed in 'Moral Development in the Professions: Psychology and Applied Ethics' (Rest & Narvaez, 1994) incorporates the Four Component Model (FCM) of morality, namely moral sensitivity, reasoning¹, motivation and implementation, as interactive elements in the development of a professional (Bebeau & Monson, 2008; Bebeau, 2002; Bebeau & Thoma, 1999). Moral reasoning is the component specifically considered in this study, which reviews the development of moral reasoning competencies (Appendix 1) in community pharmacists in Ireland, as measured by a psychometric measure known as the DIT2 (Rest et al, 1999a, 1999b), following an educational intervention incorporating profession-specific dilemmas.

1.1.1. Introduction to the DIT2.

The DIT2 is a paper-and-pencil assessment of cognitive moral development (Narvaez & Bock, 2002; Rest et al, 1999a, 1999b). It presents 12 issues after a hypothetical dilemma for a subject to rate and rank in terms of their importance (Rest et al, 1999a). Five such hypothetical dilemmas are utilised in this study. Its aim is to provide an objective measure of moral reasoning that relates to cognition, or how information is processed and constructed. It has been used with professions other than pharmacy to both assist with competency/ -ies development and to assess the extent to which a practitioner has developed the targeted competency/ -ies (e.g. Jones, 2008; Staehr & Byrne, 2003; Rest et al, 1999b; Latif & Berger, 1997; Self et al, 1994; Rest & Narvaez, 1994; Self & Baldwin, 1994).

The Center for the Study of Ethical Development (CSED), located in Alabama USA, provides a scoring service for completed DIT2 surveys (Bebeau & Thoma, 2003). Processing of the DIT2 at the CSED includes provision of a series of developmental and experimental indices that may be derived from the process. The potential value of such measurement is that a deficit, if identified, can be remedied (Bebeau & Monson, 2008; Bebeau, 2002).

1.1.2. The pharmacy profession and the community pharmacy setting.

A profession such as pharmacy is deemed to be a vocation with a body of knowledge and skills put into service for the good of others (Anderson, 2004). The attitudes that a

¹ Reasoning and judgement are used interchangeably to describe component 2 of the four component model in the literature. Reasoning will be used throughout this thesis.

pharmacist demonstrates in the application of this body of knowledge and skills when interacting with patients and their families, with professional colleagues and with society at large, are the foundations on which attempts to define professionalism rest (Waterfield, 2010; Wilson et al, 2010; Roche, 2009a; Cohen, 2006; Andersen, 2004; Welie, 2004; Swick, 2000). The profession's code of conduct (CoC, 2009) is founded on the premise of a duty of care to the patient, thus obliging the pharmacist to always make judgements in the patient's best interests (Pharmacy Act, 2007). The inference is, of course, that acting in the patient's best interests is not always easy. There are many potential sources of conflict, both internal and external to pharmacists, which raise the possibility of impairing the related decision making process to the extent that a pharmacist's, or her employer's, self-interest may inadvertently override the patient's best interests (e.g. Benson et al, 2009; Roche & Kelliher, 2009; Roche, 2009b, 2008c; Cooper et al, 2008a, 2008b, 2007a). The avoidance of situations, or dilemmas, where self-interest is at risk of prevailing is not possible for community² pharmacists working in Ireland (Roche & Kelliher, 2009).

Recent research into the types of ethical dilemmas encountered by community pharmacists and the influence of the community pharmacy environment on moral reasoning of such pharmacists repeatedly suggested that studies focussed on this environment merit particular attention (Chaar, 2010; Roche & Kelliher, 2009; Cooper et al, 2009, 2008a, 2008b, 2007a, 2007b; Benson et al, 2009). These authors found that community pharmacists (as opposed to hospital or other pharmacists) are the largest group of pharmacists facing ethical dilemmas and as such warrant specific studies relating to their moral reasoning competencies development.

1.1.3. Moral reasoning competencies development.

Research in other professions, e.g. dentistry (Bebeau, 2009a, 2009b, 2002) and business (Jones, 2008), indicates that even relatively short profession-specific educational programmes (referred to as an intervention for the purposes of this research) can lead to significant improvements in moral reasoning competencies, especially when the design, development and delivery of the intervention is context-appropriate.

Wingfield and colleagues (2004) have highlighted that there is little research literature specifically addressing ethics in pharmacy practice and that:

² Participants in the study had self-declared as being community pharmacists and working in community pharmacies, or Retail Pharmacy Businesses (RPBs) as referred to in the Pharmacy Act (2007). Pharmacists working in RPBs in the community setting are referred to as community pharmacists throughout this thesis.

'The principal areas in which research is needed include, how best to teach and assess "ethical competence" before practice; how to develop and update this competence in practising pharmacists; and how the business environment, particularly where there are corporate values and reward systems in operation, affects ethical competence.'

Wingfield et al, 2004:2382

This study aimed to address the question of assessment of aspects of "ethical competence" in community pharmacists, by exploring whether a profession-specific educational intervention, as designed, developed and delivered during this study, impacted on the development of moral reasoning competencies in community pharmacists in Ireland, as measured by the DIT2.

1.2. Research question and hypotheses.

Literature review identified that a validated and reliable measure of moral reasoning competency/ -ies development existed in the form of the DIT2 (Rest et al, 1999a, 1999b) and that an appropriately designed educational intervention has the potential to impact on moral reasoning competency/ -ies development (Bebeau & Monson, 2008; Rest et al, 1999a, 1999b). Such intervention is of particular significance for the profession of pharmacy as community pharmacists were found to be an exception to the expectation that moral reasoning competencies as assessed by this measure should be expected to increase with age (Latif, 2001a; Latif & Berger, 1997). The research question and related hypotheses are:

Research question:

Does a profession-specific educational intervention, as designed, developed and delivered during this study, impact on the development of moral reasoning competencies in community pharmacists in Ireland, as measured by the DIT2?

Hypotheses:

1. Moral reasoning competencies of community pharmacists in Ireland, as measured by the DIT2, are not impacted by the profession-specific educational intervention designed, developed and delivered during this study.
2. The context of the study group, community pharmacists working in Ireland, precludes comparison of DIT2 results with outcomes from other studies.

1.3. The educational intervention.

The educational intervention in this study was a 16-week-long blended learning programme that drew on the Neo-Kohlbergian perspective that

'intermediate concepts are jointly formed through the application of an individuals' moral understanding as described by moral [reasoning] development and more generally through the process of discussion and deliberation with others (i.e. how the intermediate concept becomes generally understood in the profession or society)'.

Thoma et al, 2008:148

The intervention design incorporated Intermediate Concept Measures (ICMs³) as a core activity to explore participants' grasp of ethical concepts specific to the pharmacy profession (Bebeau & Monson, 2008; Bebeau & Thoma, 1999). The educational intervention introduced the ICMs to an online learning environment in a structured manner that facilitated both individual and social constructivism (Vai & Sosulski, 2011; Sthapornnanon et al, 2009; Treleaven & Voola, 2009; Biggs, 2004; Huball & Burt, 2004). In this context, constructivism proposes that learning is an active process wherein new information is added to 'prior knowledge', which may have been derived from personal experience as well as formal teaching and learning. As constructivism can take place on an

³ The components of an ICM are a short Profession-specific 'dilemma' scenario, and series of action and justification choices. The profession-specific dilemma is generally prepared to include relevance to the principles of autonomy, beneficence, non-maleficence and justice and to several intermediate concepts e.g. confidentiality, capacity to consent, conscientious objection and 'patient best interests'. The case study, action choices and justification items are presented in sequence to online participants and options proposed include those with a focus on self-interest, maintaining rules and norms, and societal interests.

individual or social basis (O'Neill, 2010) it had the potential to align with Neo-Kohlbergian theory regarding the development of schemas (Narvaez & Bock, 2002).

Participants benefited from 'the safe communicative space' (Wicks & Reason, 2009) afforded by the use of pseudonyms in the online environment. This was particularly important for pharmacists who wished to peer-review decision-making through dilemma scenarios without fear of exposing themselves to a charge of 'poor professional performance' or 'professional misconduct' (Pharmacy Act, 2007). In this way pedagogies engaging a social-constructivist approach could align effectively with the online environment and with the FCM of professional education (Bebeau & Monson, 2008).

Cognitive learning theories were also employed in that the educational intervention began with an introduction to both the concept of ethical dilemmas and to reasoning frameworks (such as principlism and the values inherent in the CoC) typically used by healthcare practitioners (Beauchamp & Childress, 2009; PSI, 2009; Beauchamp, 2003; Campbell, 2003; Childress, 1998).

Professional (Rapport et al, 2010; Higgs-Kleyn & Kapelianis, 1999; Szeinbach et al, 1994) and commercial (Schmidt & Pioch, 2004; Kayne, 2004; Resnik et al, 2000; Vitell et al, 1991) influences, considered to be part of the Moral Milieu (Bebeau & Monson, 2008), were incorporated into the design of the ICMs used in the educational intervention in a manner that prompted consideration of and discussion as to their likely impact when decision-making through dilemma scenarios.

1.4. Thesis outline and structure.

Background issues were first reviewed, to include the context or environment in which community pharmacists in Ireland work. An overview of approaches taken to moral reasoning competencies development is then provided, incorporating discussion of the Neo-Kohlbergian model and the Minnesota, or four component model (FCM), approach to moral development. Methods, results and analysis follow. Finally the thesis turns to discussion of the issues involved, the significance of the study and conclusions and recommendations:

1. Chapter 1 Introduction.
2. Chapter 2 Context: Regulation, education and practice of pharmacy in Community Pharmacies in Ireland.
3. Chapter 3 Moral reasoning competencies development: The Minnesota approach and the Neo-Kohlbergian model.
4. Chapter 4 Moral reasoning competency development: The impact of educational interventions as measured by the Defining Issues Test (DIT2).
5. Chapter 5 Methods.
6. Chapter 6 Results and analysis.
7. Chapter 7 Discussion.
8. Chapter 8 Conclusions & Recommendations.

For the purposes of this thesis female gender is used to denote the community pharmacist(s) and male gender is used to denote the patient.

1.5. Summary.

The aim of this study was to consider the impact, if any, of a profession-specific educational intervention, designed, developed and delivered during this study, on the development of moral reasoning competencies in community pharmacists in Ireland, as measured by the DIT2. This aim has the potential to be of interest to individual pharmacists and to those governing and supporting the continuing professional development of pharmacists in Ireland and internationally. The use of the DIT2 as a pre and post measure of pharmacists' moral reasoning competencies in this study facilitates structured review of this validated assessment methodology in consideration of its applicability to the context: Community Pharmacy in Ireland.

Abstract: The present study was designed to evaluate the effectiveness of...

Introduction: In the past few years, there has been a significant increase in...

Methodology: A total of 100 participants were recruited for the study and divided into...

Results: The findings of the study indicate that there is a significant difference in...

Conclusion: The results suggest that the intervention used in this study is effective in...

Future research: Further studies should be conducted to explore the long-term effects...

References: The following references were consulted for this study: (1) Smith et al. (2015)...

Appendix A: Data collected for the study.

Appendix B: Copy of the questionnaire used in the study.

Appendix C: Copy of the consent form signed by participants.

Appendix D: Copy of the data analysis software output.

Appendix E: Copy of the final report of the study.

Appendix F: Copy of the ethics approval letter.

Appendix G: Copy of the funding source information.

Appendix H: Copy of the contact information for the researchers.

Appendix I: Copy of the participant information sheet.

Appendix J: Copy of the data collection protocol.

**Chapter 2 -
Context: Regulation, education and
practice of pharmacy in Community
Pharmacies in Ireland.**

2.1. Introduction.

The aim of this chapter is to give an overview of community pharmacists in Ireland in 2011 and to describe the context in which they practiced pharmacy. Systematic literature search, as outlined in Appendix 2, included searches of key pharmacy and related organisations' websites, and hand searching of pharmacy related references, in order to support this aim.

The chapter begins with an overview of community pharmacists and the pharmacies in which they worked. As these pharmacists and pharmacies were/are at the centre of a complex network of rules, codes and norms, key legislation (rules), professional codes and societal norms as expressed in national policy are discussed. Finally the chapter considers the potential for legislation, codes and national policy to influence the community pharmacist when deliberating what advice is in the 'best interest' of the patient.

2.2. Overview of community pharmacists and community pharmacy: The Irish context.

All pharmacists must be registered with the Pharmaceutical Society of Ireland (PSI) (Pharmacy Act, 2007), the regulatory body governing pharmacy in Ireland (Pharmacy Act, 2007). The numbers of pharmacists on the PSI register increased from 2009 (4,451 pharmacists) to 2011 (4,793 pharmacists) demonstrating an increase of 8% (342 pharmacists) in the two years prior to recruitment of pharmacists for this study. Of the 4,793 pharmacists registered with the PSI in 2011⁴, 62% were female and 94% declared their nationality as being from a country for whom English is the first language (i.e. Ireland, UK, Canada, Australia, USA, South Africa) (PSI, 2011). Pharmacist age profiles are summarised in Table 2.1.

⁴ As pharmacists were recruited to the pilot study in 2011, statistics available from the PSI as at January 2012 are used.

Table 2.1: Pharmacist Age profile, PSI Register 2011.

Pharmacist Age range	Number of pharmacists	Percentage
20 - 25	428	8.9%
26 - 35	2080	43.4%
36 - 45	1245	26.0%
46 - 55	580	12.1%
56 - 65	256	5.3%
66 - 75	124	2.6%
Over 75	70	1.5%
Unclassified	10	0.2%
Grand Total	4793	100.0%

Source: PSI, 2011.

Table 2.1 identifies that 87% of pharmacists were between 26 and 65 years old and that more than half of pharmacists were less than 36 years old (in 2011). Those under 26 years (9%) were generally excluded from this study on the basis that participants were required to be a minimum of three years on the register (PSI, 2011).

2.2.1. Community Pharmacy in Ireland.

A pharmacist's area of practice is self-declared when registering with the PSI (see Appendix 3). Of those who identified an area of practice (83% of 4,793 pharmacists), 80% identified themselves as practising in community pharmacy (Table 2.2).

Table 2.2: Pharmacist Area of Practice.

Areas of practice	Number of pharmacies	Percentage
Academic	39	0.8%
Community	3198	66.7%
Hospital	510	10.6%
Industry	87	1.8%
Not Practising	17	0.4%
Other	88	1.8%
Regulatory	53	1.1%
Not Stated	801	16.7%
Grand Total	4793	100.0%

Source: PSI, 2011.

Community pharmacies must also be registered, as RPBs, with the PSI (Regulation of Retail Pharmacy Business Regulations, 2008). Registration of Retail Pharmacy Businesses (RPBs) in 2011

totalled 1,757 pharmacies, having increased from 1,704 pharmacies in 2009 and 1,728 pharmacies in 2010, and demonstrating an increase of 3% (53 pharmacies) in the two years prior to recruitment of pharmacists to this study (PSI, 2011). Given a total national population of 4,574,900 (Central Statistics Office, 2011) it can be deduced that an average of one RPB per 2,600 population in 2012 and ownership types are represented in Table 2.3.

Table 2.3: Pharmacy by Ownership.

Ownership Type	Number of pharmacies	Percentage
Legal Representative ⁵	20	1%
Hospital	75	4.3%
Sole Trader / Partnership	107	6.1%
Limited Company	1573	89.5%
	1757	100.0%

Source: PSI, 2011.

While RPBs are generally found in a primary care (community) rather than secondary care (hospital) setting, it should be noted that 75 RPBs registered with the PSI (2011) reside within hospitals and some might therefore not be community pharmacies. This fact has the potential to distort the statistics presented.

In a report commissioned by the Irish Pharmacy Union (IPU), a representative body for community pharmacists, the majority of community pharmacies (88%) surveyed, whether sole trader/partnership or Limited Company, were reported to be owned by pharmacists (Grant Thornton⁶, 2012). Single pharmacy ownership, where only one pharmacy is owned by the sole trader, limited company or partnership was reported to be 54% as represented in Table 2.4 (reproduced from Grant Thornton, 2012:6).

⁵ Legal representatives are appointed, as a temporary measure, to accommodate transfer of ownership following the death of a pharmacist.

⁶ 'Grant Thornton' is a Business (Co Registration Number: 97169) registered in Ireland as a partnership providing advisory consulting services (For further details see: <http://www.grantthornton.ie/> Accessed on: 13th June 2015). The Company was commissioned by the IPU to prepare this report.

Table 2.4: Changes in structure of community pharmacy in Ireland - 2009 to 2011.

Ownership structure	2011		2010		2009		Change 2009 to 2011
	No's	%	No's	%	No's	%	
Total	1,659 ³	100%	1,652	100%	1,628	100%	2%
Chain ownership							
Single outlet	896	54%	859	52%	863	53%	4%
In chain ownership ¹ : total	763	46%	793	48%	765	47%	0%
Corporate ²	134	8%	120	7%	118	7%	14%
Other	629	38%	673	41%	647	40%	-3%
Pharmacist vs. non-pharmacist							
Pharmacist	1,460	88%	1,454	88%	1,416	87%	3%
Non-pharmacist	199	12%	198	12%	212	13%	-6%

Source: Grant Thornton derived: PSI (total outlet numbers).

¹ In chain ownership refers to more than one pharmacy owned by the same owner.

² Corporate ownership refers to corporate owned chains: Boots and Doc Morris pharmacy chains 2011.

³ The total number (1,659) excludes 98 RPBs in hospitals. Note that the PSI statistics report that 75 RPBs, of a total 1757 RPBs, are owned by hospitals (Table 2.3) (PSI, 2011). The Grant Thornton report does not specify who owns the additional 23 RPBs 'in' hospitals.

Table 2.4, as reproduced directly from the report to the IPU by Grant Thornton (2012), indicates that, apart from the 14% increase in corporate ownership resulting from ownership changes in two chain pharmacies, changes in the structure of community pharmacy in Ireland were minimal in the two years prior to recruitment of pharmacists to this study.

While the existence of a commercial transaction between the IPU and Grant Thornton in the context of preparation of this report is acknowledged, and verification of the data presented in table 2.4, and in section 2.2.3, with figures from the PSI would be preferable, the level of detail presented is not available from the PSI for the time-span in question (PSI, 2011). Nevertheless interpretation of the data provided must bear this limitation in mind.

2.2.2. Community Pharmacy revenue sources: a commercial dilemma.

The three main state sponsored medical schemes, i.e. General Medical Services (GMS), Drug Payment Scheme (DPS) and Long Term Illness (LTI) schemes as administered by the Primary Care Reimbursement Service (PCRS), accounted for 71 million prescribed drugs in 2011, representing an average of circa 40,796 items dispensed in each pharmacy (HSE, 2011) and total payments amounting to €1,592 million or circa €959,612 per pharmacy as summarised in Table 2.5 (HSE, 2011).

Table 2.5: PCRS payments - cost of prescription drugs to community pharmacies in respect of GMS, DPS and LTI PCRS schemes - 2009 to 2011.

€million	2011	2010	2009	Change 2009 to 2011	
GMS fees	283	260	258		
GMS Ingredient cost	882	932	962		
GMS VAT	31	28	26		
GMS - Total cost of prescription drugs supplied	1,196	1,220	1,246	-50	-4%
DPS - Total/gross cost of prescription drugs supplied	278	336	452	-174	-38%
LTI - Total cost of prescriptions drugs supplied	118	127	140	-22	-16%
Total cost of prescription drugs supplied under the GMS, DPS & LTI (€m)	1,592	1,683	1,838	-246	-13%
<i>(DPS Net cost to PCRS (variable patient 'deductible' collected at pharmacy level))</i>	142	173	260	-118	net -7%
GMS	58	54	51		
DPS	10	11	13		
LTI	3	3	3		
Number of items dispensed under GMS, DPS and LTI schemes (million)	71	68	67	-4	5%

(Source of data: HSE, 2011, 2010).

The number of items dispensed in the GMS, DPS and LTI schemes increased by 5% during the period 2009 to 2011, which may be taken as an indicator of workload involved, whereas the income derived from that workload decreased by at least 7%⁷ (HSE, 2011, 2010). While this is separate to any reductions in income from the range of less widely used community drug schemes⁸, non-dispensed medicines or other items for sale in the community pharmacy or for items dispensed other than under PCRS schemes during that same time period, it nonetheless highlights the trends experienced in the sector during the two years prior to recruitment of pharmacists to the study. This increasingly difficult commercial environment restricted the ability of businesses to repay debt (Roche et al, 2013). The reality associated with earning a living in such challenging circumstances is that 'circumstances' influence decision making (Thoma et al, 2008).

⁷ Variable DPS deductibles were charged at pharmacy level during this time. A conservative approach has been taken to accommodate these changes – i.e. the lower reduction, reflecting 'net cost' reduction of 7% rather than 13%, is used in discussion.

⁸ There are a number of other community drug schemes but the number of items collectively dispensed in those other schemes is circa 1 million across each of the three years 2009 to 2011 (HSE, 2011, 2010). Circa 98% of the number of PCRS items dispensed are related to GMS, DPS and LTI schemes.

2.2.3. Community Pharmacy - the working week.

Legislation requires that there be at least one registered pharmacist supervising the professional operation of the pharmacy during all opening hours (Pharmacy Act, 2007). Of the 4,793 pharmacists on the PSI register at the end of December 2011 (Table 2.2), 3,198 self-identified that they worked in community pharmacy, indicating that an average of 1.8 pharmacists worked in each pharmacy⁹(PSI, 2011). A pharmacy that employed 1.8 pharmacists on the standard working week in Ireland (a maximum of 40 hours per week) would theoretically have had 72 hours of pharmacist time available to it each week. However the statutory minimum 20 days holidays and nine bank holidays (Organisation of Working Time Act, 1997) account for 232 hours of work time per fulltime employee per year, or the equivalent of eight hours per week allocation for a pharmacy with 1.8 employees. Hence, taking account of this eight hour per week reduction in average availability, the total pharmacist time available to an average pharmacy in 2011 was 64 hours per week.

The IPU commissioned report states that community pharmacies opened on average 56 hours per week in 2011 (Grant Thornton, 2012). When this 'opening hours' figure of 56 hours per week is aligned with the pharmacist time available (64 hours per week), it highlights that a maximum of eight hours of pharmacist time per week was available to an average community pharmacy to accommodate management functions, training, sickness and/or other absence of a pharmacist and time committed to continuing education or 'competency development'. The implication is that, for the majority of the time, community pharmacists in Ireland in 2011 worked alone, without pharmacist colleagues at the pharmacy. This aligns with the findings of Cooper and colleagues, whose analysis of interviews with 23 community pharmacists in the United Kingdom highlights 'isolation' as a key concern (Cooper et al, 2009).

The IPU commissioned report (Grant Thornton, 2012) also states that 45% of the adult population visited a pharmacy within the previous week, equating to 18 visits per annum for every person in the state or 900 visits per pharmacy per week, and thereby highlighting the workload required to accommodate these visits. The pharmacist on duty in an RPB is responsible for the professional advice given in/ from the pharmacy, regardless of the member of staff that interacts with the patient (Regulation of Retail Pharmacy Businesses Regulations, 2008).

The workload associated with an estimate of 900 visits to each pharmacy each week is obviously high yet, as professionals working in a retail environment, the pharmacists working in these pharmacies also need to fulfil a wide range of professional requirements. This range of

⁹ The proportion of pharmacists that self-identified that they worked in community pharmacy in 2009 and 2010 is not available from the PSI statistics report to December 2011.

professional requirements, collectively seen as related to rules, codes and norms, further add to the demands on the pharmacist working in an average Irish community pharmacy. They are detailed in the forthcoming section.

2.3. Rules, Codes and Norms governing the practice of community pharmacy in Ireland.

Community pharmacists in Ireland and the pharmacies in which they work are at the centre of a complex network of:

- rules, including but not restricted to legislation governing healthcare in general and community pharmacy in particular (e.g. Pharmacy Act, 2007; Health Act, 2007, 2004, 1970),
- the CoC for pharmacists, supported by the Core Competency Framework (CCF) (PSI, 2013a) and 'social contract' expectations of a self-regulated profession (e.g. Welie, 2004; Anderson, 2004), and
- societal norms as expressed in national policy, especially as related to healthcare, the education of pharmacists (Pharmacy Act, 2007) and services delivery (e.g. DoH&C, 2001a, 2001b, 2000).

Rules, codes and norms have the potential to influence the community pharmacist when considering the best advice to give to a patient (Roche & Kelliher, 2014) and therefore merit further consideration.

2.3.1. Overview of Professional regulation: 'Rules' governing the practice of pharmacy in Ireland.

The professional regulation of pharmacists in Ireland, in the interests of public health, is ultimately under the jurisdiction of the Oireachtas (Government) and a legal system that incorporates Acts of the Oireachtas and statutory instruments. The Minister of Health & Children¹⁰ (MoH&C), on behalf of the Government, assigns regulatory functions to the PSI which *'is the statutory body for pharmacists and pharmacies in Ireland, established by the Pharmacy Act 2007. It acts in the public interest to regulate the profession'* (PSI, 2013b:2). While additional statutory bodies and legislative frameworks also impact on the operation of a community pharmacy in Ireland, and some aspects with particular potential to impact on a community

¹⁰ In 2011 the title was Minister of Health & Children (MoH&C).

pharmacist are addressed in this review, a complete review of related legislation¹¹ is beyond the remit of this thesis. The regulatory focus herein is largely derived from the remit of the PSI in regulating community pharmacists and community pharmacies in Ireland (Pharmacy Act 2007; Regulation of Retail Pharmacy Businesses Regulations, 2008).

2.3.1.1. Professional regulation of pharmacists.

The primary responsibility of the PSI is to maintain the register of pharmacists (Pharmacy Act, 2007). This register is openly available, online¹², so that any member of the public can verify the current status of a person presenting herself as a pharmacist. The Pharmacy Act (2007) introduced powers to remove from the register of pharmacists those practitioners considered unfit to practice by providing, in Part 6 Section 33 (Appendix 4) , for the management of complaints, inquiries and discipline related to pharmacists charged with an offence defined as 'poor professional performance' (a failure of the registered pharmacist to meet the standards of competence that may be reasonably expected of a registered pharmacist) or 'professional misconduct' (including an act, omission or pattern of conduct that is a breach of the CoC).

Fitness-to-practice provisions support the maintenance of a professional register by providing a means by which incompetent practitioners may be removed from positions where they are a threat to patient safety, the most significant sanction being to remove the practitioner from the professional register on a temporary or permanent basis (Pharmacy Act, 2007:Section 48). Lesser sanctions, censures or admonishments may also be applied to include the attachment of conditions to the registration of the pharmacist or retail pharmacy business, which may include restrictions on practice or the carrying on of the business (Pharmacy Act, 2007:S.48(1)(b)(ii)). The PSI Council may choose to give public notice of the outcome of fitness to practice hearings (PSI. Findings and Decisions, 2014; PSI. Fitness to practice Findings and Decisions, 2012). The attachment of conditions related to educational programmes, mentoring, assessment and/ or audit occurred in 11¹³ of the 21 cases referred to in these notices. Some conditions are quite specific e.g. to submit 'satisfactory evidence' of completion of an MSc, or to complete the Professional Registration Exam (PRE) exam as undertaken by MPharm students, whereas others

¹¹Links that pertain to legislation governing the practice of pharmacy in Ireland, and legislation considered necessary to competently discharge the professional responsibilities and duties of a practising registered pharmacist in Ireland. Available at: <http://www.thepsi.ie/gns/inspection-enforcement/enforcement/legislation.aspx> Accessed on 13th June 2015. *Note the inclusion that: 'This list is current as of December 2010 and will require reviewing and updating in light of any new legislation'.*

¹² Available at: <http://public.thepsi.ie/> Accessed on: 13th June 2015.

¹³ (1): PSI Preliminary Proceedings Committee Hearings held 27th January 2012; 16th July 2012 (2 separate hearings); 12th April 2013; 26th July 2013; 26th April 2013 & 16th May 2013; 29th November 2013; 5th December 2013/ 21st February 2014/ 9th May 2014; 14th October 2014. Mediation 11th October 2013.

are less 'directed' e.g. 'completion of educational courses further to self-audit/self-analysis'. One refers to a mentoring programme (and provision of reports to Council every 3 months), with particular focus on maintaining 'boundaries and awareness of ethical responsibilities' (PSI. Findings and decisions, 2014). Recent research indicates that conditions of this nature would be particularly challenging to assure (Caldicott & d'Oronzio, 2015; Bebeau & Faber-Langendoen, 2014; Parran et al, 2013).

Continued registration, as required on an annual basis, depends on the pharmacist signing a declaration giving undertakings to include that she is fit and competent to practice as a pharmacist, will practice pharmacy in accordance with the laws of the State and the CoC, and keeps abreast of continuing education and professional development in the profession of pharmacy (Appendix 3). In order to validly provide these undertakings, the pharmacist must understand the laws of the State as they apply to the practice of pharmacy. She must also understand the implications of being bound by the CoC and the competency standards and by continuing professional development expectations required in order to remain 'fit and competent' to practice as a pharmacist (See Tables 2.6 and 2.7 for further details).

As previously stated, a complete review of related legislation is beyond the remit of this thesis. However the implications of bankruptcy legislation in Ireland in the economic recession (2008-12) had a relatively unique potential to influence an individual community pharmacist both professionally and commercially, and therefore merits further consideration. The Pharmacy Act (2007) identified that if a pharmacist is declared a bankrupt (Bankruptcy Act, 1988 (Number 27), as amended by the Civil Law (Miscellaneous Provisions) Act 2011 (Part 7) and the Personal Insolvency Act (2012:Part 4)), she would cease to be entitled to register as a pharmacist. The legislation is silent on how and when a pharmacist removed from the register and subsequently discharged as a bankrupt may be considered for reregistration. The potential implications of being made a bankrupt, which is increasingly a risk in times of economic uncertainty, enhances the complexity for pharmacists seeking to meet professional responsibilities while retaining employment in a competitive market. Fear of losing secure employment in community pharmacies, as highlighted by Ottewill & Magirr (1999), Szeinbach et al. (1994) and Schmidt & Pioch (2004) amongst others, accentuates the pressure on employee pharmacists to comply with both written and inferred employer policy, as finding alternate positions is more challenging. Where the pharmacist is an owner or director in a Limited Company operating a community pharmacy, turnover sufficient to meet financial commitments of the company must be maintained to assure bankruptcy is avoided. However, recent Irish legislation has on numerous occasions facilitated unilateral reduction in fees paid to community pharmacies who have contracts with the HSE to dispense and supply medicines under the provisions of the Health

Act(s) (2013, 2007, 2004 & 1970) and FEMPI¹⁴ Act(s) (2013, 2011, 2010, 2009). While this has occurred as a result of what the preamble to the FEMPI Act (2009) summarises as *'a serious disturbance in the economy ... which threaten[s] the well-being of the community'* (FEMPI Act, 2009), and therefore applies to many sectors, community pharmacies would appear to have been particularly affected (Grant Thornton, 2012).

Professional roles with legislative responsibilities, additional to those directly aligned with pharmacist registration, also have the potential to particularly influence community pharmacists. Two such 'additional roles' identified in the Regulation of Retail Pharmacy Businesses Regulations (2008) are those of Superintendent Pharmacist (SIP) and Supervising Pharmacist (SVP) (2008:3(1)).

The SIP role has responsibility for assuring that appropriate policies and resources are in place such that any RPBs for which she is superintendent can meet the standards required in law and must be

'satisfied that all of the pharmacists and other staff, employed or engaged by him or her, or under his or her management, have the requisite knowledge, skills, including language skills, and fitness to perform the work for which they are, or are to be, responsible'

(Regulation of Retail Pharmacy Businesses Regulations, 2008:S.5(1)(h)).

The SVP role is responsible for day-to-day implementation of policy as agreed with the SIP and, in contrast to the SIP role, a pharmacist may act in the capacity of SVP in only one pharmacy. PSI records identify that there were 1152 SIPs (for a total of 1757 pharmacies) at the end of 2011 but do not specify the proportion of pharmacies where the same pharmacists held both the SVP and SIP role. The Baseline study of Community Pharmacy Practice in Ireland (Horwath Bastow Charleton, 2011) indicates that 41% of respondents held the role of SVP, 43% held the role of both SVP and SIP and 16% held the role of SIP only. This is a further indicator of the frequency of separation of responsibilities. A SVP that does not also hold the role of SIP has less autonomy over her professional practice environment (notwithstanding that a registered pharmacist holding neither the SIP nor SVP role will also be at risk of reduced autonomy over her professional practice). Research demonstrates that reduced autonomy increases the risk that, despite personal commitment to adhere to the CoC and the letter of the law, a pharmacist may not have sufficient control over the situation or other employees to ensure that those

¹⁴ Financial Emergency Measures in the Public Interest

commitments are fully honoured (e.g. Cooper et al, 2009, 2007a; Wingfield & Badcott, 2007; Brown & Bellaby, 2002; Vitell et al, 1991).

The Continuing Professional Development (CPD) of pharmacists is also under the remit of the PSI (Pharmacy Act, 2007), and a review of how CPD might be best managed into the future (PA Consulting Group, 2010), commissioned by the PSI, led to the establishment of the Irish Institute of Pharmacy (IloP) in late 2011. However, the nature and process by which the PSI will give legislative effect to the regulation of CPD responsibilities had not been defined in 2011 and was, therefore, not considered to be an influencer on pharmacists involved in this study.

Finally, data and communications are a particularly rapidly changing field to include privacy and confidentiality issues raised in the Data Protection Acts (DPA) (1988; 2003) and judging what meets the 'best interest' principle when interacting with a patient, patient records or others involved in patient care can be challenging (DPA, 2003). Additional challenges related to data protection arise with various forms of electronically held data and social media (PSI, 2013c). Community pharmacists must be aware of and address these issues if they are to meet the professional commitment (Appendix 3) to uphold the laws of the State.

2.3.1.2. Professional regulation of community pharmacies.

Section 18 of the Pharmacy Act outlines the authority of the Minister to introduce regulations governing e.g. facilities, operations, staffing and patient counselling in community pharmacies (Appendix 5). While the PSI issues guidelines¹⁵, originally introduced as a pharmacy practice guidance manual (PPGM) (PSI, 2008a), to support practitioners in many of these areas, it is the Regulation of Retail Pharmacy Businesses Regulations (2008) that specifies much of the basis on which owners or pharmacists operating community pharmacies might be found to be in breach of legislation. Therefore standard operating procedures (SOPs), the processes by which the operations of the pharmacy comply with requirements specified in these regulations, must be recorded and available for inspection by the PSI. Responsibilities of pharmacists with respect to the counselling of patients regarding medicinal products supplied, regardless of whether or not the pharmacist also holds the role of SIP or SVP, outlined in sections 9 and 10 of these regulations (Appendix 6), can be particularly challenging.

In the case of counselling in the supply of medicinal products other than on foot of a prescription the user must be *'aware of what the appropriate use of the medicinal product is and that it is*

¹⁵ Complete range available at: <http://www.thepsi.ie/gns/pharmacy-practice/overview.aspx> Accessed on: 13th June, 2015.

being sought for that purpose and, in so far as the registered pharmacist is aware, the product is not intended for abuse and/or misuse' (Regulation of Retail Pharmacy Businesses Regulations, 2008:Section 10). As employees other than pharmacists may be involved in the sale of non-prescription medicines and medical devices¹⁶, and a pharmacist that is an employee or locum herself may not have adequate control over those employees or their terms of employment and/or remuneration, it can be difficult to assure that the regulations are being met. When considering what interactions with a patient are likely to meet the professional commitment to duty of care, it is important for the pharmacist to ensure that these staff not only meet these legislative requirements but also facilitate the regulatory criteria relating to the pharmacist's role in the patient decision to purchase and consume that medicine (Pharmacy Act, 2007; Regulation of Retail Pharmacy Businesses Regulations, 2008).

2.3.2. Overview of the 'Codes' governing the practice of pharmacy.

'Codes' governing the practice of pharmacy, as included for discussion, consist of the CoC, the related CCF and the profession's social contract with the public.

2.3.2.1. The Code of Conduct for Pharmacists (CoC).

The PSI defines the CoC in Ireland as a public declaration of the principles and ethical standards which govern pharmacists in the practice of their profession (PSI, 2009) and is contained in six key principles found in Table 2.6.

Table 2.6: Code of Conduct for Pharmacists (CoC).

Principles of Professional conduct	
1	The practice by a pharmacist of his/her profession must be directed to maintaining and improving the health, wellbeing, care and safety of the patient. This is the primary principle and the following principles must be read in light of this principle.
2	A pharmacist must employ his/her professional competence, skills and standing in a manner that brings health gain and value to the community and the society in which he/she lives and works.
3	A pharmacist must never abuse the position of trust, which they hold in relation to a patient and in particular, they must respect a patient's rights, including their dignity, autonomy, and entitlements to confidentiality and information.

¹⁶ In order to be classified as a medical device, the product should have a medical purpose and its primary mode of action will typically be physical (www.imb.ie / www.hpra.ie).

4	A pharmacist must conduct himself/herself in a manner which enhances the service which their profession as a whole provides to society and should not act in a way which might damage the good name of their profession.
5	A pharmacist must maintain a level of competence sufficient to provide his/her professional services effectively and efficiently.
6	A pharmacist must be aware of his/her obligations under this Code and should not do anything in the course of practising as a pharmacist, or permit another person to do anything on his/her behalf, which constitutes a breach of this Code or impairs or compromises his/her ability to observe this Code.

Source: PSI, 2009.

Pharmacists engage in the irreversible care and treatment of patients ‘*who stand in such a degree of relationship to a pharmacist that the pharmacist ought to reasonably apprehend that such a person or person’s health, wellbeing and care are likely to be affected by the acts or omissions of that pharmacist*’ (PSI, 2009: Foreword). The CoC seeks to assure that patient interests are not subordinated, intentionally or otherwise, to the interests of the practitioner or the organisation by which she is employed and it is one basis from which review of acts, omissions or patterns of conduct might be deemed to constitute professional misconduct or poor professional performance (Pharmacy Act, 2007). Breach of the CoC may result in a complaint of ‘professional misconduct’ (Appendix 4) and, even in the absence of any harm to a patient being demonstrated, sanctioned under fitness to practice legislation (PSI. Findings and Decisions, 2014; Fitness to Practice Findings and Decisions, 2012).

2.3.2.2. The Core Competency Framework (CCF).

Commentators believe ‘*if there was to be an impact on pharmacy practice, desirable objectives require detail regarding competencies and how they were to be achieved*’ (Wingfield et al, 2006:693). The PSI, under authority provided for in the PSI Education and Training Rules (2008b:Part 1(4)(1)), has published a CCF (PSI, 2013a) against which a pharmacist’s competence may be compared for the purpose of determining adherence to the CoC, especially to principles 2 and 5 (Table 2.6), or against which a programme of education leading to registration as a pharmacist may be evaluated (PSI, 2010). The CCF outlines competencies (knowledge, skills and attitudes) as lists of behaviours collectively considered to demonstrate professional competence in registered pharmacists. In context, the International Pharmaceutical Federation (FIP) proposes that competence be defined as: “*The capacity to improve therapeutic outcomes, patients’ quality of life, scientific advancement and enhancement of our public health imperatives*” while ‘competencies’, it proposes “*...refer to the knowledge, skills, attitudes and behaviours that an individual develops through education, training, development and experience. Taken together, these competencies can be formulated into a **framework** that can contribute towards supporting*

practitioner development, within an individual, for effective and sustained performance” (FIP, 2012:4). Bruno et al. (2010) anticipate that the formation, assessment and assurance of all listed competencies will be challenging.

While it has been developed with the FIP framework in mind, the CCF incorporates 6, rather than 4¹⁷, domains or groups of competencies and, in the domain referred to as ‘Professional Practice’, it gives separate attention to professional, ethical, legal and patient-centered practice and to CPD (Table 2.7).

¹⁷ The four domains in the FIP Global Competency Framework are: (1) Pharmaceutical Public Health Competencies, (2) Pharmaceutical Care Competencies, (3) Organisation and Management Competencies, and (4) Professional/Personal Competencies (FIP, 2012).

Table 2.7: Core Competency Framework (CCF) for Pharmacists (PSI, 2013a).

Domain	Competency
Professional practice	Practises 'patient-centred' care Practises professionally Practises legally Practises ethically Engages in appropriate continuing professional development
Personal skills	Leadership skills Decision making skills Team working skills Communication skills
Supply of medicines	Manufactures and compounds medicines Manages the medicines supply chain Reviews and dispenses medicines accurately
Safe and rational use of medicines	Patient consultation skills Patient counselling skills Reviews and manages patient medicines Identifies and manages medication safety issues Provides medicines information and education
Public health	Population Health Health promotion Research skills
Organisation and management skills	Self-management skills Workplace management skills Human resources management skills Financial management skills Quality assurance

Source: PSI CCF (PSI, 2013a:10).

The educational intervention designed for this research study targets consideration of one aspect of the professional practice domain - the behaviours associated with the demonstration of competency in ethical practice. Expected behaviours, as they appear in the CCF (Section 1.4), are that a pharmacist (1) understands her obligations under the principles of the statutory Code of Conduct for Pharmacists and acts accordingly, (2) makes and justifies decisions in a manner that reflects the statutory Code of Conduct for pharmacists and pharmacy and medicines law, and (3) recognises ethical dilemmas in practice scenarios and reasons through dilemmas in a structured manner (PSI, 2013a:12).

However, the CCF as currently proposed does not include specific reference to 'professional judgement', -a term used in the Pharmacy Act (2007) when it alludes to the possibility that such judgement might be 'wrongly but honestly formed' (Appendix 4). This reference presents in a manner that implies not just an acceptance that 'honestly formed' professional judgement can be wrong, but that such 'wrongly' formed professional judgment might be of some defence against a finding of professional misconduct by a committee engaged in a Fitness to Practice hearing

(Pharmacy Act, 2007:Part 6). Hence, while concerns expressed by Gallagher in 2010, that *'the exact nature of professional, cultural and technical competencies required to satisfy these new fitness-to-practice requirements remain undecided'* (p.71) have been largely addressed by the CCF, the undefined reference to professional judgement as it relates to fitness to practice procedures may be considered one gap between the guidance explicitly directed by the CoC and the CCF.

The development of competencies associated with the formation of professional judgement by community pharmacists (e.g. Rapport et al, 2010; Chaar et al, 2009; Wingfield & Badcott, 2007; Chaar, 2006; Coles, 2002) remains unsupported. This poses a risk, even to the conscientious practitioner, that she will be found guilty of professional misconduct as a result of misunderstanding the reference to 'wrongly but honestly formed professional judgement', and potentially attract sanctions that may have professional, commercial or personal consequences (Pharmacy Act, 2007). The characterisation, development and/or evaluation of moral reasoning competencies are likely to support the formation of professional judgement (e.g. Khan & Ramachandran, 2012; Waterfield, 2010; Hodges et al, 2010; Thoma et al, 2008; Cohen, 2006; Coles, 2002; Higgs-Kleyn & Kapelianis, 1999; McDowell, 1990, 1991) in a manner that the pharmacist meets the expectations of the Pharmacy Act (2007). The consideration of these competencies are the core focus of this research study and, if deemed successful in any of those aspects, would be a contribution to the practice of community pharmacy practice in Ireland and beyond.

2.3.3. The Profession's Social Contract with the public.

Both the annual Declaration made to the PSI by pharmacists seeking to continue registration as pharmacists (Appendix 3), and the CoC, refer to the profession of pharmacy as a collective i.e. if an individual pharmacist is to be considered a professional, she must both personally meet the standards expected of a member of the profession, as outlined in the CCF, and have a profession to which she can belong (e.g. Schafheutle et al, 2012; Waterfield, 2010; Wilson et al, 2010; Roche, 2009a; Andersen, 2004; Welie, 2004). As it is society that grants the status of profession, and the norms of a society change over time, society has changing expectations of a group to which it grants professional status. Welie (2012, 2004) describes this relationship as a dynamic social contract between the public and the profession and this is the assumed relationship within this study.

Professionalisation, as interpreted in 'The peril of deprofessionalisation' (Anderson, 2004:2373), proposes that distinguishing attributes of a profession include (1) *'A systematic body of knowledge or theory, (2) authority recognised by clients, (3) broad community sanction of this authority, (4) a regulative code of ethics, and (5) a professional culture sustained by professional associations'*. Educators can, amongst other supports, provide structured access to the 'body of knowledge' and the theoretical basis of the 'regulative code of ethics' but it is clear that knowledge alone, even when combined with the *'cognitive ability to apply the knowledge in order to be able to demonstrate that they can perform the skill'* (Khan & Ramachandran, 2012:925), is not a basis on which to claim entitlement to call oneself a member of a profession.

The 'authority recognised by clients' (Anderson, 2004) may simplistically be seen to derive from the development of a trusting relationship between the healthcare practitioner and the patient. However the expectation by the patient that his/her best interests will be prioritised by a newly encountered member of the profession derives from a societal trust or broad community sanction of the collective profession's authority, as summarised by the *'notion ... that professionalism is a collective responsibility of the ... profession that arises from the social contract with society'* (Hodges et al, 2011:361).

Society's recognition of the potential benefit of medicines underpins its preparedness to take the risk that harm may be caused in pursuit of the desired benefits, but its acceptance that medicines can also cause harm underpins its justification for the restriction of access to available medicines by the general public (Roche, 2014). This restriction could otherwise be considered an infringement of civil liberties e.g. where, as previously mentioned, the pharmacist must be satisfied that the purpose for which a non-prescription medicine is sought complies with regulatory restrictions in the Regulation of Retail Pharmacy Businesses Regulations 2008 (2008:S.10) a contemporary example being the restriction on the sale of codeine-containing products for pain relief. This restriction is managed by the granting of a custodian role, wherein legislation restricting access to certain 'controlled' substances (medicines) identifies circumstances in which the pharmacist may hold and be a legitimate supplier of such substances, in the form of this social contract with the profession (Pharmacy Act, 2007). Therefore, the public, having been promised altruism, enters into a mutual agreement with the profession, granting it such privileges as a monopoly and social status (e.g. Roche, 2014, 2009a; Welie, 2012, 2004; Hodges et al, 2011). The public, in the form of its public representatives, has opportunity to impact on that 'agreement' by the development and amendment of national policy governing the practice of the profession as and when changing societal norms demand (e.g. DoH, 2013, 2012; DoH&C, 2001a, 2001b, 2000).

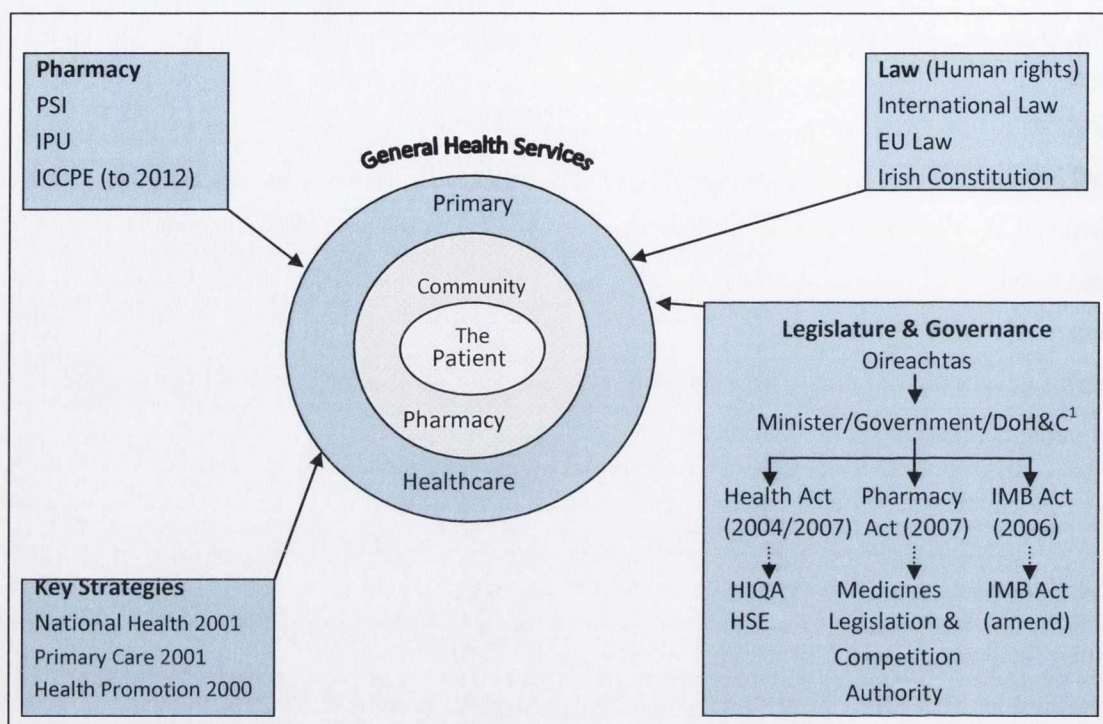
2.4. Overview of national policy: 'Norms' governing community pharmacy (2011-12).

Key stakeholders with influence over the practice of community pharmacy in Ireland during 2011 and 2012, additional to the previously mentioned PSI and the HSE, are introduced in this section. National healthcare policies of particular significance to pharmacy practice are also considered. This is followed by review of national policy as it relates to the education of pharmacists. Finally issues related to the delivery of pharmacy services are introduced and the potential impact of norms governing community pharmacy on the ability of a pharmacist to act in the 'best interests' of patients under her care is reviewed.

2.4.1. Healthcare policy governing community pharmacy (2011-12).

Notwithstanding that a Strategic Framework for the Reform of the Health Service (Ireland) was released in 2012 (DoH, 2012), and significant changes to the structure and functions of health services in Ireland may therefore be imminent (DoH, 2013; HSE (Governance) Act, 2013), it is the structure which governed the practice of pharmacy in Ireland for the period of this study (2011-12), that is presented in Figure 2.1.

Figure 2.1: Key stakeholders influencing the practice of pharmacy in community pharmacies in Ireland 2011-2012.



¹DoH&C (Department of Health and Children) was renamed the DoH (Department of Health) in 2011. However DoH&C is retained for consistency with details on relevant publications.

The key legislative and governance stakeholders (Figure 2.1) are the Oireachtas in interaction with the Minister, the Government and the DoH&C, guided by relevant legislation, specifically:

- The Health Act (2004, 2007), facilitating the establishment of the HSE, whose impact on community pharmacists has already been discussed, and the Health Information Quality Authority (HIQA).
- The Pharmacy Act (2007) which, as previously discussed, facilitates several pieces of medicines legislation and the introduction of the CoC by the PSI.
- The Irish Medicines Board (IMB¹⁸) Act (2006)

HIQA is an independent body established to drive continuing improvement in Ireland's health and personal social care services, monitor the safety and quality of these services and promote person-centred care for the benefit of the public (HIQA, 2012:7). Reporting to the MoH&C and the Minister of Children and Youth Affairs (MoC&YA), HIQA statutory responsibilities were not

¹⁸ IMB was renamed the Health Products Regulatory Authority (HPRA) in July 2014. Legislation related to the organisation continues to refer to IMB.

applied to community pharmacies in 2011 and it had little direct impact on community pharmacists.

The mission of the IMB¹⁹ in 2011 was to *'protect and enhance public and animal health through the regulation of medicines, medical devices and healthcare products'* (IMB, 2011:2). It aimed to ensure the quality, safety and efficacy of medicines and medical devices available in Ireland and to participate in systems designed to do that throughout the European Union. This provided assurance to the community pharmacist that the medicines she supplied were to the highest standard available. The IMB also had authority regarding classification of medicines e.g. as legally requiring a prescription, the statement of 'Summary of Product Characteristics' (SPC), which directs healthcare professionals on product usage, and the Patient Information leaflet (PIL) to be supplied to the patient. The Pharmacy Act (2007) entitled the IMB to nominate a non-pharmacist to the council of the PSI.

Key strategies identified in Figure 2.1 are the National Health Strategy (DoH&C, 2001a), the Health Promotion Strategy (DoH&C, 2000), and the Primary Care Strategy (DoH&C, 2001b). The National Health Strategy (DOH&C, 2001a), titled 'Quality and Fairness', focuses on a systems style approach to the provision of healthcare which aims to develop a co-ordinated approach to enabling individuals make informed choices about their health. The four core principles of equity, people-centredness, quality and accountability underpin 'Quality and Fairness'. Its proposed framework for change placed such emphasis on the strengthening of primary care that a separate Primary Care strategy was launched at the same time (DoH&C, 2001b). The Health Promotion Strategy (2000-5) recognises that individuals wishing to adopt a healthy lifestyle may be prevented from doing so by environmental and socio-economic factors outside their control (DoH&C, 2000). This is consistent with the commitment of the National Health Strategy to international initiatives in primary healthcare, in particular the Jakarta Declaration (WHO, 1997) and the Verona initiative - a European World Health Organisation (WHO) series of meetings held 1998-2000 which reviewed the determinants of health as they affect Europeans (WHO, 1999). Both initiatives promoted a very broad-based approach to health as summarised in Table 2.8.

¹⁹ For the purposes of transparency the author declares that she had the following affiliation with the IMB (now HPRA): Board member, 2006 to 2011.

Table 2.8: National Strategy – key influencers.

Jakarta Declaration (1997)	Verona Benchmark ²⁰
<ul style="list-style-type: none"> • Promotion of social responsibility for health • An increase in investments for health development • The expansion of partnerships for health promotion • An increase in community capacity and empower the individual • Securing an infrastructure for health promotion 	<p>Offers a basis on which partnerships with commercial, statutory and voluntary organisations can be developed, with a view to improving health. The development of meaningful partnerships in health promotion is highlighted in healthcare strategies across the globe.</p>

Source: derived from Jakarta Declaration (WHO, 1997); Verona initiative (WHO, 1999).

In order to give effect to their objectives, health promotion initiatives depend on access to those who generally consider themselves well. The primary care environment, especially in the context of the high street location held by most community pharmacies, provides a most effective framework to pursue those aims (Figure 2.1). The World Health Organisation defines Primary Health Care as:

'... the first level of contact of individuals, the family and the community with the national health system, bringing healthcare as close as possible to where people live and work and constitutes the first element of a continuing healthcare process.'

(WHO, 1978: 3-4)

This is consistent with the opening line of the Primary Care Strategy relating to the *'first point of contact that people have with the health and personal social services'* (DoH&C, 2001b:7). The Primary Care strategy proposed that primary care teams, *'based in single locations where possible and be easily accessible'* (DoH&C, 2001b:8), would be put in place to meet the health and social care needs for a specific population. Members were to include GPs, nurses/ midwives, health care assistants, home helps, physiotherapists, occupational therapists, social workers and administrative personnel (DoH&C, 2001b). This strategy places the *'community pharmacist'* in the proposed primary care networks, developed to support the primary care teams, to include speech and language therapists, community pharmacists, dieticians, community welfare officers, dentists, chiropodists and psychologists. (DoH&C, 2001b). This strategy should increase accessibility to primary care for all members of the population and allow people to use a variety of formal or informal

²⁰ Ireland endorsed the Verona Initiative, a European WHO series of meetings between 1998 and 2000, which reviewed determinants of Health as they affect Europeans (WHO, 1999).

routes to health care, a view supported by Ottewill & Magirr (1999). It also recognises the potential for an integrated primary care system to include a range of services to *'keep people well, from promotion of health and screening for disease to assessment, diagnosis, treatment and rehabilitation... fully accessible by self-referral'* (DoH&C, 2001b:15). The network is a logical positioning for community pharmacies given their specific value as a point of first contact for people who consider themselves well and want to self-refer while also facilitating the separation of GPs and community pharmacists as independent sources of advice to patients under their care.

The IPU represents pharmacists, its objective being to promote the professional and economic interests of its members (IPU, 2013). It is a valuable resource for pharmacists owning, operating or managing community pharmacies including matters related to health and safety, employment and business law. The contractors committee of the IPU interacts with the HSE regarding issues related to the 'Community Pharmacy Contractor Agreement for provision of services under the Health Acts' (the Contract) (2013) which entitles RPBs holding contracts to remuneration when they dispense and supply medicines under the Health Acts (2007, 2004 & 1970) to eligible patients on behalf the HSE. The Contract has, since 1996, contractually obliged pharmacists to implement many of the provisions since specified in the Pharmacy Act, especially regarding the sale and supply of prescription medicines (Clause 9). Contract provisions address matters such as premises, equipment, professional supervision, staff and practice standards. There are specific references to professional judgement (Clause 1(2), 1(3), 4(1)(b) & 9(5)) and, counselling requirements (Clause 9²¹). Any sanctions for breaches are contractually related and bankruptcy of a contractor is listed as an event giving rise to immediate termination of the Contract (Clause 21(4)). While a license to operate a RPB (Pharmacy Act, 2007) is a pre-requisite for application for a Contract to provide pharmacy services through the PCRS, it is not automatic that a Contract will be awarded to the holder of a RPB licence, and a separate inspection is undertaken by the HSE prior to consideration of the application by the community pharmacy.

²¹ 'Pharmacy contractors shall ensure that, prior to the dispensing of each prescription, the pharmacist shall offer to discuss with the individual for whom the prescription is issued, or with the carer of such person, all such matters as the pharmacist, in the exercise of his/her professional judgment, deems significant including' ... e.g. issues related to compliance, side effects, adverse effects and safe disposal methods.

The Irish Centre for Continuing Pharmaceutical Education (ICCPE²²) was established in 1998 *'to provide and promote quality life-long learning for pharmacists by updating knowledge and skills to improve integrated professional practice and pharmaceutical care in the community'* (ICCPE, 2008:iii). When the HSE was established in 2004, funding streams for the ICCPE were aligned with that organisation (Health Act, 2004). The ICCPE co-ordinated the delivery of continuing education programmes for community pharmacists. Face-to-face two hour evening and full-day education sessions were generally arranged into twice yearly six to eight week programmes (Spring and Autumn). Joint programmes focussed on engaging pharmacists with information related to the impact of the Pharmacy Act, jointly developed by the ICCPE and the PSI, were also delivered from 2009 onwards (HSE, 2009). While the ICCPE was active prior to and during the period of this study (2011), it was disbanded on December 31st 2012.

2.4.2. Education policy governing community pharmacy (2019-12).

While the ongoing competence of pharmacists is addressed by means of the Pharmacy Act (2007) and the related CoC, CCF and annual declaration made by pharmacists seeking to retain registration (Appendix 3), it is the Education and Training Rules (PSI, 2008b) that set out in detail the procedures and requirements to be operated by the PSI in carrying out its various functions relating to education and training prior to registration. These include:

- the specification of qualifications appropriate for practice/registration as a pharmacist including the setting of standards of professional competence and ethical conduct (Part 1(4)(1) and Part 2),
- requirements for education and training programmes intended to lead to the recognition and approval of degrees in pharmacy (Part 3).

Notwithstanding that the Department of Education (DoE) does have a significant role in decisions regarding the funding of third level education programmes, the Pharmacy Act (2007) places the PSI in a pivotal role with respect to the accreditation of education programmes preparing students to the point of application for registration as pharmacists and in the development of structures through which practising pharmacists maintain competence.

²² For the purposes of transparency the author declares that she had the following affiliation(s) with the ICCPE: Board member, 2004 to 2012; Chair, joint working group, 2008 to 2012.

The National Pharmacy Internship Programme (NPIP) offered a Masters level programme (MPharm) for graduates of Pharmacy Degree Programmes in Ireland from 2009, and completion of the NPIP entitled individuals to apply to the PSI to enter the register of pharmacists in Ireland. The number(s) graduating amounted to approximately 170 students each year (Wilson & Langley, 2010). Graduates of the three schools of pharmacy, Trinity College Dublin (TCD), Royal College of Surgeons in Ireland (RCSI) and University College Cork (UCC), were entitled to apply for entry to the NPIP. The NPIP was delivered by the RCSI on behalf of the PSI. The PSI required that practising pharmacists acted as tutors to students on the NPIP (PSI, 2010) and the majority of these tutors were in the community pharmacy setting.

A review of undergraduate and pre-registration training, commissioned by the PSI and known as the PEARS (Pharmacy Education and Accreditation Reviews) project (Wilson & Langley, 2010) recommended the introduction of an integrated 5-year Masters level programme of education and training for pharmacists in line with international best practice. While subsequent educational policy supported the recommendation, the 5-year integrated programme did not begin in the three schools of pharmacy until September 2015.

The PSI commissioned PA Consulting Group to research, review and critically assess CPD models, and the associated assessment and audit systems, in order to guide the Council as it developed an appropriate and effective system of mandatory CPD for pharmacists in Ireland (PA Consulting Group, 2010). The report specifically recommended that an institute-type structure would be established to oversee the management and delivery of CPD, with the PSI controlling the regulatory processes and defining the competency standards against which the CPD system would be framed (PA Consulting Group, 2010). However, while the publication of the report made explicit the compulsory nature of CPD, and therefore may have had some impact during the time of this study, the Irish Institute of Pharmacy (IloP²³) was not established until late 2011.

However CPD programmes on offer in 2009 to 2011 did not address the ethical competencies domain of the CCF nor directly reference professional judgement as applied in pharmacy legislation.

²³ For the purposes of transparency the author declares that she has the following affiliation(s) with the IloP: Peer support pharmacist 2014 to current; and Chair/rapporteur to/member of programme accreditation committees during 2014 and 2015.

Many of these organisations provided non-formal training supportive of developing pharmacy services – (Horwath Bastow Charleton, 2011), e.g. IPU initiatives included: inhaler technique review services (a collaboration between the IPU, Glaxo Smith Kline and the Asthma Society of Ireland), Medicines Usage Reviews (originally a collaboration between ICCPE, the HSE and the IPU) and cardiovascular risk assessment (a collaboration between the IPU and the Irish Heart Foundation)²⁴. These developments highlight a need for further consideration of issues and opportunities related to service provision by community pharmacists in the time-frame prior to and during this study.

2.4.3. Services delivery: norms governing community pharmacy.

Consideration of service delivery by community pharmacists (as opposed to ‘supply’ functions or services in secondary care) prompts review of key service characteristics of particular relevance to the retail environment. Research highlights that service provision is intangible, perishable and inseparable from the service provider (e.g. Zeithaml et al, 1985). In healthcare settings generally, tangibles typically include premises equipped for and ‘dedicated’ to healthcare and the wearing of a clinical uniform (e.g. Rehman et al, 2005), and the norm is that these are considered sufficiently tangible to persuade patients to willingly pay for a healthcare practitioner’s time when advising the patient. However patients at community pharmacies are accustomed to paying for product supplied rather than time spent with the pharmacist. The perishable nature of service provision leads most healthcare service providers to operate an appointment system in an effort to maximise their patient care. It would be uneconomic to have times where they are waiting around for a patient to arrive to make use of their competencies (Zeithaml et al, 1985). However the informality of the community pharmacy setting results in an expectation that an appointment will not be required. This expectation denies the pharmacist an equivalent level of structure for patient consultations as available to most other healthcare professionals (e.g. Brown & Bellaby, 2002).

Restriction of medicines supply to community pharmacies on the basis that the risk of harm is reduced by the advice available from the pharmacist (Appendix 6) highlights both the importance of the pharmacist as an advice centre and the inseparability of the service provider from the service. However the absence of clear definition of what is intended in reference to the exercise of ‘professional judgement’ when caring for patients, in both the

²⁴ Available at: www.ipu.ie Accessed on: 10th June 2013.

Pharmacy Act (2007) and the Contract with the HSE, creates a legislative vacuum for the community pharmacist in this regard (e.g. Gallagher, 2010; Pharmacy Act, 2007).

Indeed if a community pharmacist wishes to practice pharmacy/provide pharmacy services other than under the direct employment of a RPB, there appears not to be a structure by which the PSI can directly 'regulate' that pharmacist e.g. were a pharmacist to provide medicines usage review services as an independent consultant from a location not directly aligned with a RPB. Hence, while the concept of pharmacists extending and enhancing delivery of services is positive in terms of increased accessibility to healthcare expertise for society at large, it must be cautioned that any shortfall in guidance, and the absence of reference to pharmacy services in the Pharmacy Act (2007) may inadvertently increase the risk of a breach of 'rules', 'norms' and 'codes', and at least some such breaches could be identified as having been the result of 'honest' misunderstandings.

2.5. Rules, norms and codes: potential influences on advice from the pharmacist.

There is potential for legislation, codes and national policy to influence professionals' decision-making in both positive and negative ways (Cooper et al, 2009, 2008a; Mc Dowell, 1991, 1990) e.g. Cooper and colleagues suggest that pharmacists' ethical intention may be compromised by fear of legal prosecution or disciplinary action and that there may be a corresponding risk of legalistic self-interest (Cooper et al, 2009; 2008b). However, there is no evidence that such influences actually lead to community pharmacists in Ireland failing to act in the patient's best interests (PSI. Findings and Decisions, 2014; McDowell, 1990). Neither is there any evidence that related influences result in 'wrongly' formed professional judgement[s]' as might be envisaged in the Pharmacy Act (2007: Section 33), (Appendix 4). Nevertheless, the existence of any potential influences on decision-making specific to the community Pharmacy context merits review. If such influences are made explicit to a community pharmacist, she should be more likely to manage their impact as she seeks to reason through complex situations in order to provide the best advice for a patient under her care. These influences are therefore considered from professional, commercial and personal perspectives (Roche & Kelliher, 2014).

2.5.1. Professional influences.

Pharmacists' advise patients on how to deal with symptoms through the safe, effective and rational use of medicines (PSI, 2013a). They also advise the patient whether to have a prescription filled and they then supply the product the patient requires. Thus, the community pharmacy setting in which pharmacists practice can create uncertainty in patients' minds as to whether they ought to expect standards of retailing excellence or standards of healthcare excellence (McDowell, 1991, 1990; Zeithaml et al, 1985). In reality, both are required to fulfil the community pharmacist's 'social contract' (e.g. Roche, 2014, 2009a; Welie, 2012, 2004; Hodges et al, 2011), a reality that can exacerbate the potential for commercial, professional and personal influences to conflict (e.g. Caldicott & d'Oronzio, 2015; Bebeau & Faber-Langendoen, 2014; Parran et al, 2013; Bebeau & Monson, 2008). Indeed the reduced formality of the retail setting and the nature of the long-term relationships between pharmacists and their patients both serve to reduce the formality of the interaction (Brown & Bellaby, 2002). While this is positive in terms of access to public health (DoH&C, 2001b), such decrease in formality has the potential to increase the risk of a breach of 'rules', 'norms' and 'codes' (e.g. Caldicott & d'Oronzio, 2015; Bebeau & Faber-Langendoen, 2014; Parran et al, 2013; Bebeau & Monson, 2008).

2.5.2. Commercial influences.

There is reason to believe that various forms of 'service or success' challenges (Schmidt & Pioch, 2004; Resnik et al, 2000; Sanghavi, 1995; McDowell, 1991, 1990) exist for a community pharmacist, regardless of whether she is self-employed or not. The pharmacy's income is generally derived from product sales evolving from a service (i.e. giving advice) that includes a recommendation to purchase an item from the pharmacy. Thus, if the pharmacist does not recommend a purchase, she is not remunerated for that advice – and, in the above transaction, it is the remuneration that represents 'success' for the community pharmacy in which she works (McDowell, 1991, 1990). Indeed, if the community pharmacist refuses, ethically, to provide a patient with something for which he is prepared to pay, then not only does the pharmacist get no remuneration, but she also does potential damage to the business 'goodwill' element of the retail setting (Rapport et al, 2010; Resnik et al, 2000). Further, a team-based approach raises specific professional challenges, where a patient may interact with non-professional members of staff over whose actions the responsible pharmacist may or may not have direct control (Schmidt & Pioch, 2004; Szeinbach et al, 1994). Finally, while the fact that the initiation of prescription drug supply is not driven by the community pharmacist reduces the external appearance of

a potential conflict, it has been the author's experience that pharmacists are regularly consulted by a patient who has been given a prescription for a medication he does not want to take (for example, in the case of prescribing for anti-depressant medication where the patient is not convinced that the chemical route is most appropriate) creating a need for professional judgement on the part of the pharmacist (McDowell, 1991, 1990).

2.5.3. Personal influences.

From a community pharmacy perspective *'it is not uncommon for professional pharmacists to experience conflict between their own ... beliefs and duties and their obligations to the pharmaceutical organizations for which they work'* (Vitell et al, 1991:296). Thus, there is a personal dimension in the reasoning process (Thoma et al, 2008), wherein the community pharmacist's value system influences their judgement and ultimately the preferred option(s) offered to the patient (Roche & Kelliher, 2014, 2009). These personal influences may include (but are not limited to) personal and professional background, location and source of previous professional experience, moral reasoning competencies, personal lifestyle preference, personality traits, age, gender, religion and cultural background (e.g. Caldicott & d'Oronzio, 2015; Bebeau & Faber-Langendoen, 2014; Parran et al, 2013; Bebeau & Monson, 2008; Rest et al, 1999b) The challenge from an ethical perspective is to ensure that the community pharmacist's personal preferences, value structures and self-protection mechanisms are reflected on when applying rational and reasoned professional judgement.

A summary of key influences is presented in Table 2.9.

Table 2.9: Key potential influences on the community pharmacist when deliberating what advice is in the 'best interests' of the patient.

Influence	Description	Example
Professional	<p>Risk of not acting in the patient's best interests due to: (a) an error of judgement, (b) inadequate control over the situation, (c) decreased formality levels in the community pharmacy.</p> <p>Desire to maintain registration with the PSI: Influence of statutory/ regulatory requirements and the risk of a charge of negligence.</p>	<p>(a) Inadequacies in professional communication skills leading to misunderstandings, which may be exacerbated by isolation (Cooper et al, 2009); (b) potential distractions in the pharmacy (Brown & Bellaby, 2002); (c) Reduced formality can increase the risk of 'layman' rather than 'professional' judgement being applied to interactions with patients (Waterfield, 2010)</p> <p>Protection of self- interest by restricting actions to the letter of the law rather than reasoning towards justifiable professional judgement as essential to meet the duty of care to a patient.</p>
Commercial	<p>Professional worth as assessed by commercial 'success'</p> <p>Time spent on patient counselling is unremunerated.</p> <p>Pharmacist responsibility, whether employee or owner, to all stakeholders.</p> <p>Placing commercial objectives above duty of care.</p>	<p>Defensive formation of professional judgement where the pharmacist may act conservatively to avoid risk of 'failure' (McDowell, 1990).</p> <p>Professional advice may not necessarily attract income potentially influencing the pharmacist to supply product (Resnik et al, 2000).</p> <p>The reality of earning a living, pursuing profit, and pressure to repay debt influences decision making (Thoma et al, 2008), particularly when in 'survival' mode.</p> <p>Where the pharmacist moves beyond commercial necessity in sole pursuit of commercial gain (e.g. Caldicott & d'Oronzio, 2015; Bebeau & Faber-Langendoen, 2014; Parran et al, 2013).</p>
Personal	<p>Self-protection: fear of increased public scrutiny and regulation.</p> <p>Value system challenges: e.g. conflict avoidance/ integrity.</p> <p>Altruism: sensitivity to potential conflicts of interest; moral reasoning.</p>	<p>Fear of having to explain his/ her actions and provide justifications for judgements made may promote conservative judgement formation (Wingfield & Badcott, 2007)</p> <p>Subordination to patient or prescriber demands rather than acting according to 'best interests' principles (Cooper et al, 2009, 2008a, 2007a, 2007b)</p> <p>Motivated to accommodate the patient perspective to facilitate informed consent (Roche & Kelliher, 2009; Thoma et al, 2008).</p>

Adapted from: Roche & Kelliher, 2014.

Professional, personal and commercial issues with the potential to influence community pharmacist decision-making are numerous (e.g. Caldicott & d'Oronzio, 2015; Bebeau & Faber-Langendoen, 2014; Parran et al, 2013; Roche & Kelliher, 2009; Wingfield & Badcott, 2007; Resnik et al, 2000) and were therefore considered when planning how the sample of pharmacists used in this study might be characterised and in the design and development of the educational intervention in which they engaged.

2.6. Summary

Community Pharmacists in Ireland are at the centre of a complex network of key legislation (rules), professional codes and societal norms as expressed in national policy.

Single pharmacy ownership, where only one pharmacy is owned by the sole trader, limited company or partnership, was reported to be 54% (Table 2.4). The average reduction in income per pharmacy (2009 to 2011) amounted to €264,014 (Section 2.2.2). Pharmacists in community pharmacies generally work 'alone', i.e. without other pharmacists (Section 2.2.3: Community Pharmacy the working week), so that, while they may work with technical and other support staff, they do not have structured access to peers in order to collaboratively review ethical dilemmas (PSI, 2011; Wingfield & Badcott, 2007; Cooper et al, 2009, 2007a).

Pharmacists must be registered with the PSI in order to practice their profession (Pharmacy Act, 2007) and prioritisation of the patient's best interests is a core responsibility once registered (CoC, 2009). However recently introduced legislation governing Fitness to Practice procedures challenges pharmacists to maintain competencies at a sufficient level to interpret the legislation and apply it in the context of the existing community pharmacy practice environment while at the same time continuing to meet this duty of care to patients they already serve. The Regulation of Retail Pharmacy Businesses Regulations (2008:3(1)), introduced two new roles, i.e. those of Superintendent Pharmacist (SIP) and Supervising Pharmacist (SVP), and holders of both roles have additional responsibilities over and above those of other registered pharmacists. Community pharmacists in Ireland are faced with dilemmas in everyday practice (e.g. Roche & Kelliher, 2009; Cooper et al, 2009; Benson, 2009; Chaar, 2006). There is a risk is that a community pharmacist would inadvertently behave in a manner that is later externally interpreted to represent 'poor professional performance' or 'professional misconduct' (Pharmacy Act, 2007). The impact

of increased susceptibility to legal action, inherent in the provisions of the Pharmacy Act (2007), carries potential costs to the pharmacist such as lost time, damage to reputation and litigation expenses – even if the professional is ultimately vindicated. However, there is little specific research on what pharmacy educators might do to support assessable formation of competencies, specifically moral reasoning competencies, supportive of professional judgement formation through dilemma scenarios.

The DIT2 derives from the Neo-Kohlbergian model, and is used as a psychometric measure of moral reasoning i.e. a measure of one of the four components that underpin the Minnesota approach to moral development (Rest et al, 1999b). A key question for this thesis is whether the DIT2 is an appropriate instrument with which to measure moral reasoning competencies development in community pharmacists in Ireland. Chapter three reviews the Minnesota approach and the Neo-Kohlbergian model, in the context of the study aims.

**Chapter 3 -
Moral reasoning competencies
development: The Minnesota approach and
the Neo-Kohlbergian model.**

3.1. Introduction

The aim of this chapter is to review the development of the Minnesota approach and its underpinning Neo-Kohlbergian theory, in the context of the research question and related hypotheses, in order to determine whether the DIT2 would be likely to be an appropriate choice of measure of moral reasoning competencies development in Irish community pharmacists. Literature search, as outlined in Appendix 2, applied search inclusion criteria relevant to the research question to a range of databases, and further searched key authors and websites, in order to support this aim.

'Moral Development in the Professions: Psychology and Applied Ethics' (Rest & Narvaez, 1994) incorporates the Four Component Model (FCM) of morality, namely moral sensitivity, reasoning, motivation and implementation, as interactive elements in the development of a professional (Bebeau & Monson, 2008; Bebeau, 2002; Bebeau & Thoma, 1999). Moral reasoning, as measured by the DIT2 (Rest et al, 1999a), is the component specifically considered in this study. Both the FCM and the DIT2 are incorporated into what is known as the Minnesota approach to, or Neo-Kohlbergian model of, moral development.

This chapter begins with a critical review of key moral development theories that prevailed during the earlier part of the 20th century to include socialisation theories as proposed by David Emile Durkeim (1858-1917) amongst others and cognitive theories as proposed by Jean Piaget (1896-1980) and Lawrence Kohlberg (1927-1987). Kohlberg's theories are then appraised before the development of the Minnesota approach and the rationale underpinning the Neo-Kohlbergian model, in the context of the research question, are introduced. The chapter goes on to evaluate key developments, including how the FCM relates to moral reasoning competencies development, before summarising the use of ICMs in professional education initiatives.

3.2. Moral Development Overview.

The socialisation view of moral development emphasised that moral development was a result of cultural impression on a child, where *'learning the norms of one's culture, of accepting them and internalising them, and of behaving in conformity to them'* (Rest & Narvaez, 1994:2), was a dominant expectation in the first half of the 20th Century. Socialisation would therefore be achieved using multidimensional parental discipline

techniques that made clear to a child when the parent disapproved of his/her behaviour. The socialization view highlights the role of the family in the early stages, but peers and the wider community also drive the socialization process by both direct and indirect (e.g. television and radio) means. The expectation was that development resulted from the passive absorption of societal norms - as put forward by Emile Durkheim (Piaget, 1932). However, as highlighted by Gibbs & Schnell, (1985), success with such techniques was considered dependent on the child having a capacity for empathy, and for directing that empathy towards those impacted by the behaviour attracting parental disapproval, suggesting that development might not be an entirely passive process. Jean Piaget (1896-1980) goes further when, in reference to Durkheim, he suggests that it would be *'absurd and even immoral to wish to impose upon the child a fully worked-out system of discipline'* (Piaget, 1932:404).

Piaget proposed an interactive concept of development, in which the child receives feedback from others that are developmentally equal and these 'peer' interactions are core to a child's construction of moral feelings and understanding of cooperation (Piaget, 1932). His first priority was to *'establish what was meant by 'respect for rules' from the child's point of view'* (Piaget, 1932:Foreward), an objective pursued by questioning a large number of children about the *'extremely complex system of rules'* contained in a game of marbles (Piaget, 1932:13). Through his studies, he came to the conclusion that relationships in society span two extremes: The first of these, described as *'relations of constraint'*, seeks *'to impose upon the individual from the outside a system of rules with obligatory content'* (Piaget, 1932: 395), and could be considered to represent e.g. the authority of the parent over the 'child'. The second relates to the role of cooperation, which he seems to envisage is for the purpose of accessing the *'ideal norms at the back of all rules'* (Piaget, 1932: 395). Hence, while Piaget introduced the concept of an interactive approach to development, it was with the expectation that ideal norms did exist and the child could discover those norms by means of targeted feedback during cooperative interaction with peers.

Notwithstanding that Piaget's research is restricted to the moral development of the child, his contributions to the cognitive developmental approach were to move a number of ideas forward e.g. (a) he attempted to analyse the epistemology of how children learn 'right' from 'wrong' i.e. his approach represented a change of emphasis in the field (to a cognitive approach); (b) he proposed that there was a progressive order of change in constructing an understanding of the 'meaning' attached to 'right' and 'wrong', for which Piagetian 'stages' were presented as a 'staircase' of the structure of one's reasoning; (c) he

sought to depict the developing capabilities of people's thinking in terms of the acquisition, at higher stages, of the ability to perform cognitive operations not feasible when at lower stages i.e. as a child moves through adolescence and beyond she becomes better able to understand the intentions of others and, while this is not a 'structural' change, it leads to increased moral understanding; (d) his developmental approach proposed that pre-existing decision-making and reasoning schemas (i.e. organising, conceptual structures in the mind that have developed from and are influenced by experience) are essential in order to understand experience and (e) he proposed that the extent to which an individual had developed the ability to construct 'meanings' attached to 'right' and 'wrong' could be assessed by means of a '*clinical interview*' wherein subjects were expected to explain their thinking when reasoning through dilemmas (Piaget, 1932).

However, a number of concerns arose with respect to Piaget's contributions to the field of moral reasoning competencies development including that: (a) Piagetian stages are based on '*basic logical reasoning structures*' (Faust & Arbuthnot, 1978:435), in which reasoning is considered to be the '*application of a logical rule to a problem to derive a solution*' (Carpendale, 2000:187). This is a limited view i.e. moral reasoning involves more than the generalisation of '*logical reasoning*' to '*moral content*', (Carpendale, 2000; Faust & Arbuthnot, 1978), a factor which limits the applicability of Piagetian stages with respect to development beyond childhood; (b) Piagetian stages were presented as 'hard stages', implying that individuals would progress through these stages in a linear manner and, (c) having reached a specific stage, all (logical) decision-making would take place at that level or, in rare occasions, between two adjacent levels. However Piaget himself identified inconsistencies in reasoning by children (Piaget, 1932) i.e. '*children who demonstrate the use of a particular rule on some tasks fail to solve very similar tasks that appear to involve the very same logical principle*' (Carpendale, 2000:187); (d) While Piaget anticipated that schema development was essential to understand experience, this was in the context of both his prioritisation of rules based decision-making and his 'hard stage' theory of development. Limitations may therefore include that 'experience' underpinning Piaget's version of schema development was limited (rules based, and influenced by peers' perspectives of those rules) and that only schemas relevant to one 'stage' could be 'accessible' at any given time (Piaget, 1932); and (e) even though '*Piaget liked the flexibility of clinical interviewing because such flexibility is needed in probing the thoughts of youngsters who cannot give direct, well formulated answers to adult questions*' (Piaget, 1932:5), his priority appears to have been to probe the 'thoughts of youngsters' with respect to dilemmas posed, rather than to assess moral reasoning competencies

development. In addition the management of any perception of bias, and the training of interviewers, was a recognised challenge to the assurance of integrity in this approach (Piaget, 1932).

3.3. Kohlberg's Theory of Moral Development.

Lawrence Kohlberg challenged the assumption that society's determination of what is morally right and wrong, in the context of societal rules and norms, is imposed on the individual (Carpendale, 2000; Kohlberg & Hersch, 1977). Following Piaget, Kohlberg's theory highlighted cognition and the prioritisation of form rather than content. Kohlberg concurred with Piaget's view that the aim of moral education should be developmental, and proposed that education should stimulate participant's thinking ability over time in ways that *'will enable them to use more adequate and complex reasoning preferences to solve moral problems'* (Kohlberg & Hersch, 1977:56). Kohlberg's model *'was derived primarily from people's moral judgments in response to hypothetical dilemmas'* (Krebs & Denton, 2005:631) and it entailed a view of reasoning as a process involving the application of a moral principle to a dilemma to derive a solution.

However, in contrast with Piaget's model (Piaget, 1932), which was derived at least in part from naturalistic observations of children, Kohlberg primarily talked to people²⁵ rather than observing them interact and play (Schraeder, 2015) and sought to use scenarios more relevant to adolescents and/ or adults e.g. 'Heinz and the drug' (background scenario outlined in Appendix 7) rather than games of marbles (Piaget, 1932). Piaget did not propose (or envisage) any structural change (Piaget, 1932) whereas the core of Kohlberg's thesis was to explore whether there might be structural changes into adolescence and beyond (Zizek et al, 2015) – Kohlberg's upper stages were an attempt to map out the features of these new structures.

Kohlberg adopted a cognitive developmental approach to moral education, and his approach divided morality into judgements about justice, individual responsibility and outward behaviour (Carpendale, 2000; Kohlberg & Hersch, 1977). His apparent prioritisation of 'justice' (Zizek et al, 2015), rather than what is commonly referred to as Gilligan's ethics of care, or commitment to communication and relationships (Gilligan, 1982), continues to generate debate as to whether empirical results have been adversely

²⁵ Kohlberg's longitudinal study ran from 1956 to 1976. A total of 84 participants, all males between 10 and 16 years old, were interviewed in 1956 and subsequently invited for re-interview every three to four years. A total of 54 of the sample were interviewed between 3 and 6 times. (Gibbs et al, 2007).

influenced by the male-only participants in his research (e.g. Vitton & Wasonga, 2009; Reiter, 1996) i.e. even though the empirical evidence indicates that females do not appear to be disadvantaged when assessed using the DIT (Dong, 2011; Rest et al, 1999b; Thoma, 1986²⁶), the ‘debate’ in the ‘literature’ continues.

Referred to as ‘*the Kohlbergian version of Piagetian stage theory*’ (Rest et al, 1999b:17), Kohlberg assumed that there would be six stages, also compared to steps of stairs, in the development of moral reasoning (Kohlberg & Hersch, 1977), but Kohlberg distinguished that the steps represented ‘conceptions’ of how co-operation might be organised. Three levels of two stages each were described as representative of pre-conventional (stages 1 and 2), conventional (stages 3 and 4) and postconventional (stages 5 and 6) reasoning - as represented in Table 3.1.

Table 3.1: Stages in the Concept of Cooperation (Kohlberg).

Phase	Stage	Description
Pre-conventional	Stage 1	The morality of obedience: Do what you're told.
	Stage 2	The morality of instrumental egoism and simple exchange: Let's make a deal.
Conventional	Stage 3	The morality of interpersonal concordance: Be considerate, nice, and kind: you'll make friends.
	Stage 4	The morality of law and duty to the social order: Everyone in society is obligated to and protected by the law.
Postconventional	Stage 5	The morality of consensus-building procedures: You are obligated by the arrangements that are agreed to by due process procedures.
	Stage 6	The morality of non-arbitrary social corporation: Morality is defined by how rational and impartial people would ideally organize co-operation.

Adapted from Rest & Narvaez, 1994:5

According to Kohlberg’s theory each stage is a “*structured whole*” within which individuals are consistent in their level of moral reasoning and through which individuals generally (i.e. except under conditions of extreme trauma) move forward sequentially (Carpendale, 2000). Stages are “*hierarchical integrations*” where ‘*thinking at a higher stage includes or comprehends within it lower stage thinking*’ (Kohlberg & Hersch, 1977:54). The first stage in each level is considered to be a transitional view and the second a more consolidated perspective. Kohlberg’s approach was, however, criticised on the basis that e.g. (a) his

²⁶ In a meta-analysis of 56 studies that used the DIT, involving over 6,000 subjects, Thoma found that gender differences accounted for .002 of the variance in DIT scores, whereas education was 250 times more powerful.

description that moral development was represented by a shift from *'conventional moral thinking' (the morality of maintaining social norms because they are the way we do things) ... 'to postconventional moral thinking (the morality that rules, roles, laws and institutions must serve some shareable idea of co-operation)'* (Rest et al, 1999b:2) was perceived to be a limitation; (b) moral reasoning appeared not to be *'as consistent across different content as predicted by Kohlberg's theory'* (Carpendale, 2000:181) -a factor that undermines his sequential (stage) theory (Lind & Nowak, 2015; Carpendale, 2000) and (c) it operated at too broad a level of abstraction, the concern underpinning criticism of these *'abstract markers'* is that they are *'not sufficient representations of all levels of cognition that are involved in making a moral decision'* (Rest et al, 1999b:11).

Furthermore, Kohlberg argued that the individual develops strategies for understanding moral phenomena in the context of her understanding of social cooperation and that moral reasoning is based on perspective taking i.e. social cooperation must rely on how we view people and what motivates them (Zizek et al, 2015).

Having described his stages, Kohlberg advocated that the task of the moral psychologist was to devise a method for identifying the (highest) stage to which a person had risen (Kohlberg & Hersch, 1977). He proposed that interview data was central to the process of identifying the stage characteristic of a person's reasoning and, on the assumption that reliable information about the inner processes that underlie moral development is obtained only by interviewing participants, he developed the Moral Judgement Interview (MJI). Trained interviewers (a) posed questions regarding dilemmas and (b) analysed the problem-solving process employed by the participants (Rest et al, 1999b, Kohlberg & Hersch, 1977). However, researchers have repeatedly expressed reservations regarding the *'severe limitations of self-reported explanations of one's own cognitive processes'* (Rest et al, 1999b:20-21) as underpin with interview techniques used by Kohlberg (e.g. Lind & Nowak, 2015; Narvaez & Bock, 2002; Carpendale, 2000).

Indeed Kohlberg acknowledged that, while the core principle, that development is the aim of education, remained constant, there were three areas in which the cognitive developmental approach to moral education might be incomplete, namely: (1) The *'stress placed on form rather than content'*; (2) the *'focus on concepts of rights and duties rather than issues of the good'* and (3) the *'emphasis on moral judgement' [reasoning] rather than behaviour'* (Kohlberg & Hersch, 1977:58). Aligned with Kohlberg's own acknowledgement that a more comprehensive approach to the study and assessment of cognitive moral

development was required, several researchers continued the debate as to how that might proceed.

Several research groups deviated from Kohlberg's stage theory e.g.

- **Turiel, Nucci and colleagues'** 'domain theory' proposed that development could be better described if the conventional and the moral (post-conventional) were viewed as distinct developmental pathways (Turiel, 1966), i.e. the theory suggested that Kohlberg confused the conventional and moral, and only emphasized the conventional in stages 3 and 4 when the adolescent comes to understand the moral basis of social conventions. Findings, however, identified that children do distinguish social rules that vary by context whereas moral rules were context and culture free (Nucci & Turiel, 1978) e.g. in one study Catholic children mostly agreed that if the Pope said one must eat fish on a Friday that would be acceptable, whereas the same children mostly disagreed when asked if the Pope said it was acceptable to hit other children.
- **Shweder and colleagues'** 'cultural psychology' approach proposed that cultural differences result in people building different conceptions of the world, and that these cultural differences accounted for more of the variance in moral thinking than Turiel's domains or Kohlberg's stages (Shweder, 1991). However, Shweder did agree that people construct reality cognitively (Rest et al, 1999b; Shweder, 1991).
- **Emler and colleagues** examined the claim that conventional and post-conventional reasoning are consecutive stages in a developmental sequence in terms of two validity tests – the relation of these two forms of reasoning to moral conduct (behaviour) as reflected in reputation²⁷ and their relation to political orientation on a left-wing ideological measure (Emler et al, 2007). The DIT was used as a measure. They proposed that conventional and post-conventional reasoning are independent domains of moral thought associated with '*aspects of social behaviour and political attitudes*' (Emler et al, 2007:76). However, Emler and colleagues did not use the DIT as validated, appearing to use only some aspects of the measure to calculate new indices. In addition, they assumed that reputation (amongst peers recruited by students in the higher education institution concerned) can be '*treated as reflections of conduct*' (Emler et al, 2007:86) – assumptions that have not been addressed in their study.

²⁷ '*Participants (n=172), in groups of four mutual acquaintances, provided ratings of one another's standings, and estimates of their own standing and reputations, on four trait dimensions (moral responsibility, consideration for others, respect for authority and political orientation). Post-conventional moral reasoning, assessed using the Defining Issues Test, was not significantly related to either reputation or to self-rating on any dimension except political orientation*' (Emler et al, 2007:76).

- **Snarey's** systematic review (1985) of *'cross-cultural studies of moral reasoning that had used Kohlberg's model and method'* (Snarey, 1985:202) provided support for five key assumptions²⁸ underlying Kohlberg's universality claims and identified a 'basic stage trend'. However the review did identify some *'major caveats regarding the range and general applicability of the stages across cultures'* (Snarey, 1985:202), not least of which was an element of cultural specificity with respect to Kohlberg's highest stages. Snarey proposed that Kohlberg's scoring system should be amended accordingly. More recently, Gibbs and colleagues (including Snarey) sought to review the use of an assessment method²⁹ developed by Gibbs to revisit *'Kohlberg's generic claim that, in principle, there is a cross-cultural universality to the development of moral judgment as well as to social perspective-taking processes in moral values'* (Gibbs et al, 2007:444). They report continued convergence for stage development and related social perspective taking processes across cultural groups and conclude that Kohlberg was, in principle, correct regarding 'universality'.
- **Greene and Haidt's** intuitionist approach prioritised affective processes, and drew on cognitive neuroscience and philosophy (Greene, 2003; Greene et al, 2001) to support their proposal that automatic emotional processes (i.e. intuition) tend to dominate the production of moral judgments. Various parts of the brain were activated differently when participants were required to deliberate on a personal, as opposed to impersonal³⁰ moral violations (Greene & Haidt, 2002; Greene, 2003; Greene et al, 2001). They found that *'there are systematic variations in the engagement of emotion in moral judgments'* (Greene et al, 2001:2107), but acknowledged that the interrelationships between cognition and emotion is complicated and confirmed that they found *'no specifically moral part of the brain'* (Greene & Haidt, 2002:522). While they countered Kohlberg's cognitive focus, they nonetheless maintained that *'reasoning can play a restricted but significant role in moral judgment'* (Greene & Haidt, 2002:517). However sample sizes were very small in such neuroimaging studies, group sizes of three being used in some cases (Englander et al, 2012), and challenges with respect to accounting for confounds is a stated limitation.

²⁸ Key assumptions as summarised by Snarey are: (1) culturally diverse samples, (2) universal moral questions; (3) invariant sequence; (4) Full stage range; and (5) general applicability (Snarey, 1985).

²⁹ The Social reflection questionnaire - a dilemma-free assessment method (Gibbs et al, 2007).

³⁰ A moral violation is 'personal' if it is: (i) likely to cause serious bodily harm, (ii) to a particular person, (iii) in such a way that the harm does not result from the deflection of an existing threat onto a different party. A moral violation is 'impersonal' if it fails to meet these criteria (Greene & Haidt, 2002; Greene et al, 2001).

- **Graham, Haidt and colleagues** developed the Moral Foundations questionnaire³¹ (MFQ) (Graham et al, 2011), which they presented as a tool for exploring an ‘expanded moral domain’. Haidt proposed that Kohlberg and colleagues focused too much on the cognitive aspects of moral functioning and advocated that *‘intuitions come first, strategic reasoning second’* (Haidt, 2013:281) i.e. that people are affectively driven and use intuitions rather than deliberative reasoning processes. Haidt said that group membership imposed constraints on morality as *‘once you become part of a team, motivated reasoning and the confirmation bias are so powerful that you’re going to find support for whatever you want to believe’* (Haidt & Warburton, 2012) i.e. an individual evolves her moral reasoning to further her social agendas – to justify her own actions and to defend the team(s) she belongs to. However, Haidt’s methodology included *‘giving people scenarios that were disgusting, or disrespectful’* (Haidt & Warburton, 2012) and appears to have varied in content and format across his studies, thereby potentially undermining his claims.
- **Joshua Greene and colleagues** proposed a dual-process theory, advocating that the brain has competing moral subsystems i.e. emotional/ intuitive (affective) and rational/ calculated (cognitive) that support reasoning through ‘intractable’ dilemmas³² (e.g. Shenhav & Greene, 2014; Cushman & Greene, 2012) The same cognitive and affective processes support individual impulses (intuition) towards either one (or several) resolutions to a dilemma. Combining insights from neuroscience with those from social science and philosophy, they interpreted evidence of an integration of the affective and cognitive processes, with respect to both automatic and controlled decision-making processes. Greene and colleagues emphasised that knowing why one might feel an impulse (intuition) towards one or other solution to a given dilemma could play a critical role in helping an individual *‘decide whether to favor one impulse over another’* (Cushman & Greene, 2012:277). *‘Moral Tribes: Emotion, Reason, and the Gap between Us and Them’* (Greene, 2013) further drew on dual-process theory to posit that individuals have an instinctive, automatic tendency (intuition) to cooperate with others in his/her social group on matters of group interest (the ‘tribe’) ... but that those ‘tribal emotions’ mitigate against inter-group harmony - as would be required for decision-making at a societal level. The book sought to demonstrate when one should

³¹ Haidt and colleagues *‘... developed the Moral Foundations Questionnaire on the basis of a theoretical model of 5 universally available (but variably developed) sets of moral intuitions: Harm/Care, Fairness/Reciprocity, Ingroup/Loyalty, Authority/Respect, and Purity/Sanctity’* (Graham et al, 2011:366)

³² Philosophical dilemmas arise *‘when distinct psychological processes give contradictory answers to the same questions’* ... and there are *‘two key ingredients: competing cognitive systems yield non-negotiable answers to questions that are not independently adjudicable’* (Cushman and Greene, 2012:275)

trust her instincts, when one should reason, and how the 'right kind' of reasoning could lead to better decisions.

- **Krebs and Denton (2005)** proposed that Kohlberg's cognitive-developmental approach to morality was not well equipped to account for the ways in which individuals make moral decisions in their everyday lives and challenged Kohlberg's assumption of 'invariant sequence'. They revised his model to a '*more interactional model*' in which moral development is defined more by an '*expansion in the range of structures of moral reasoning available*' to an individual '*than by the last structure*' she acquires (Krebs and Denton, 2005:633). They posited that the manner in which an individual processes moral information stems from '*an interaction between the mental structures ...acquired and the content of the moral dilemmas*' an individual encounters (Krebs & Denton, 2005:634). This revised approach was suggested as being more attentive to the purposes for which people use morality in 'real life' moral conflicts³³ and the self-interested approach in which people '*uphold systems of cooperative exchange that help them achieve their goals and advance their interests*' (Krebs & Denton, 2005:629). However their focus is on moral behaviour, most specifically on the 'judgments' people make in '*response to behaviours emitted by themselves and others and to influence their own and others' behaviours*' (Krebs & Denton, 2005:645), rather than on the structures used in moral reasoning as was the focus of Kohlberg's work. Indeed Krebs and Denton's summary response to Gibbs' defence of 'Neo-Kohlbergian models of morality' further acknowledges this difference when they state that: '*although cognitive-developmental approaches are equipped to account for some aspects of morality, a more general framework that organises the insights from other theoretical approaches is needed*' (Krebs & Denton, 2006:672).

Of particular interest to this study, there evolved from the doctoral dissertation of James Rest (Rest et al, 1999b) a collaborative approach to further development of Kohlberg's work by the 'Minnesota group' (see e.g. Mechler & Thoma, 2013; Bebeau & Monson, 2008; Narvaez & Bock, 2002; Rest et al, 1999b; Bebeau et al, 1999; Bebeau & Thoma, 1999; Rest, 1979). The group, which included Darcia Narvaez, Steve Thoma and Muriel Bebeau, sought to reformulate a number of Kohlberg's core ideas in what became known as the Neo-Kohlbergian model (Rest et al, 1999b; Rest, 1986) of moral development.

³³ Types of real life moral conflicts are categorised as (1) philosophical, (2) antisocial dilemmas (reacting to transgressions or temptation), (3) social pressure, and (4) prosocial dilemmas (reacting to conflicting demands or reacting to the needs of others) (Krebs & Denton, 2005:637).

3.4. An overview of the Minnesota approach and associated Neo-Kohlbergian theory.

The Minnesota approach and associated Neo-Kohlbergian theory continued to derive validation from the two aspects of the Kohlberg model that the group considered essential, i.e. *'that the measure describe the phenomenon that is both cognitive and developmental'* (Thoma, 2002:231). However, the Minnesota group perceived limitations in Kohlberg's six-stage theory, and its proposals included that (a) moral judgment is *'only one psychological component of general moral development'*, (b) that *'intermediate level concepts are needed for a full decision-making model'*, (c) that *'justice [on its own] is not a comprehensive moral theory'* (i.e. it emphasises the political side of morality) and (d) that Kohlberg's 'dilemmas' did not *'cover the whole domain of morality'* (Rest et al, 1999b:57).

The Minnesota group agreed (with Kohlberg) that cognitive processes such as decision-making schemas used in moral reasoning are activated automatically³⁴ without awareness, but drew further on cognitive developmental theory in the context of its proposal that this tacit knowledge is beyond an individual's ability to verbally articulate (Narvaez & Bock, 2002; Rest et al, 1999a, 1999b). Hence a means by which to activate these schemas, and thereby to measure the extent to which they had been developed, was a priority.

The history of the development of the Minnesota approach may be considered to have had four separate phases (Table 3.2).

³⁴ 'Automatic' processing is understood to be characterised by some combination of: involuntariness, autonomy, existence outside of awareness, unintentionality and effortlessness (Narvaez & Bock, 2002).

Table 3.2: The development of the Minnesota approach to moral development.

Phase/Time-frame	Development phase theme	Key developments	Key output
Phase 1 (1970-1979)	Establishment of the measurement (the DIT1) and the complex stage model.	<ul style="list-style-type: none"> • A stage model and a new assessment method were developed. • The stage model facilitated an index that could be validated (The P-Score). • In response to the perception of a judgement/reasoning-action gap in Kohlberg's theory, Rest developed the FCM (Rest, 1979). • Intra-individual variation was explored-measures of consolidation and transition, and of types (Thoma & Rest, 1999). 	Development in judging moral issues (Rest, 1979).
Phase 2 (1979-1986)	Theoretical concerns related to conditions and determinants of change in moral reasoning competencies.	<ul style="list-style-type: none"> • Explored relationships between moral reasoning and moral action – e.g. cultural influences (King & Mayhew, 2002). • Identified positive impact (DIT scores) of educational interventions designed around dilemma discussions (Rest et al, 1999a, 1999b). • FCM addressed affective as well as cognitive processes, in an interactive manner (Bebeau, 2002). 	Moral development: advances in research and theory (Rest, 1986).
Phase 3 (1986-1994)	Assumption: 4 components that addressed measures, and indices that capture links between processes and/or components. (Builds on empirical results).	<ul style="list-style-type: none"> • Further development of the FCM. • Increasing focus on applied research i.e. moral education, particularly in the professions (Rest & Narvaez, 1994). • FCM facilitated study of the utiliser variable – i.e. tendency to use the interpretive process measured by the DIT (Thoma, 2006; Thoma & Rest, 1999). • Moral sensitivity – developments in assessment (Bebeau, 2002). 	Moral Development in the professions (Rest & Narvaez, 1994).
Phase 4 (1994-current)	Theoretical and empirical underpinnings of the DIT1 revisited.	<ul style="list-style-type: none"> • Volume of data available facilitated revisiting indexing and procedural issues to improve the P-Score. The N2-Score emerged and showed good discrimination at the upper end of development. • <u>Recasting of schema theory</u> – aligned with stage mixture. • Questions re liberal political bias, verbal ability and moral cognition issues led to revamp/update of the DIT1 scenarios: new version is called the DIT2. • Rejection criteria recalibrated for the DIT2. • ICMs developed, less abstract than bedrock level (DIT2) and more abstract than surface level (rules, norms and codes). 	<p>Postconventional moral thinking: A Neo-Kohlbergian Approach (Rest et al, 1999b)</p> <p>DIT2: Devising and testing a revised instrument of moral judgment (Rest et al, 1999a).</p>

Adapted from: Thoma, 2002

Key: DIT=Defining Issues Test; N2-Score=DIT N2-Score; P-Score=DIT P-Score; FCM=Four Component Model.

Each phase (Table 3.2) was associated with a *'different goal and theoretical consideration'* (Thoma, 2002:225). Many of these developments were prompted by developments in the existing evidence base (e.g. Rest et al, 1999b; Rest & Narvaez, 1994) and further to consideration of reservations expressed by other researchers in the field of moral development (see Section 3.5).

3.5. Applied (Minnesota) Approach: Key Considerations.

While a complete review of the work of the Minnesota group or its Neo-Kohlbergian model of moral development is beyond the scope of this thesis, developments with particular relevance to the context of this study, as highlighted in a chronological manner in Table 3.2, include:

- The development of the DIT1, schema theory³⁵, the P-Score index and intra-individual measures of consolidation and transition (phase 1),
- the FCM and the potential for educational interventions to impact on moral reasoning development and DIT1 scores (phase 2),
- the utiliser score and the focus on moral development in the professions (phase 3), and
- the N2-Score, revamp of the DIT1 to the DIT2 and the recasting of schema theory, improved reliability checks and development of ICMs (phase 4).

3.5.1. The DIT1 (Appendix 7)

Reservations regarding the *'severe limitations of self-reported explanations of one's own cognitive processes'* (Rest et al, 1999b:20-21 and Section 3.3; Lind & Nowak, 2015; Narvaez & Bock, 2002; Carpendale, 2000;) prompted the reformulation of Kohlberg's core ideas and the development of a means of measuring moral reasoning other than by interview i.e. the DIT1 .

Development of the DIT1 drew on Kohlberg's interview scenarios and data to create six separate scenarios and 12 standard items related to each dilemma, and formatted them

³⁵ The term schema, as used in social cognition research, generally refers to a relatively concrete level of conception (e.g. role or event schemas represent the general structure of some content stimulus configuration such as being a fire fighter or attending a wedding) than the more abstract connotation of concept driven processing or *'conceptions of the moral basis of society'* (Rest et al, 1999b:137). To avoid ambiguity or confusion, use of the term(s) schema/ 'schema theory' (Section 3.5.2) in this thesis should be taken to refer to 'moral' schema/ schema theory. Terms such as *'general knowledge structures'* (Walker, 2002) or *'meta-schemas'* (Rest et al, 1999b) might also have been used.

into a paper-and-pencil assessment of cognitive moral development (Rest et al, 1999a, 1999b, 1997a) i.e. from the perspective of a participant, or 'respondent', the presentation of the DIT1 is straightforward. Beginning with a recognition task, the DIT1 first presents a moral dilemma to a participant and then presents the set of 12 statements, referred to as standard items, for her to evaluate (Rest et al, 1997a). Reliability checks inherent in the material seek to provide a means of purging response sheets that have the potential to provide bogus data e.g.

- (1) Random ticking of boxes (identified, amongst other things, by inconsistencies in answers).
- (2) Missing data, where excessive omission of rating or ranking invalidates the answer sheet.
- (3) 'Alien' test-taking, i.e. being overly influenced by the language used rather than the meaning portrayed by the words (for detection of which five 'meaningless items' are included throughout the DIT1).
- (4) Non-discrimination of answers such as when stories have more than eight of the 12 items rated the same (Rest et al, 1999b).

Demographic data recorded in the DIT1 includes educational level, sex, age, conservative-liberal tendencies, whether English is a first language (related to interpretation of the questionnaire itself) and whether or not the respondent is a citizen of the USA (related to potential cultural context within the stories used in the DIT) (Appendix 7). Completed questionnaires are analysed and scored by computer at the CSED.

DIT1 items cluster around the three general moral schemas: arguments that appeal to personal interests (Personal Interest/stages 2 & 3); to maintaining rules, codes and norms (Maintaining Norms/stage 4); or appeal to moral ideals and/or theoretical frameworks for resolving complex moral issues (postconventional reasoning/stages 5 & 6) as represented in Table 3.4. The participant's task is to rate and rank these 'standard items' in terms of their perceived moral importance for the protagonist in the story (Bebeau & Thoma, 2003).

3.5.1.1 What does the DIT measure?

The DIT measures whether bedrock schemas are activated (to the extent that the person has developed them) and engaged when decision-making through dilemmas (Thoma & Dong, 2014; Thoma, 2006; Bebeau & Thoma, 2003; Rest et al, 1999b). These bedrock, or

default, schemas focus on the macro³⁶ moral level and *'inform the individual's understanding of social cooperation in terms of justice and fairness within the context of law, the mechanisms of government and other social institutions'* (Thoma & Dong, 2014:56). These schemas are activated when other more automatic and/ or context specific interpretative systems fail or provide incomplete or inconsistent information. As the participant encounters an item that both makes sense and also taps into her preferred schema, that item is rated and ranked as highly important. Alternatively, when a participant encounters an item that either doesn't make sense or seems simplistic and unconvincing, the item receives a low rating and is passed over for the next item (Thoma, 2006; Rest et al, 1999a). The items of the DIT balance 'bottom up' processing - stating just enough of a line of argument to activate a schema - with 'top down' processing - not a full line of argument so that the participant has to 'fill in' the meaning from schema already in the participant's mind (Thoma, 2006, 2002; Bebeau & Thoma, 2003; Rest et al, 1999a, 1999b). DIT researchers assume that rating and ranking of items across the stories can provide an index of a participant's preferred schema(s) and *'represent how the participant generally approaches moral decisions beyond the DIT'* (Thoma & Dong, 2014:56).

3.5.1.2. DIT: Validity criteria adopted by the Minnesota group.

Support for validity claims for the measure was derived, at least in part, from *'prior experience with and use of Kohlberg interview data'* (Thoma, 2002:229). Construct validity³⁷ criteria adopted by the Minnesota group to determine suitability of the DIT1 as a potential measure of moral reasoning are summarised in Table 3.3.

³⁶ However, DIT researchers clearly acknowledge that *'everyday morality is much more contextually dependent than macro morality and is influenced by multiple interpretative systems that include but are not limited to the default system measured by the DIT'* (Thoma & Dong, 2014:56).

³⁷ *'Construct validity of causes and effects is concerned with the possibility that operations that are meant to represent the manipulation of a particular independent variable can be construed in terms of other variables'* (Kirk, 2013:16).

Table 3.3: Measures of moral reasoning - validity criteria adopted by the Minnesota group.

No	Criteria used to determine validity of measures of moral reasoning.	Example (DIT), related to education where applicable	Validation
1	The measure is able to distinguish between groups who ought to differ on a measure of moral reasoning development.	e.g. education level.	Studies have shown that 30% to 50% of the variance of DIT scores is attributable to the level of education in heterogeneous samples (Rest et al, 1999a, 1999b; Thoma et al, 1986).
2	Longitudinal gains.	e.g. years in higher education or across lifespan.	The measure produces evidence of upward movement in the DIT1 over time showing dramatic longitudinal gains in college (Rest et al, 1999a, 1999b).
3	Correlations of moral reasoning with moral comprehension (i.e. measures of cognitive capacity more than personality measures).	e.g. as measured by paragraph-length moral argument, followed by four short statement alternatives from which the participant chooses one as representative of the argument.	DIT1 scores are significantly related to measures of moral comprehension, recall and reconstruction of postconventional moral arguments (Narvaez, 1998) and to Kohlberg's Moral Judgment Interview.
4	Sensitive to moral educational interventions. Exposure to specific circumstances that seek to stimulate development is associated with change on the measure.	e.g. Intervention studies - such as the presence or absence of a dilemma discussion condition in educational interventions.	One review of over 50 intervention studies reported moderate gains, whereas the comparison groups showed only small gains. (Rest et al, 1999a, 1999b).
5	Linked to many pro-social behaviors and to desired professional decision-making.	Rest & Narvaez, 1994; includes healthcare professionals; accountants (detecting fraud); teacher performance.	One review reported that 32 of 47 measures were statistically significant (Thoma et al, 1986).
6	Linked to political attitudes and political choices.	DIT1 scores are a major predictor of issues of morality.	In a review of several dozen correlates with political attitudes, DIT1 scores typically correlated in the range, $r = .40$ to $.60$ (Rest et al, 1999a, 1999b).

Adapted from: Thoma, 2002; Rest et al, 1999a; 1999b; Narvaez, 1998; Thoma et al, 1986.

At that time, validity for the DIT had been assessed in terms of these criteria cited in over 400 published articles (to 1996) representing over two decades of research and involving thousands of participants (Rest et al, 1999a, 1999b). Reliability³⁸ claims were supported by

³⁸ 'Reliability may be described as a threshold condition: any valid test requires an adequate level of reliability, but increasing the reliability of a test does not necessarily increase its validity' (Rest et al, 1999b:92). Empirical evidence provides a basis on which the measure is used in this study (e.g. Thoma 2006, Rest et al, 1999b). In addition, Sections 4.2.7.1 & 4.2.7.2 provide examples of the use of the DIT in the Irish setting in which findings have been comparable with theoretical expectations (e.g. O'Flaherty &

demonstration that internal consistency estimated in both 1979 and 1995, as represented by Cronbach's alpha, was found to be acceptably in *'the upper 0.70s/low 0.80s for both the P-Score and the N2-Score'* (Rest et al, 1999b:92). Test-retest reliability has also been found to be in the upper .70s to low .80s for both measures (Mechler & Thoma, 2013; Rest et al, 1999b). However, as group administered, multiple choice tests attract a risk of "garbage" data, especially when participants are guaranteed anonymity (Rest et al, 1999b), additional reliability checks were therefore developed for the DIT (Rest et al, 1997b; Section 3.5.9).

Claims for construct validity for the DIT1 as a test of moral reasoning derived from, amongst other things, its ability to differentiate groups according to educational level (e.g. Self et al, 1994; McNeel, 1994; Ponemon & Gabhart, 1994; Self & Baldwin, 1994; Thoma, 1986), age (e.g. Schlaefli et al, 1985) and/or political tendencies (Rest et al, 1997a, 1997b). Some studies do question the consistency of 'differentiation' of groups according to educational level (e.g. Doyle & O'Flaherty, 2013), age (e.g. Herington and Weaven, 2008; Latif, 2001a; Latif & Berger, 1999) and political ideology or tendencies (e.g. Emler et al, 2007, 1983). However, Doyle & O'Flaherty's (2013) comparison of accountants in 2009 with undergraduates in 2006 provided little detail regarding the post-graduate 'experience' (Section 4.2.7.2) e.g. exposure to the 'moral milieu' (Bebeau & Monson, 2008) and Latif's findings may be an anomaly related to study design³⁹ issues (Sections 3.5.4 and 4.2.6). Emler and colleagues asked participants to 'fake', in a retake of the DIT, as either radicals or conservatives (Emler et al, 1983) but, as subsequent studies showed that efforts to fake moral judgments on the defining issues test led to a reduction in principled reasoning (Barnett et al, 1995) and that political ideology accounted for very little of the variance in moral judgement developments (Thoma et al, 1999), it is likely that the results obtained by Emler et al (1983) *'were not legitimate because they manipulated the test in a way that invalidated the outcomes'* (Mechler & Thoma, 2013). In addition, the DIT2 was assessed against several predictive models of *'attitudes towards human rights and civil liberties'* (ATHRI) (Crowson & DeBacker, 2008:43) and findings included that DIT2 scores and political identification *'emerged as significant predictors in nearly all regression analyses'*. Emler and colleagues further proposed that, rather than being a developmental process,

Gleeson, 2014; Doyle & O'Flaherty, 2013; Roche & Henman, 2008). However, as the DIT has not been independently validated in the Irish community pharmacy setting participants' DIT scores are also compared with norms across the general population of the USA as reported by the CSED (Dong, 2011). See Section 6.3.1.1.1.

³⁹ Latif used a relatively small sample size for a cross-sectional study design. A further confound may arise as a result of him having posted DIT surveys to practising pharmacists whereas students completed them face-to-face and it is not clear what additional support (over and above a 'cover letter') may have been available to pharmacists by comparison with the students with whom P-Scores are compared (Latif & Berger, 1997) and/or whether such support may have biased results one way or another.

the distinction between conventional and post-conventional reasoning relates to political orientation (Emler et al, 2007; Emler & Stace, 1999; Emler & Palmer-Canton, 1998) but these proposals have been described as unfounded as these studies focussed on DIT ranking data to the exclusion of item rating data (Mechler & Thoma, 2013; Thoma et al, 1999). Some questioned whether a higher score on the DIT is 'better' or, indeed, whether the DIT measures moral reasoning i.e. questions regarding its discriminant validity (Rest et al, 1999b). In response, moral comprehension studies (e.g. Narvaez, 1998; Rest et al, 1997b), pro-social behaviours/DIT correlational studies (e.g. Chang, 1994; Ponemon & Gabhart, 1994; Thoma et al, 1986) and recall and reconstruction studies (e.g. Narvaez, 1998) successfully provided further support to the validity criteria outlined in Table 3.3, ((3) & (5)). For an extended list of published studies, see Rest et al, 1999b: Chapter 4. Hence, while many of these findings merit continued investigation, no study undermines, and most studies support, claims for construct validity for the DIT.

3.5.1.3 The DIT: sensitivity to educational interventions.

Of particular relevance to this study, the measure was sensitive to interventions designed to improve moral reasoning e.g. by showing pre-test/post-test gains on moral education programmes and interventions. Meta-analysis of 55 moral intervention programs involving 'dilemma discussion' identified that the effect size⁴⁰ was in the '*moderate but significant range*' (of 0.41) (Schlaefli et al, 1985). This magnitude of effect size increase was '*typical in power of effectiveness of third level [Higher Education] programmes*' (Rest et al, 1999b:74). In comparison, control groups showed an effect size increase of only 0.09 (Schlaefli et al, 1985). Schlaefli and colleagues also found that older groups (college and adult groups) showed greater change in DIT scores than junior high or high school students.

As highlighted by Walker '*the distinctive focus of the DIT is in the shift to postconventional reasoning*' (2002:362). This focus on postconventional reasoning mitigates against its use in the study of moral reasoning in childhood and guidance notes of the DIT state that it should not be used with children under 12 years of age (Bebeau & Thoma, 2003). This age limitation continues to be seen, by others studying moral reasoning development, as a limitation of the Neo-Kohlbergian approach (e.g. Walker, 2002; Kay, 1982). However all

⁴⁰ Effect size is calculated as the difference between a pre-test and a post-test average for a sample divided by the standard deviation of the pre-test (Rest and Narvaez, 1994:20).

participants in this study are qualified pharmacists and are therefore of an appropriate age at which to use the measure.

One potential value of such measurement of moral reasoning competencies is that a deficit, if identified in a community pharmacist, could be remedied by engaging in an appropriate educational intervention (e.g. Bebeau, 2009a, 2009b, 2008; Bebeau & Monson, 2008; King & Mayhew, 2002; Bebeau, 2002; Schlaefli et al, 1985, and Table 3.3). The theory indicates that the 'deficit' would be a shortfall in the level of schema development in the community pharmacist's mind. Development of an appropriate 'remedy', or in the context of this study the educational intervention, should therefore be supported by further review of schema theory.

3.5.2. Schema Theory.

The Neo-Kohlbergian model sought to address criticism of Kohlberg's stage theory (Section 3.3 and Lind & Nowak, 2015; Carpendale, 2000). The model proposed schema theory as a preferred description of moral status i.e. whereas stages are generally defined in terms of cognitive operations, (moral) schemas represent '*a network of knowledge that is organised around particular life events*' (Thoma, 2002:240-241) and exist to help individuals understand new information based on previous experience. This schema theory therefore takes account of the proposition that schemas are highly contextual (Thoma 2006, 2002; Narvaez & Bock, 2002; Rest et al, 1999b).

Consistent with this view is the expectation that these 'moral' schemas '*facilitate the processing of moral information*' (Thoma, 2006:86) and thereby support decision-making through dilemmas in a consistent and coherent manner. This insight has the potential to provide direction to the development of professional ethics programmes (e.g. Bebeau & Faber-Langendoen, 2014; Bebeau, 2009a, 2009b, 2008, 2002; Bebeau & Monson, 2008; ; King & Mayhew, 2002), stimulating the inclusion of constructivist techniques that force participants to consider action options that derive from or incorporate the different schemas.

The adoption of this perspective on schemas heralded further shifts in basic assumptions, including the relaxation of the strong distinction between content and structure, and an acceptance that '*a focus on the tacit understanding of moral issues may be a better representation of real-life decision-making than other, more verbally based, assessment systems*' (Thoma, 2006:87). As the DIT was now considered to measure the default or

preferred schema used by individuals to interpret moral issues, it also accommodated anomalies in developmental scores by distinguishing whether an individual clearly preferred one particular schema or provided little evidence of distinguishing between schemas (Thoma, 2006; Rest et al, 1999b).

The Neo-Kohlbergian model proposes three developmental schemas: personal interest, maintaining norms and postconventional (Thoma, 2006, 2002; Narvaez & Bock, 2002; Rest et al, 1999a, 1999b). These '*schemas are commonly understood to be general knowledge structures that reside in long-term memory and that thus facilitate information processing*' (Walker, 2002:361). Rest and colleagues (Rest et al, 1999a, 1999b) and their critics (e.g. Rogers, 2002; Walker, 2002) alike, repeatedly highlighted that these schemas did not (and do not) portray all the cognition that is necessary for a practitioner to reason through a professional dilemma. However, they do enable researchers to describe the developmental aspect of moral reasoning (Rest et al, 1999b). Descriptions and features of these three schemas are summarised in Table 3.4.

Table 3.4: Model of moral status. Neo-Kohlbergian schemas - description and features.

Neo-Kohlbergian schema	Description	Features (Rest et al, 1999b; Narvaez & Bock, 2002)	Approximates to Kohlberg's stages (Walker, 2002)
Personal Interest	<p>Focuses on either aspects of the situation that influence the self or relationships between the self and known others (Thoma, 2002:241)</p> <p><i>'Fairness of simple exchanges of favor for favor (Stage 2) and maintaining approval' (Stage 3)</i> (Bebeau & Thoma, 2003:18)</p>	<ul style="list-style-type: none"> - Self focused: Advantage to self is primary. - Arbitrary, impulsive co-operation. - Survival orientation. - Negotiated cooperation. Scope includes others who are known. - In group reciprocity*. - Responsibility orientation. 	<p>Stages:2 & 3</p> <p>Appeals to personal stake that individuals have in the consequences of an action.</p>
Maintaining rules and norms	<p>Centres around the role of social norms in organising and maintaining order in society (Thoma, 2002:241).</p> <p>...focus on maintaining the existing legal system (Bebeau & Thoma, 2003:19)</p>	<ul style="list-style-type: none"> - Need for norms. - Society-wide view. - Uniform categorical application. - Partial society-wide reciprocity. - Duty orientation. 	<p>Stage: 4</p> <p>Generally accepted norms and hierarchical roles.</p>
Postconventional reasoning	<p>Criteria that define a postconventional system:</p> <ol style="list-style-type: none"> a) the central role of moral criteria in the formulation of, and understanding of, laws and norms; b) the appeal to an ideal - must convey some idealised view of how the community ought to be ordered; c) must present a clear sense that moral ideals are open, subject to critique, and thus shareable with the larger community; d) The system is fully reciprocal – i.e. developed to address the community as a whole and then uniformly applied (Rest et al, 1999b; Thoma, 2002:242). 	<ul style="list-style-type: none"> - Appeal to an ideal. - Shareable ideals. - Primacy of moral ideal. - Full reciprocity. - Rights orientation. 	<p>Stages:5 & 6</p> <p>Diverges from Kohlberg's stages 5 & 6, Postconventional reasoning – appeals to ideals that are fully shareable and full reciprocity.</p>

*Reciprocity: *'each citizen obeys the law, expecting that others will also obey'* (Rest et al, 2000:5).

Similarities with Kohlberg's stages 2 and 3 are apparent in the personal interest's schema and Kohlberg's stage 4 is generally aligned with the maintaining norms schema (Rest et al, 1999a, 1999b). Critics, (e.g. Bergman, 2006; Walker, 2002; Rogers, 2002), question the

truncation of Kohlberg's stages such that e.g. stage 1 is omitted. However, while the need for measures of moral reasoning competencies development is undoubtedly necessary for studies involving children, guidelines for the DIT1 clearly identify that it is intended for those over 12 years of age (Bebeau & Thoma, 2003; Rest et al, 1999b) – an age by which individuals would be expected to have moved beyond Kohlberg's stage 1.

The postconventional schema proposed in the Neo-Kohlbergian approach diverges more significantly from Kohlberg stages 5 and 6 in that the schema appeals to shared ideals arising from the experience of the community, with particular reference to how such ideals become accepted by the community (Rest et al, 1999b). This shared or 'common' morality is defined as *'a social construction, evolving from the community's experiences, particular institutional arrangements, deliberations and the aspirations that are voiced at the time and which win the support of the community'* (Rest et al, 1999a:301), whether the 'community' in question is society as a whole or a sub-section such as a profession. This emphasis on 'common' morality, which viewed postconventional thinking as informed by many different traditions (Rest et al, 1999b), is also a response to the criticism that Kohlberg's theory on postconventional thinking was limited to one tradition (e.g. Puka, 2002; Carpendale, 2000).

DIT researchers accepted *'the notion that understanding moral phenomena is developmental and not simply an accumulation of social norms over time'* (Bailey et al, 2010:3). The shift to schema theory highlighted that what develops in an individual is a *'joint product of context as well as the individual's organizing processes'* (Bailey et al, 2010:3), resulting in both an appreciation that educational contexts should be taken into account when interpreting variations in moral reasoning scores (Maeda et al, 2009) and a significant shift in the definition of what the DIT actually measures (Thoma & Dong, 2014; Thoma, 2006; Rest et al, 1999a, 1999b). The emphasis on context further aligns the Neo-Kohlbergian approach with the demands of providing role models, practical experience and profession-specific dilemmas in professional education (e.g. Bebeau & Monson, 2008; Reiter, 1999; Rest & Narvaez, 1994).

The measure, or index, that was most commonly used until recent years, and was therefore used for much of the limited research into developmental scores of practising community pharmacists (Latif 2001a; Latif & Berger, 1999, 1997; Latif et al, 1998), is known as the P-Score.

3.5.3. P-Score Index: postconventional schema score.

An empirical approach was taken to the investigation of various potential indices for the DIT1 using large databases of samples (Rest et al, 1999a, 1999b, 1997b; Rest, 1979). Many options were developed and applied, according to the validation criteria in Table 3.3, until the P-Score '*began to distinguish itself from the others*' (Thoma, 2002:232). Defined as the weighted average of the rank of stage 5 and stage 6 items summed across the six (DIT1) stories (Appendix 7), the P-Score originally referred to principled reasoning. However, it was later interpreted as the extent to which a person prefers postconventional moral thinking as defined by a demonstrated preference for postconventional items (Thoma, 2006, 2002; Rest et al, 1999b). The percentage P-Score can range from 1 to 95 (as described in Appendix 8). Reliance on ranking data was claimed to represent a more stable index of the reasoning process, based on the '*greater cognitive investment in a ranking process*' as compared to the individual item rates (Thoma, 2002:232-233). The P-Score also put an explicit focus on comprehension of items. Seen as representing the leading edge of the individual's response profile, the P-Score became the standard means of indexing the DIT and interpretation of study results in the context of the literature generally made reference to P-Score results (e.g. Prescott et al, 2014; Chaar et al, 2009; Jones, 2008; Latif, 2000a, 2000b, 2000c; Rest et al, 1999a; Latif & Berger, 1997).

However, notwithstanding its value as a measure of the individual's response profile, a major perceived weakness of the P-Score is the amount of data excluded in its calculation, as it is derived from data that completely excludes responses aligned with the personal interests and maintaining norms schemas (Rest et al, 1999a, 1999b). The search for a means by which to address these weaknesses was therefore progressed – and ultimately led to the N2-Score (Table 3.2. See Section 3.5.7 for further detail). In addition, intra-individual measures, such as whether the individual is considered to be (a) consolidated at one developmental phase or schema, (b) not showing preference for any one schema, or (c) in transition from one schema to another, had the potential to have an impact on the interpretation of reasoning competencies demonstrated at a point in time (Thoma & Rest, 1999; Rest et al, 1999a, 1999b) – whether that 'point in time' would be pre or post engagement with an educational intervention.

3.5.4. Intra-individual measures: Consolidation, Transition and Types.

Developmental profile and phase indices emerged from systematic examination of large data sets (Bebeau & Thoma, 2003; Thoma & Rest, 1999; Rest et al, 1999a, 1999b) i.e.

further investigations into how schema contribute to the overall functioning of the moral reasoning component were undertaken. This work was a response to, at least in part, criticisms that 'dilemma discussion' educational interventions, (a stated validity criterion), did not always show development on the P-Score (e.g. teacher-training (McNeel, 1994; Chang, 1994), counselling (Sprinthall, 1994), accounting and auditing (Ponemon & Gabhart, 1994) and medicine (Self & Baldwin, 1994) none of which consistently found gains over the course of their programmes). The primary aim of these indices was to provide a means of describing developmental patterns underlying schema growth. They were also used to identify individuals for whom moral schema was less central to their moral reasoning (transitional status) as the benefit associated with moving from transitional to consolidated status might not be reflected in development in the P-Score (at least not in the initial stages).

These variables were created using DIT responses and provide further support to studies seeking to e.g. assess the impact of educational interventions (Thoma, 2006; Derryberry & Thoma, 2005; Bebeau & Thoma, 2003; Thoma & Rest, 1999). Consolidation on the DIT indicates clear preference for a specific schema, be that personal interest, maintaining rules and norms or postconventional reasoning, as indicated by item rating by the respondent (Rest et al, 1999a, 1999b). A failure to discriminate is viewed as a marker of developmental disequilibrium, or 'transition'. Hence the terms 'transition' ('1') and consolidation ('2') are used to classify profiles and the related index is referred to as 'Contrans' (Derryberry & Thoma, 2005; Bebeau & Thoma, 2003; Thoma & Rest, 1999). Recent evidence suggests that DIT scores change at different rates based on whether the individual is 'consolidated' or in 'transition' at the outset of an educational intervention designed to impact on moral reasoning (Bailey et al, 2010; Thoma, 2006; Thoma & Rest, 1999).

When Thoma & Rest (1999) noticed that some respondents showed little evidence of discrimination between two or more schema-type items, whereas others seem to clearly distinguish between the three schema-type items, they devised criteria to differentiate profiles. As it was possible that response patterns could '*display a theoretically inconsistent bimodal pattern*' (Thoma & Rest, 1999:327) e.g. high on personal interest schema, low on maintaining norms schema and high on the postconventional schema, the frequency with which such bimodal patterns occurred was determined. Only 4% of consolidated participants (i.e. approximately 2% of all participants) were found to provide bimodal patterns, and most of these highlight the maintaining norms to postconventional transition (Thoma & Rest, 1999).

Respondents completing the DIT may therefore be classified into one of seven moral types. Classification of these moral 'types', ('typenew'), involves a developmental ordering incorporating schema preferences and whether reasoning is in transition or consolidated (Rest et al, 1999b). The number of 'can't decides' (Appendix 7) chosen by a respondent is another reflection of schema-preference mixture and will affect her designation to 'consolidated' or 'transitional' and, consequently, the type number assigned.

A summary of the development profiles and phase indices is provided in Table 3.5.

Table 3.5: Developmental profiles and phase indices - Type levels

Type	Schema	Contrans
1	Predominant in personal interests schema.	Consolidated (2).
2	Predominant in personal interests schema.	Transitional (1).
3	Predominant in 'maintaining norms' schema, with personal interests secondary schema.	Transitional (1).
4	Predominant in 'maintaining norms' schema.	Consolidated (2).
5	Predominant in maintaining norms schema and with the 'postconventional schema' secondary.	Transitional (1).
6	Predominant in postconventional schema	Transitional (1).
7	Predominant in postconventional schema	Consolidated (2).

Adapted from: Bebeau & Thoma, 2003.

Profiles identified as consolidated (types 1, 4, and 7) in their reasoning provide stronger relationships between DIT scores and outcomes than those identified as transitional (types 2, 3, 5 and 6), especially when individuals are reasoning through '*situations involving ambiguity and minimal time for decision-making*' (Derryberry & Thoma, 2005:89). This is not surprising as individuals in 'transition' have to deal with potentially conflicting interpretations derived from multiple schemas (Rest et al, 1999b).

These moral types have been found to be ordered developmentally (Thoma, 2006; Rest et al, 1999a, 1999b) meaning that as a person develops across her lifespan it is expected that she will move from consolidated profiles to transitional profiles with corresponding shifts in schema preference and consistency in moral reasoning. As respondents of the DIT ought to be greater than 12 years, very few respondents are generally classified as type 1 or 2 (Thoma, 2006; Rest et al, 1999a, 1999b).

Of particular interest to a study involving community pharmacists is the finding that '*changes in type are of particular interest in understanding patterns where there appears to be no change on the P index, or in patterns of regression on the P index that sometimes occur*' (Bebeau & Thoma, 2003:21) not least because one of the few reported studies on

moral reasoning development in this category of pharmacists suggests that they are an exception to the expectation that P-Score increases with age (Latif, 2001a).

'Types' and Contrans profiles give a more complete picture of respondents' moral characteristics than any of its independent component variables (Thoma, 2006; Derryberry & Thoma, 2005; Bebeau & Thoma, 2003; Thoma & Rest, 1999). As a result types and Contrans have been used to provide further and, potentially, a more sensitive evaluation of pre-test/post-test change scores for educational intervention studies. Such evaluation should therefore be of particular importance when presenting data in this study on community pharmacists in Ireland.

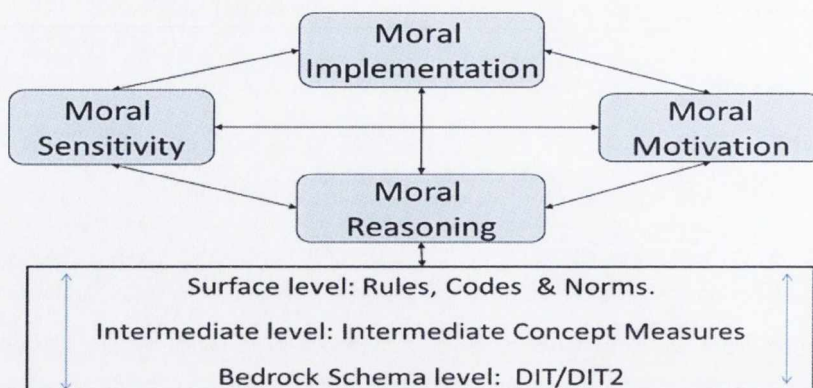
The question of how educational interventions, intended to impact on moral development, might be appropriately designed is addressed by Bebeau and Monson (2008) when they highlight that becoming a professional is an intellectual, social and moral process as might be successfully completed through the FCM of professional education.

3.5.5. The Four Component Model (FCM) of professional education.

The FCM approach to professional education (Bebeau & Monson, 2008; Bebeau, 2002; Bebeau & Thoma, 1999; Rest et al, 1999a, 1999b) advocated for a broader conception of moral functioning (than the focus on moral reasoning as assessed by the DIT) and introduced four psychological components underlying moral behaviour. These four components are (a) moral sensitivity, (b) moral reasoning, (c) moral motivation and (d) moral implementation or character and are represented as interactive⁴¹ elements in the development of a professional as depicted in Figure 3.1.

⁴¹ While adjustments to the FCM have been proposed (Curzer, 2014), in a manner that reduced the four to moral sensitivity, theory and reasoning, empirical evidence for the value of such proposed adjustments was not provided i.e. Curzer presented the components as having a 'linear relationship' rather than as interactive elements in the development of a professional (Curzer, 2014:105) and his explanation of schemas was more Kohlbergian than 'meta-schema', or 'moral' schema understanding proposed in Neo-Kohlbergian theory.

Figure 3.1: The Four Component Model of professional education.



Adapted from: Thoma, 2006.

In a response to criticisms levelled at Kohlberg’s perceived focus on cognition, i.e. to the exclusion of other domains (Section 3.3 and Kohlberg & Hersch, 1977), proponents of the Four Component model (Bebeau & Monson, 2008; Rest et al, 1999b; Bebeau & Thoma, 1999; Rest & Narvaez, 1994) emphasised that (a) there are cognitive and affective (feeling) processes associated with each component, and (b) each component involves different kinds of interaction between cognition and affect (Walker, 2002; Rest et al, 1999b). This response also addressed concerns, raised by e.g. Krebs and Denton (2005), regarding the perceived risks of an exclusively cognitive approach to moral development.

The Neo-Kohlbergian position thus supports the view that *‘the individual engages social information and interprets personal intuition to the service of developing a working moral perspective and understanding of specific situations’* (Bailey et al, 2010:3). Researchers (e.g. Bebeau, 2002; Bebeau & Thoma, 1999) repeatedly highlighted that *‘moral failure can be a consequence of a deficiency in any component’* (Rest & Narvaez, 1994:23), and therefore suggested that *‘ethical interventions should include direct instruction in each of the four components and that different measures should be developed to assess them’* (Bailey et al, 2010:6).

3.5.5.1. Framework for the design and outcomes assessment of educational interventions.

Amongst the intentions behind the development of the model was the desire to provide a framework for the design and outcomes assessment of educational interventions aimed at moral development (Bebeau & Monson, 2008; Bebeau, 2002; Duckett & Ryden, 1994; Rest

& Narvaez, 1994). Design of educational interventions to impact on moral development therefore has the potential to benefit from an understanding of all four components, and an appreciation of how the components each interact with the other(s):

'Moral sensitivity is the awareness of how our actions affect other people' (Rest & Narvaez, 1994:23) and sensitivity to potential conflicts of interest is an essential pre-requisite to the development/application of professional judgement. If one does not recognise that a dilemma exists, in the first instance, there will be no perception of a need to reason through it (Bebeau & Monson, 2008). However, given advances in moral development theory, it is envisaged that moral sensitivity should now be defined as *'processes that involve the recognition of moral dilemmas within context'* (Bailey et al, 2010:6) – emphasis added.

Moral reasoning, which is *'concerned with the processes people go through to arrive at dilemma resolution'* (Latif, 2000c:258) or a morally ideal outcome (Bailey et al, 2010), depends on the cognitive construction of reasoning abilities (Rest et al, 1999b) as developed through and influenced by experience and applied in the context of the presenting dilemma. Activation of 'reasoning' depends on an individual being able to identify the dilemma, what actions might be justifiable and how others might be affected by the behaviour implied by each option (Bebeau & Monson, 2008; Rest et al, 1999b). A morally ideal outcome is the objective of the reasoning process. Overly simplistic justification of action options may result in a deficiency in this component, the example given by Rest and Narvaez (1994) being that *'acts of terrorism justified in terms of revenge for previous wrongs may be short-sighted, counterproductive, and targeted at innocent people'* (p.24).

Three levels of moral reasoning processing are referenced in the FCM (Figure 3.1):

- (1) Developmental bedrock schemas, which reflect default systems that are activated when more automatic and context-specific interpretive systems fail or provide incomplete or inconsistent information (Roche et al, 2014; Thoma, 2006, 2002; Rest et al, 1999a, 1999b), are measured by the DIT and reflect broad developmental changes or inclinations regarding preferred schemas at an abstract level.
- (2) Intermediate level moral concepts, (Intermediate Concept Measures (ICMs), which are profession-specific to the context of community pharmacy in this study, are designed to cover a broad range of situations that require significant professional interpretation by participants in the educational intervention. They are referred to as 'intermediate' as they lie between the 'surface level' codes governing the

profession and the deeper level or bedrock schema reasoning processes identified (Thoma, 2006, 2002; Rest et al, 1999a, 1999b). Reasoning about intermediate concepts⁴² is in part a reflection of the individual's default schema and in part a reflection of the '*influences of the default schema on systems at the more contextual levels*' (Bailey et al, 2010:7) in the moral reasoning component. ICMs are further discussed in Section 3.5.10.

- (3) The more concrete, or surface level, processing incorporates rules (or legislation governing the practice of pharmacy) and codes of conduct/ethics, as generally included in professional ethics programmes (e.g. Caldicott & d'Oronzio, 2015; Bebeau & Faber-Langendoen, 2014; Parran et al, 2013; Bebeau 2009a, 2009b, 2008; Bebeau & Monson, 2008; Rest & Narvaez, 1994). The most difficult aspect of using professional codes as a framework for decision-making is that it is difficult to recognise when the endless variables in real-life scenarios as included in a given dilemma scenario are actually covered by the code (e.g. Roche & Kelliher, 2014; Gallagher, 2010; Cooper et al, 2009, 2008a, 2008b, 2007a, 2007b; Benson et al, 2009; Wingfield & Badcott, 2007; Higgs-Kleyn & Kapelianis, 1999).

When decision-making through dilemmas, a professional will first access surface level guidelines provided by rules, codes and norms and, where clear guidance is not evident to that professional, intermediate concepts will then be considered (Bebeau & Faber-Langendoen, 2014; Bailey et al, 2010; Bebeau 2009a, 2009b; Thoma et al, 2008; Bebeau & Monson, 2008; Narvaez & Bock, 2002). Only where the answer as to 'what should be done?' is not clear, will the individual rely on her bedrock schema (Thoma, 2006, 2002; Rest et al, 1999b).

Moral motivation involves the prioritisation of moral values over competing values and influences, the risk of a deficiency being that '*values such as self-actualisation or protecting one's organisation replace concern for doing what is right*' (Rest & Narvaez, 1994:24). A community pharmacist may feel pressurised into particular actions by the perception that she must avoid failure (Thoma et al, 2008; Resnik et al, 2000; McDowell, 1990), maximise commercial gain and/ or restrict practice to what is certain in the letter of the law (e.g. Caldicott & d'Oronzio, 2015; Bebeau & Faber-Langendoen, 2014; Parran et al, 2013; Thoma et al, 2008) rather than apply professional judgement to interpret the intent of the law, (e.g. Caldicott & d'Oronzio, 2015; Bebeau & Faber-Langendoen, 2014; Parran et al, 2013). If participants are to recognise the potential impact of competing motivations, educational

⁴² Intermediate concepts represent moral concerns that are described in terms of guiding ethical standards of the professional (Thoma et al, 2008; Bebeau & Thoma, 1999).

design must force consideration of good and bad justifications for action options chosen (e.g. Hew & Cheung, 2011; Hrastinski, 2009; Bebeau & Monson, 2008; Huball & Burt, 2004). ICMs, as incorporated into the design of the educational intervention used in this study, support this aspect of development (Section 5.6 and section 4.4.1.2).

Moral implementation (*or moral character*) requires perseverance and courage, even where an individual is sensitive to dilemmas, competent to reason through them in an ethical manner and places a high priority on moral values (Bebeau & Monson, 2008). It requires strength of character to see difficult actions choices through to completion (e.g. Bebeau & Faber-Langendoen, 2014) within a concrete situation (Bailey et al, 2010; Thoma, 2006; Rest et al, 1999b). It would be likely of benefit both to the patient, in terms of likelihood of increased safety, and to the pharmacist, as she aspires to professional behaviour, if competencies related to 'strength of character' could be developed, assessed and/or predicted (Caldicott & d'Oronzio, 2015; Bebeau & Faber-Langendoen, 2014). It is the actions (or failure to act) by the professional that will attract scrutiny, requiring the pharmacist to explain her justifications for decisions made during the process of reasoning through dilemma scenarios (e.g. Caldicott & d'Oronzio, 2015; Bebeau & Faber-Langendoen, 2014; Wingfield & Badcott, 2007). However, given that fitness-to-practice proceedings are initiated after a perceived failure in professional practice or patient care (Pharmacy Act, 2007), and the primary objective is that a pharmacist has the necessary competencies to care for the patient in a professional manner (PSI, 2013a), moral development programmes for pharmacists ought to focus on developing competencies to prevent or ameliorate the likelihood of unprofessional 'implementation'.

The Ethics course provided by the Minnesota Board of Dentistry (Bebeau & Faber-Langendoen, 2014) is a rare example of the use of the FCM as a structure through which to address professional development of practitioners (further detail provided at Appendix 9). Guided by theory and grounded in evidence, the FCM supports a developmental approach to professionalism and ethical practice in a manner that engages cognitive, affective and behavioural domains. The downside is that it is a resource-intensive approach – both in terms of the face-to-face component and range of assessments involved.

Notwithstanding the importance of moral reasoning competency/ -ies development in a community pharmacist, it is the implementation of her reasoned action choices that determine successful patient outcomes. Findings from studies in other professions, e.g. medicine (Putnam Cole et al, 2013; Sheehan et al, 1980), Dentistry (Bebeau, 2009a, 2009b), Nursing (Krichbaum et al, 1994), Physical Therapy (Sisola, 2000) and teachers (Chang, 1994,

indicated that higher scores on the DIT2 correlated positively with professional behaviour and/or improved patient care. However, corresponding studies on pharmacist studies have not been identified in the literature. Indeed critics suggest that *'the importance of clarifying the meaning of consistency between moral cognition and moral action'* (Blasi, 1980:1) continues to be neglected by researchers in the field of moral development (e.g. Craft, 2013). To this end an index with characteristics that predict intrapersonal consistency, such as with the utiliser score, serves to respond to such criticism – and also has the potential to support the aims of this research study.

3.5.6. The utiliser score (U-Score).

The U-Score measures *'the degree to which the individual uses moral [reasoning] information in making decisions about moral situations'* (Bailey et al, 2010:7) reflecting how much the individual relies on ethical factors versus competing factors when decision-making through dilemmas. It provides additional insights into moral reasoning that are not directly assessed by overall DIT summary scores and allows, in conjunction with consideration of type(s), for more complete assessment of the relationships between moral issues and actions (Thoma, 2006; Thoma & Rest, 1999).

It is primarily intended to be used as a moderator variable (Thoma & Rest, 1999), i.e. to increase the predictability of moral reasoning as related to implementation. As it seeks to estimate how moral schemas contribute to the overall functioning of the moral reasoning component in the FCM, it is an example of a development that would not have been attempted prior to the introduction of the FCM (Thoma, 2006). It assesses how reasoning about fairness and social co-operation are prioritised in judgement formation and provides a means by which researchers may *'ask whether an intervention increased the focus on moral considerations (U-Scores)'* (Bailey et al, 2010:9).

If an individual is unable to successfully apply moral concepts to interpret a social situation, such as when in *'transition'* between schemas, then the ensuing uncertainty will reduce the utility of the Kohlbergian moral framework for that individual (Thoma & Rest, 1999). *'Individuals may, for instance, use alternative ethical systems such as those proposed by other models of sociomoral reasoning'* (Thoma & Rest, 1999:324). U-Scores are designed to estimate the degree to which participants use the Kohlbergian framework, rather than an alternate framework (Thoma & Rest, 1999). U-Scores have a potential range of -1 (low utilization) to +1 (high utilization), although *'large sample estimates of utilization suggest and actual range of -.40 to .77'* (Thoma & Rest, 1999:327). Higher U-Scores indicate

greater consistency between dilemma choices, or 'item endorsement' on the DIT (Appendix 7), and the inferred action choices implied by item rating (Bebeau & Thoma, 2003; Rest et al, 1999a, 1999b). U-scores may therefore support interpretation of patterns observed in DIT scores (e.g. Bailey et al, 2010).

U-Scores may also guide the choice of design of educational interventions (Thoma, 2006). As the Kohlbergian system aligns with justice reasoning and the introduction of the background to e.g. principlism (Beauchamps & Childress, 2009) as a framework for decision-making, critics suggest that a participant who prioritises alternate systems of moral reasoning may be disadvantaged in the level to which such an assessment would support her demonstration of moral reasoning competencies (Rest et al, 1999b). Different educational strategies may therefore be preferred for pharmacists with different developmental profiles (i.e. at various locations in the consolidation and transition cycle) as reflected in the U-Score (Bebeau & Monson, 2008; Thoma, 2006). Therefore, the traditional intervention design, incorporating dilemma discussion, should be combined with exercises which address the '*importance and utility of moral concepts in social decision-making (highlighting application and the importance of moral definitions of concrete situations)*' (Thoma & Rest, 1999:331).

Given that the concepts of consolidation and transition, and the U-Score itself, are important interpreters of the success or otherwise of educational interventions, criticisms related to the limited range of data used to derive the P-Score index of moral reasoning development (Walker, 2002; Rest et al, 1999a, 1999b, 1997a, 1997b) were considered by the Minnesota group, and research into what further potential indices might be available was progressed. Further developments by the group led to a 'new index' for which the score was later referred to as the N2.

3.5.7. The N2-Score.

The N2-Score emerged following a re-examination of data from a large study that used the DIT as a pre- and post-test of the effects of an ethics curriculum for professional school students (Bebeau & Thoma, 2003, 1994; Rest et al, 1997a, 1997b). Two effects of the educational intervention were observed: (1) the *acquisition of new thinking (increases in P-Score)*... and... (2) *systematic rejection of simplistic thinking (decreases in stages 2 & 3)* (Rest et al, 1997a: 500), both effects being desirable outcomes of an ethics curriculum. The N2-Score was designed to accommodate both of these observations as it represents the extent to which postconventional items are prioritised and the degree to which personal

interest items receive lower ratings than the ratings given to postconventional items (Rest et al, 1997a, 1997b). The process by which an N2-Score is calculated (Rest et al, 1997a, 1997b) is further described in Appendix 8. It includes the use of data derived from both the rating task (i.e. the extent to which a participant reports that individual statements helped her make a decision regarding what the protagonist in the story should do) and the ranking process (how important each statement was in helping her to come to a decision). Scores are adjusted so that P and N2 have the same mean and standard deviation allowing comparisons to be made (Appendix 8).

The N2-Score, however, has more stringent rules for dealing with missing data than the P-Score, e.g. where a respondent fails to complete part of the DIT answer book, and therefore *'more protocols are invalidated for missing data in the N2 index than for the P-Score'* (Rest et al, 1997a:501). This has the potential to reduce the yield of data from the overall bank of data collected. Data integrity is prioritised (Thoma, 2006; Rest et al, 1997a).

The N2-Score generally outperforms the P-Score on six criteria of construct validity as outlined in Table 3.3.

Aligned with considerable progress in updating indices used to interpret DIT scores, the Minnesota group also reviewed the content of the DIT1. Having been first published in 1974, even Rest himself later posited that some of the references in the scenarios were outdated (Rest et al, 1999a, 1999b) e.g. references to the Vietnam War as being a 'current event' (Appendix 7). This factor, amongst others, led to a revised instrument for the measurement of moral reasoning known as the DIT2 (Rest et al, 1999b).

3.5.8. The DIT2.

Updating of the DIT1 (Appendix 7) to devise the DIT2⁴³ (Appendix 10) involved three key changes: (1) *in dilemmas and items*, (2) *in the algorithm of indexing*, and (3) *in the method of detecting unreliable participants* (Rest et al, 1999a:644), each of which are discussed below.

(1) in dilemmas and items: As one scenario in the DIT1 was identified as not contributing as much to validity as were the other dilemmas (Rest et al, 1997a) the DIT2 presents five, rather than six, updated hypothetical dilemmas (Appendix 10) for which, in turn, the respondent is expected to convey an action decision. Otherwise similar in construction to

⁴³ Note that what the DIT measures and reports are the same for the DIT1 and DIT2 (see Section 3.5.1).

the DIT1, the DIT2 then presents 12 issues after each dilemma for a participant to rate and rank in terms of their perceived importance – notwithstanding that the wording and order of items has changed. It also continues to collect general demographic data (Appendix 10). The shift in definition of what the DIT actually measures (section 3.5.1), driven by the recasting of schema theory (Section 3.5.2), also applied to the DIT2. These default ‘schemata’ are described as the *‘basic system used to interpret moral claims within concrete situations when other more context specific systems fail or provide ambiguous interpretations’* (Bailey et al, 2010:7). Hence the updating of dilemmas, they being the ‘concrete situations’ interpreted when completing the DIT, was an important development (Thoma, 2006; Rest et al, 1999b).

(2) in the algorithm of indexing: The DIT2 takes advantage of the development of the ‘N2 Index’ (Thoma, 2006, 2002; Bebeau & Thoma, 2003; Rest et al, 1999b, 1997a and section 3.5.7). Validity has been established with respect to comparison of study outcomes where the DIT1 and the DIT2 have been used, and in terms of six validity criteria (including age and educational differences among students in professional schools) cited in over 400 published articles (Thoma, 2006, 2002; Walker, 2002; Rest et al, 1999a; 1999b). This facilitates comparison between research outcomes from studies using the DIT2 with studies that used the DIT1, as with comparisons between the work on community pharmacists by Latif and Berger (Latif, 2001a; Latif & Berger, 1997) and this study.

(3) in the method of detecting unreliable participants: *‘There is the ever-present problem in group-administered, multiple-choice tests (that are also often anonymous) that participants might give bogus data’* (Rest et al, 1999a:647). The DIT1 had, typically, over 12-15% of samples discarded for questionable participant reliability. Update of the method of detecting participant reliability was therefore an advantage to researchers seeking to not ‘waste’ data that had been collected. The underlying assumption was that the validity of the new index was established (Thoma, 2006; Rest et al, 1999a, 1999b).

However the increased power/validity of DIT2 over DIT1 is primarily due to the new methods of analysis, incorporating the N2-Score (2), and the new methods of detecting unreliable participants (3) rather than the practical improvements in dilemmas, items, or instructions (1) (Rest et al, 1999a).

When provided with collated responses to the DIT2 questionnaire in an appropriate format, the CSED completes the DIT2 scoring process on the dataset and includes variables i.e. developmental indices, development profile and phase indices and experimental

indices, along with summary of demographic data collected and reliability checks aligned with the process, in the returned spreadsheet as outlined below:

- Demographic variables – education level, sex, age, whether conservative or liberal (self reported), whether English is the participant’s primary language⁴⁴ and whether she is an Irish citizen⁴⁵ (adapted from original questionnaire).
- Developmental indices – each of the three schemas (personal interest, maintaining norms and postconventional reasoning) and the N2-Score are reported on a scale of 0 to 95% (Appendix 8).
- Developmental profile and phase indices – contrans (1 or 2), typenew⁴⁶ (nominal 1 to 7) and U-Scores are provided (Section 3.5.4).
- Experimental indices - the number of ‘cannot decides’ recorded, a Humanitarian Liberalism⁴⁷ score (HUMLIB⁴⁸) and a Religious Orthodoxy proxy measure referred to as CANCER10⁴⁹ (Bebeau & Thoma, 2003) are provided (Appendix 10).
- Reliability checks and additional DIT scores (Bebeau & Thoma, 2003) – purged participants (those failing reliability checks), and MSCORE (referring to the number of ‘meaningless items’ checked by the participant) and an ANTISOCIAL score (anti-establishment attitude) (Appendix 11).

Scored data is returned from the CSED to the researcher in a format from which accuracy of entries can be verified against the (hard copy) DIT2 surveys completed by participants (Bebeau & Thoma, 2003). Outputs from this scoring process provide the baseline data on which the researcher conducts analysis and from which discussion, in the context of the study design, may proceed.

Review of the literature identified that researchers typically present only P-Scores (e.g. Prescott et al, 2014; Chaar et al, 2009; Jones, 2008; Latif & Berger, 1997) or, more recently, N2-Scores (e.g. Self et al, 2013; Gallagher, 2011; Latif, 2009; Staehr & Byrne, 2003), and omit comment on alternate developmental scores, or on any of the developmental profile and phase indices, as provided by the CSED. Recent calls for more comprehensive

⁴⁴ Due to the small sample size, and rare reporting that English was not a “first language”, this variable was excluded from analysis in the study.

⁴⁵ Due to the small sample size, and rare reporting that participant was not an Irish citizen, this variable was excluded from analysis in the study.

⁴⁶ Type indicator.

⁴⁷ Neoliberalism is ‘a market-driven approach to the economy and to policy ...The word ‘liberal’ in Europe does not mean what it means in U.S. politics’ (Gee, 2012:27). i.e. It refers to someone who e.g. believes in low levels of government interventions in the market. The Humlib experimental index is therefore not used in this study.

⁴⁸ Humanitarian Liberalism score: indicates humanitarian liberal perspective on moral issues (1-5). ‘

⁴⁹ Religious orthodoxy: the sum of the rates and ranks for item 10 in the Cancer scenario 4 (1-9).

reporting of findings from studies using the DIT highlight that educational interventions also have an independent effect on developmental profile and phase indices and these should be assessed by researchers in order to present a full picture of the intervention or experience (e.g. Swisher et al, 2012; Bailey et al, 2010). The detection of unreliable participants is a high priority (Thoma, 2006; Bebeau & Thoma, 2003). Reliability checks, included in the DIT2 to detect such participants, provide a means by which a researcher may decide whether or not individual profiles should be purged from the dataset prior to analysis (Appendix 11).

3.5.9. Reliability checks included in DIT2 analysis and scoring.

The four standard reliability checks, as discussed with respect to the DIT1 (i.e. relating to random responding, missing data, alien test-taking sets and non-discrimination – Appendix 11), support the purging of protocols i.e. where a participant's response sheet provides 'unreliable' data that particular protocol is purged during data processing at the CSED (Thoma, 2006; Bebeau & Thoma, 2003; Rest et al, 1999a, 1999b). Research has shown that this leads to clearer data trends (Rest et al, 1997b). However this led to criticism as 12-15% of protocols could be purged (Rest et al, 1999b). The method of detecting participant reliability was reconsidered in light of updates to the DIT1 and its measurement indices. As described in Appendix 11, the *'new checks procedure recognises the same four problems in participant reliability, but deals with them in ways different from the standard checks procedure'* (Rest et al, 1997b:654).

The 'new checks total score' anticipates whether the respondents' scores represent moral thinking (as the moral reasoning construct purports) or are bogus data (Bebeau & Thoma, 2003). Cut-off points were derived by the Minnesota group by *'empirical trial and error'* (Rest et al, 1999a:654). The score is a running total of the four reliability checks, updates and rationale as outlined in Appendix 11, where the maximum total score is 600 and a respondent's score is purged if the 'new checks total score' is greater than 200.

Two further 'experimental indices', i.e. the 'meaningless items' (M-Score) and the 'antisocial score' (A-Score), are reported in both DIT1 and DIT2 in conjunction with the reliability checks (Thoma, 2006; Bebeau & Thoma, 2003). They have potential to support individual feedback to participants undertaking an educational programme, especially where key indices indicate deficiencies in moral reasoning competencies as measured by the DIT2 (Bebeau & Monson, 2008).

The M-Score, included in alien test-taking, is also folded into the 'new checks' score. The 'meaningless items' *'are lofty sounding, using complex style or verbiage, but are essentially meaningless statements'...* And as *'DIT items are essentially fragments of a larger moral argument, respondents who don't understand the argument can't distinguish it from items that have complex verbiage but are essentially meaningless'* (Bebeau & Thoma, 2003:25). The M-Score may therefore detect participants who might be trying to fake a high score.

The A- Score *'represents considerations that reflect an anti-establishment attitude'*. An understanding of the maintaining norms schema is presupposed but the underlying consideration exposed is that the participant faults *'existing authorities and "the establishment" for being hypocritical and inconsistent with its own rationale'* (Bebeau & Thoma, 2003:26).

The value of the improved reliability checks is that valid data is less likely to be purged during processing of the data, which is particularly important in this study where sample sizes are small (Thoma 2006, 2002). The provision of the M-Score and A-Score has the potential to support more comprehensive personalised feedback on a pharmacist's DIT profile, as discussion on a respondent's tendency to select such items may be included.

Given that deficits, if identified, can be remedied (Bebeau & Faber-Langendoen, 2014; Bebeau & Monson, 2008; King & Mayhew, 2002; Bebeau, 2002; Latif, 2000c), particularly by appropriately designed educational interventions, the characterization of 'deficits' by the interpretation of a participant's profile provides opportunity to guide her in her choice of further CPD (e.g. Bebeau & Faber-Langendoen, 2014; Bebeau, 2009a, 2009b; Bebeau & Monson, 2008). Given the reference to ICMs in the FCM (Figure 3.1), and the potential that ICMs might be included in an educational intervention appropriate for practising community pharmacists, their rationale and development merit further consideration.

3.5.10. Development of ICMs.

The Neo-Kohlbergian model of moral reasoning proposes that moral thinking is multi-layered, as represented in the FCM (Figure 3.1). This model includes three levels of abstraction related to moral reasoning (Figure 3.1) i.e. the DIT assessed default, or bedrock, schema, intermediate concepts and ethical codes, rules and norms (Thoma et al, 2008; Thoma, 2006; Rest et al, 1999b). The design of professional *'ethics courses are often organised around intermediate level concepts'* (Bebeau & Thoma, 1999:347). However, profession-specific 'intermediate concepts' had not been reported for pharmacy and their

development was required before this study could proceed. Consideration of intermediate concepts, examples of which include respect for autonomy, paternalism, informed consent and duty of care (Beauchamps & Childress, 2009; CoC, 2009) and many of which are interpersonal in nature (Bebeau & Thoma, 1999), requires a level of conception as used in day-to-day decision-making by community pharmacists (Rest et al, 1999b). This includes deliberation regarding the various considerations relevant to the different courses of action a pharmacist might take when faced with the dilemma proposed and the making of a judgement regarding which of the available actions would be most morally and/or professionally justifiable. This process of justification involves '*determining what the moral ideal is and integrating shared moral norms and individual moral principles*' (Walker, 2002:355). To be most effective in stimulating development, ethical problems proposed i.e. narratives and cases, '*must come from lived experience*' (Reiter, 1996:51).

The search for related assessment methodologies led to the development of the ICM as '*a prototype measure*' of intermediate level concepts intended to assess the outcomes of dental ethics instruction (Bebeau & Thoma, 1999:350). As identified in section 3.5.5, these concepts are referred to as 'intermediate' as they lie between the 'surface level' codes governing the profession and deeper level or 'bedrock schema' reasoning processes. The components of an ICM (i.e. the prototype measure) are a short profession-specific 'dilemma' scenario, and series of action and justification choices (e.g. Appendix 12 as used in this study). The profession-specific dilemma is generally prepared to include relevance to several intermediate concepts, e.g. confidentiality, capacity to consent, conscientious objection and 'patient best interests' (Roche et al, 2014; Bebeau & Thoma, 1999; Rest et al, 1999b).

When applying the technique in a teaching and learning environment, the case study, action choices and justification items are presented in sequence and options proposed include those with a focus on self-interest (personal interest schema), maintaining rules and norms, and societal interests (postconventional schema). Participants rate various possible action choices and justification options. Performance on the ICM, when it is used as an assessment methodology, is indicated by the extent of the agreement in categories of action and justification choices with those of an expert group that independently review the ICM. The approach as introduced by Bebeau (2002) focused on strategies that included prioritisation of the realism of the cases as perceived by practising dentists, achieving consensus regarding categories of 'better' (i.e. reflecting decision-making in the patient's or societal best interests) and 'worse' (i.e. reflecting decision-making in the self interest) action choices and justification options and exploring differences among groups expected

to differ in dental ethics expertise (Bebeau & Monson, 2008; Bebeau & Thoma, 1999). *'Evidence with the ICM indicates that ... it is sensitive to the effects of professional ethics training and that it provides non-redundant information to the DIT'* (Walker, 2002:357). While the DIT and ICMs are only *'modestly correlated indicating that intermediate concepts are not simply reflective of the more abstract developmental stages of schemas'* (Walker, 2002:357), the DIT measures moral judgement constructs that have been shown to facilitate intermediate concept reasoning (Thoma et al, 2008). Reasoning about the intermediate concepts is in part a reflection of the default schema assessed (and activated by) the DIT2 – in this respect indicating that ICMs and the DIT are complementary.

Relationships, e.g. with the DIT2 and other measures of expertise, continue to be considered. While simple correlations between ICMs and the DIT2 are considered to be weak (Walker, 2002), participants high on the personal interest schema tend to have deficits on the ICM and, when developmental phase is included in the analysis, findings indicate a substantial increase in the weak relationship initially observed (Thoma et al, 2008). However, much smaller differences are observed between *'maintaining norms'* and postconventional thinking. These findings suggest that an individual must have a *'system-wide view of cooperation'* before she comes to understand intermediate concepts (Thoma et al, 2008).

The ICM focus on intermediate concepts aligns well with professional education initiatives, and is therefore of particular relevance to this study (Bebeau & Thoma, 1999; Rest & Narvaez, 1994). The use of scenarios designed to reflect dilemmas faced in the everyday practice of community pharmacy, with items and scoring systems grounded in the thinking and reasoning of respected practitioner and educator members of the profession, is more likely to resonate with those undertaking professional ethics programmes (Thoma et al, 2008; Bebeau & Monson, 2008; Bebeau & Thoma, 1999). A version of ICMs, wherein participants are given a profession-specific scenario and are presented with 12 action options which they must independently rank for the three most and least preferred options, and are then required to work in groups to achieve agreement regarding most and least preferred action options, was trialled in the professionalism and ethics programme with Masters of Pharmacy (MPharm) students in Ireland in late 2009 (Roche & Gallagher, 2012, 2010). The discovery of *'differences between expert and novice groups ... enables the educator to judge individual performance against a valid standard'* (Bebeau & Thoma, 1999:358), by arranging for a group of experts to also individually indicate their most and least preferred options. Outcomes during the first three years of the MPharm programme repeatedly verified that group ranking of the action choices demonstrated increases in

alignment with expert group opinions when compared with individual choices (Roche & Gallagher, 2012), thereby reinforcing the potential for discussion and debate in a team-based approach to learning to support the development of moral reasoning competencies. The promotion of discussion and debate was prioritised in this study, and the development and use of ICMs was pursued with that aim in mind i.e ICMs used in this study were not developed as an assessment methodology, as had been the driving force underpinning their original conception by Rest and colleagues (Rest et al, 1999b; Bebeau & Thoma, 1999).

While there is no suggestion, by either the Minnesota approach or alternate designs (e.g. Liu et al, 2012; Bebeau & Monson, 2008; Rest & Narvaez, 1994; Penn, 1990; Schlaefli et al, 1985), that dilemma discussion should be the only technique used in educational interventions aimed at impacting on moral reasoning competencies development, the integration of dilemma discussion into the design of the educational intervention is nevertheless core to the Minnesota approach to moral reasoning development.

3.6. Summary.

Recent history of theories related to moral development prioritised socialisation (e.g. Durkheim) and cognitive (e.g. Piaget and Kohlberg) theories. Critical review of the literature related to these and alternative theories indicates that the development of the Neo-Kohlbergian approach and its related FCM of professional development offers a framework in which some combinations of these theories might be effectively explored.

A review of the related literature highlighted ten key developments by the Minnesota group, all of which have been identified as being of particular interest to this study:

1. The DIT.
2. Schema Theory.
3. P-Score Index.
4. Intra-individual measures and 'types' - consolidation and transition.
5. The FCM, and its potential to impact on educational interventions.
6. The U-Score.
7. The N2-Score.
8. DIT2.
9. Reliability checks included in DIT2 analysis and scoring.

10. Development of ICMs.

Each of these has been discussed and appraised, in turn, before consideration of how well ICMs align with professional education initiatives, making them of particular relevance to this study (Rest & Narvaez, 1994; Bebeau & Thoma, 1999).

A summary of research into moral reasoning competencies development through educational interventions (or, in some instances, educational programmes), in which the DIT is used as a measure, is provided in chapter 4.

**Chapter 4 -
Moral reasoning competency development:
the impact of educational interventions as
measured by the Defining Issues Test
(DIT2).**

4.1. Introduction

The aim of this chapter is to provide a background to, and critical appraisal of, research in which an educational intervention was employed with the objective of impacting on moral reasoning competencies development as measured by the DIT, as was relevant to the aims of this study. Literature search inclusion criteria relevant to the research question were applied to a range of databases, and to further searches of key authors and websites, in order to support this aim (Appendix 2). A primary aim was to identify, if they existed, reports of studies where the impact of an educational intervention on the moral reasoning competencies of community pharmacists, as measured by the DIT, was determined. Search inclusion criteria (Appendix 2b) therefore specifically targeted the population under study (i.e. Community Pharmacists) and pharmacy in all contexts. A secondary aim was to identify relevant studies in Ireland in which the DIT was used as a measure. Search inclusion criteria (Appendix 2b) therefore also targeted research in Ireland in which the DIT was used.

This thesis sought to explore whether an educational intervention, as designed, developed and delivered during this study, impacted on the development of moral reasoning competencies in community pharmacists in Ireland, as measured by the DIT2. Review of the literature related to the Minnesota approach and Neo-Kohlbergian theory confirmed that the choice of the DIT2 as a measure of the impact of educational interventions was appropriate (Table 3.3) and that the incorporation of ICMs in the design of the educational intervention during this study merited consideration.

Despite the repeated and prolonged calls for research in this area (e.g. Wingfield et al, 2004; Cooper et al, 2007a, 2007b; Benson et al, 2009; Latif, 2001a; Latif & Berger, 1997), there is a paucity of publications related to research with practitioners. Literature review, as presented in this chapter, was therefore extended to include more general research into moral reasoning competencies development using the DIT in educational contexts other than for pharmacists, and to various formats of educational intervention design used in studies involving other professions and/ or with undergraduate students, as might provide insight to pursue the research question. Previous studies undertaken were appraised in order to support the design of this study.

4.2. Moral reasoning competency development assessment using the DIT: the literature.

Design of this study particularly benefited from review of the following publications:

- (a) a meta-analysis of intervention studies using the DIT completed by Schlaefli et al (1985),
- (b) Penn's (1990) approach to teaching ethics,
- (c) Rest & Narvaez's (1994) book exploring moral development in the Professions and
- (d) a special issue of the journal of moral education (2002) dedicated entirely to a 'critical appraisal of the DIT and its overall impact on moral theory'.

References to assessments of key 'shorter' interventions are highlighted, even where they relate only to school or undergraduate programmes. Research outcomes of work by Bebeau (2009a, 2009b, 2008), as relevant to this thesis, are then summarised. This is followed by consideration of pharmacy-related publications that influenced the design of this study, namely the work of David Latif (e.g. 2000a, 2000c, 1998a, 1998b), and two relevant pharmacy specific reviews relating to DIT use i.e. Wingfield et al (2004) and Cooper et al (2007b). The section continues with an overview of key contemporary⁵⁰ publications that reported the use of the DIT2 with pharmacy students or pharmacists, in the Irish context and/or used it as a pre-post measure of the impact of educational interventions. An outline of the proposed educational intervention design is also provided.

4.2.1. A meta-analysis of intervention studies using the defining issues test.

Having posed the question 'Does Moral Education improve Moral Judgment?' Schlaefli et al (1985) completed a meta-analysis of 55 intervention studies, completed between 1972 and 1983, that used the DIT as a pre-post measure. Various types of interventions and extended programmes were employed across these studies, which Schlaefli et al (1985) summarised as '*group discussion of moral dilemmas, psychological development programmes, social studies and humanities courses*' (p. 319).

In context, intervention studies, which have been presented as a validity criterion for the DIT2 (Section 3.5.1, Table 3.3) are similar to the more commonly observed longitudinal

⁵⁰ i.e. 'a maximum time frame of 5-10 years is usually placed on the age of the works to be included... Seminal or influential works are the exception to this rule' (Cronin et al, 2008:40).

studies i.e. they test and retest the same subjects but, in contrast to longitudinal studies that generally run for at least 4 years (Rest et al, 1999b), educational interventions are '*usually shorter in duration*' and '*have more control over what experiences the subjects have between testings*' (Rest et al, 1999b:74).

Key findings indicated that the use of interventions involving discussion of dilemmas were most effective, and produced moderate results i.e. an effect size of .41 by comparison with the (meta-analysis) control group effect size of .09 (Section 3.5). The study also determined that interventions shorter than three weeks did not produce significant gains on the DIT, but that very long educational interventions (greater than 12 weeks) were not any more effective than interventions lasting from three to 12 weeks.

However, limitations included that (a) only 9 studies employed a fully randomised, experimental design thereby limiting the inferences that could be made further to statistical analysis, (b) a range of statistical analyses was used, thereby making it difficult to directly compare outcomes, (c) small sample sizes in some studies limited the potential for secondary analysis and/ or inferences that could be made, (d) all except five of these studies related to educational interventions provided as part of formal programmes, in primary or second level schooling or in college or university settings, where the participants were enrolled in those 'formal programmes', and (e) three of these five 'exceptions' related to in-service training for school-teachers and the remaining two studies related to adult church-goers – such contexts ((d) and (e)) potentially introducing bias to the findings.

None of the studies reported related to either pharmacy students or to pharmacists, indicating a gap in the literature as was identified to 1985 (Appendix 2).

4.2.2. Teaching ethics – a direct approach.

Penn (1990) argued that the moral discussion model is not, by itself, the most effective manner in which to impact on moral reasoning (as measured by the DIT). He proposed that educational interventions must also incorporate the cognitive skills of logic, role-taking (from individual, group and institutional perspectives) and the intellectual construction of concepts of justice. Where the 'dilemma discussion' model was considered to be based on the assumption that students could '*best develop principled moral reasoning if they discover it for themselves through group discussion*' (p. 126), Penn's approach was that students could '*best develop skills in principled moral reasoning if those skills [were]*

directly taught as applied to specific social issues' (Penn, 1990: 125-126). He used the analogy that students are not required to discover calculus for themselves – they are first taught the basic concepts.

Penn (1990) used the DIT as a pre-post measure of the impact of each of three variations of his ethics course design, and two comparison groups, over a five-year period. Paired t-tests for all three intervention groups were found to be statistically significant. Results indicated that, while gains varied amongst student cohorts from different disciplines, average pre-post changes in DIT scores for all three variations of the intervention design showed effect sizes nearly double those of the more successful moral education projects previously reported in the literature.

Mean P-Scores for the five groups, as measured pre engagement with the educational intervention(s), were compared. Differences were not found to be statistically significant at the .05 level - Indicating that by that measure (P-Score) the 5 groups were similar at the outset. However developmental phase scores (Section 3.5.4) were not reported. Neither does the study directly compare the three intervention designs used by Penn in his study.

4.2.3. Moral development in the professions: psychology and applied ethics.

Rest and Narvaez's (1994) book included reports of studies related to the assessment of the impact of educational interventions and programmes by a variety of researchers supportive of the theory (that moral development is both cognitive and developmental) and considered to be research active in 'moral development of the professions' at that time. The authors described a number of intervention studies involving various disciplines and concluded that the most successful programmes incorporated: self-reflection, role taking, instruction in moral and philosophical concepts considered critical to the development of moral reasoning competencies, and discussion of individual cases of (profession-specific) problem-solving.

Stephen Mc Neel (1994) considered '*how strong the impact of college is on moral [reasoning] development*' (p.28) and reported that some (i.e. business and education) students grew more slowly than others. He also confirmed the generalizability of Penn's (1990) approach, with results that indicated a modest effect size from a 16 week programme designed in accordance with Penn's direct approach – the effect size being '*about 80% of the average effect size associated with 4 years in liberal arts college*' (McNeel, 1994:41). Variation in impact (on moral reasoning scores as measured by the

DIT) on cohorts of students from different disciplines was reported, with gains being much sharper amongst business and education students taking the 16 week programme.

Three types of studies (e.g. Kirk, 2013; Bryman, 2012; Cohen et al, 2007; Gall et al, 2007) using the DIT were reported namely:

- (a) cross-sectional studies and/ or comparison between cohort studies - that compared one subgroup of professionals with another, as was particularly evident in the summary of studies presented by Ponemon & Gabhart (1994) in their summary of ethical reasoning studies in accounting and auditing (pp. 110-111), and also addressed by Duckett & Ryden (1994) in relation to nursing students,
- (b) longitudinal studies that compared students beginning a professional program with students finishing that program, and
- (c) pre-post intervention studies and/ or pre-post crossover studies - that used the DIT for pre and post evaluation of a specific course or educational intervention in moral education.

Elements of programme or intervention impact on moral development in the professions were evident throughout the publication (Rest & Narvaez, 1994). However, most related to analysis of the impact of sustained education through multiyear (professional degree) programmes e.g. longitudinal studies in nursing (Duckett & Ryden, 1994) and dentistry (Bebeau, 1994), both of which reported gains following the incorporation of ethics programmes into the curriculum, and teacher-training (McNeel, 1994; Chang, 1994), counselling (Sprinthall, 1994), accounting and auditing (Ponemon & Gabhart, 1994) and medicine (Self & Baldwin, 1994) none of which consistently found gains over the course of their programmes. While the impact of such programmes could be measured by the DIT, and it is relevant to note that research using the DIT was also widespread amongst other professions, the outcomes from such extended programmes are not directly comparable with this study. While some reports of short interventions in healthcare professional programmes were included e.g. in chapters by Self and his co-authors in the fields of both medicine and veterinary science (1994), they related to first year students on professional programmes, rather than to practitioners.

Rest & Narvaez's contributors continued to support the use of dilemma discussions in educational interventions, and they highlighted the increasing frequency with which the DIT was employed as a measure of the impact of educational interventions amongst these professions (Rest & Narvaez, 1994). However, as none of the studies reported related to either pharmacy students or to pharmacists, the perception that there was a gap in the

literature in this respect, as had been highlighted in the review by Schlaefli et al (1985), would appear to have continued to 1994.

4.2.4. The Journal of Moral Education 'Special Issue' 2002 Entitled: 'Critical appraisal of the DIT and its overall impact on moral theory'.

This special issue of the journal of moral education provided a history of the Minnesota approach and its impact on moral development theory and practice, and it emphasised educational issues (see Appendix 13 for summary of contents). Its eight articles encapsulated peer-reviewed update(s) of the mixture of 'promise' and 'concerns' related to the Minnesota approach in the context of education.

Contributions from four established researchers from outside the Neo-Kohlbergian tradition (Nucci, 2002; Puka, 2002; Rogers, 2002; Walker, 2002) articulated concerns and critique in the field including that (a) as psychometric forms of assessment (e.g. the DIT2) are based on previous developmental research, they are by definition derivative and unsuited for basic research on moral development e.g. Nucci called for '*a constant reciprocal interaction between the generation of standardised measures and basic developmental research*' (Nucci, 2002:315), a call repeatedly supported by Rest and colleagues (e.g. Rest et al, 1999b); (b) the Neo-Kohlbergian focus on development may lead to failure '*to take impediments that must be overcome seriously*' (Puka, 2002:339) e.g. close-mindedness, prejudice and stereotyping, as Puka suggested these might 'hamper' moral thinking; (c) Roger's proposed that, as a recognition measure, the DIT pulls forward the 'leading edge' of the participants' socio-moral perspective (Rogers, 2002) and therefore risks inappropriate claims to evidence of postconventional thinking, concerns discussed and addressed by Narvaez & Bock (2002); (d) evidence from Rogers' 'battery of instruments'⁵¹ challenges aspects of e.g. the FCM (Rogers, 2002), although such challenges, as related to the FCM, were addressed by Bebeau (2002); and (e) the '*cognitive bias and the scarcity of attention to moral judgement development in childhood*' (Walker, 2002:365), often confessed 'shortcomings' (Chapter 3), and addressed in this issue of the

⁵¹ Research by Rogers included use of a 'battery of instruments, such as the Measure of Intellectual Development (three essay scores, constructed in the context of Perry's 1970 theory of intellectual and ethical development), Sentence Completion Test (Lovinger's, ego development), Piaget's Moral Judgment Interview (MJ) in written format, Stages of Adaptation, Test of Cognitive Development (based on Piaget's theory of formal operations), Critical Thinking Appraisal (three subscales, inference, recognition of assumptions and deduction,.... and the Test of Thematic Analysis and Learning Style Inventory. Rogers states that '*none of these instruments exceeded the DIT in its capacity to simultaneously support ease of administration, ease of scoring, normative comparison, and overall interpretability of observed change*'. (Rogers, 2002:325)

Journal of Moral Education by Thoma (2002). However while all four authors critiqued some aspect of the Minnesota approach to moral development (Sections 3.3 and 3.4; Appendix 13), none of the concerns raised undermined the choice of the approach to address the central research question in this study.

These and other critiques by Nucci, Puka, Rogers and Walker were acknowledged and/ or addressed, in the same Journal (summary in Appendix 13), by researchers from 'within' the Minnesota approach i.e. the special issue incorporated a historical overview of the approach as articulated at the time (Thoma, 2002), a review of the impact of the DIT on research in higher education (King & Mayhew, 2002), consideration of the contributions of the DIT and the FCM to professional education (Bebeau, 2002) and an exploration of how the DIT is supported by cognitive science (Narvaez & Bock, 2002).

Support for the claim that an appropriately designed educational intervention can impact on moral reasoning and that the DIT should be considered a valid measure of moral reasoning therefore appears to have been universal amongst the eight authors. However, none of the authors reported studies related to either pharmacy students or pharmacists.

4.2.5. Muriel Bebeau: the DIT as a measure of moral development in dental students and dentists.

Research outcomes of work by Bebeau, as relevant to this study, i.e. with undergraduate dental students (e.g. Bebeau, 2008), practising dentists (Bebeau 2009a, 2009b), and in longitudinal studies of incoming graduates (e.g. Bebeau 2008), provided important additional background to this thesis.

Review of the impact of a dental ethics curriculum on moral reasoning using the DIT is encapsulated in Bebeau's representation of DIT effect sizes changes, between 1985 and 2006, from pretest to posttest for 23 cohorts of dental students (Bebeau, 2008). Effect sizes as high as .79 were achieved. Bebeau concluded that, on the basis that (a) an effect size of .35 indicates a statistically significant change attributable to an educational intervention (Schlaefli et al, 1985), and (b) the only years (of tuition in the dental school) that exhibited a negative effect size occurred when curriculum changes (including dramatic time reductions) occurred in 2000. From 2003 to 2006, these results from DIT assessment provided supporting evidence of the value of the ethics curriculum. However, while outline of curriculum changes (2003 to 2006) was reported, evaluation of the educational interventions provided by Bebeau and colleagues, in the context of providing confirmation

that no other changes occurred in the undergraduate programme at that time, has not been reported. Hence it is possible that other factors may have also impacted on DIT scores during 2003 to 2006.

Bebeau's work with the Minnesota dental licensing board during 1990 to 2005, wherein 41 professionals considered to have violated the Minnesota Dental Practice Act, as determined by the board, were referred for assessment and, pending the outcome of each assessment process, ethics instruction by Bebeau (Bebeau & Faber-Langendoen, 2014; Bebeau 2009a, 2009b). *'Instruction was required for those professionals whose pretest score was lower than the mean score for dental graduates on a particular measure'* (Bebeau, 2009b:36). This 'instruction' (Appendix 9) sought to address all four components of moral development (Section 5.5) and was adapted to suit participant needs. The DIT was used as part of the initial assessment of moral reasoning, and as an outcome measure at the end of the programme. Results indicated that changes in P-Scores⁵² *'pre their programme (m=36.9, SD=11.8, n=30) to post their programme (m=51.8, SD=14.5, n=30) were found to be significant and effect size was very large (d=1.28, p<.0001)'* (Bebeau, 2009b:37). This was a rare example of the use of the DIT as a pre-post measure of the impact of engagement, by practitioners, with an educational intervention. Limitations included that (a) Muriel Bebeau was both delivering the educational intervention (instruction) and in the role of researcher in each of these cases, and (b) the sample size is comparatively small. It was/ is a resource-intensive approach – both in terms of the face-to-face component and range of assessments involved in the intervention itself, and with respect to adaptation costs when the various assessment tools are first used in different contexts/ professions (Appendix 9). Bebeau (2008) also reported a decline in mean P-Scores over time for US students entering professional (dental) school at a Midwestern University (from 1998 to 2006) and, as a comparison, for US college students at a Southern University (1989 to 2006). She concluded that *'declines in cross-sectional samples support [their] observation that DIT scores have declined over the last twenty to thirty years'* (Bebeau, 2008:377) and both proposed explanations and called for further research to ascertain the reason for this decline. Regardless of its genesis, this insight alerted the researcher (in the current study) to the need to consider the year of data collection when interpreting whether outcomes from studies indicate that levels of moral reasoning determined are comparable (or not) with international peers.

⁵² Confirmed that it was P-Score, rather than N2-Score, directly with the author.

4.2.6. Pharmacy specific research publications that influenced the design of this research study.

Latif and Berger (1997) incorporated use of the DIT into a cross-sectional study that examined the moral reasoning of a cohort of first year pharmacy students in one school of pharmacy and a random sample of community pharmacist's in a city in the USA (Latif & Berger, 1997) – thereby seeking to infer developmental sequence from group differences. Findings indicated that the average P-Score achieved for the community pharmacist group (m=36.4, n=113) compared unfavourably with that achieved by students (m=42.47; n=77). Pharmacists also compared unfavourably with other professional groups, such as practising physicians (m=49.2) and staff nurses (m=46.3).

Interpretation of the findings should, however, take account of (a) the relatively small sample size(s) for a cross-sectional design i.e. cross-sectional design(s) should seek to use large composite samples, thereby reducing the probability that some other factor is systematically causing differences between the age/education groups (e.g. Kirk, 2013; Bryman, 2012; Cohen et al, 2007; Gall et al, 2007), and (b) the fact that the DIT questionnaires are reported to have been posted to the community pharmacists (with a cover letter) i.e. it is not clear what additional support (over and above a 'cover letter') may have been available to pharmacists by comparison with the students with whom P-Scores are compared (Latif & Berger, 1997) and/ or whether any additional such support may have biased results one way or another. Neither was there information provided as to whether or not the (older) pharmacists had less formal education than the students – a factor which could further confound results (Rest et al, 1999b; Rest 1979).

Subsequent investigations by Latif and Berger suggested that e.g.:

- a) there was a link between P-Scores and patient care performance scores (Latif & Berger, 1999),
- b) there were differences between scores obtained by pharmacists working in chain and independent pharmacies (Latif, 2000d),
- c) scores did not increase with tenure⁵³ as a pharmacist (Latif, 2001a) and
- d) community pharmacists were an exception to the expectation that moral reasoning competencies increase with age (Latif & Berger, 1997).

⁵³ Latif's studies used a 'systematic random sample of community pharmacists' and this '*sampling frame was obtained from the State's Board of Pharmacy*' (Latif & Berger, 1997:173). His various publications derived from this set of data. The reference to 'tenure' related to years of licensure and the inference was that this correlates with tenure in the community pharmacy setting.

Most of these studies were limited to one dataset collected in the USA in circa 1997 – hence the limitations and/ or confounds, as outlined above, are likely to apply. The majority of the reports related to pharmacy students (Appendix 14). Other than a report of a study related to undergraduate student' moral development at a school of pharmacy as published in 2009 (Latif, 2009) in which N2-Scores were reported, the P-Score was the only developmental index reported in any of Latif's publications.

Wingfield et al (2004) evaluated the scope of pharmacy ethics by undertaking a review of international discourse relating to ethical issues in pharmacy practice as published between 1990 and 2002. They prioritised literature in which '*ethical challenges arise*' for practising pharmacists in the delivery of healthcare '*per se*' and '*the delivery of healthcare in a business environment*' (2004:2384). Few publications that specifically addressed ethics in pharmacy practice were reported. In those in which ethical issues were targeted, the review clarified that the most common approach was to employ a '*scenario from actual pharmacy practice*' and then explore '*a variety of possible options to identify one or more defensible solutions*' (Wingfield et al, 2004:2383). This finding was consistent with Neo-Kohlbergian theory i.e. the employment of profession-specific dilemma discussions in curriculum design. Latif was described as being '*prolific*' in the area of moral reasoning and community pharmacy and identified as having used the DIT in many of his studies. A total of 18 citations of his work were identified, confirming that his work was '*visible*' to researchers exploring pharmacy ethics in 2002, and nine citations were included in discussion by Wingfield et al (2004) (Appendix 14).

Cooper et al (2007b) identified 20 empirical ethics studies in pharmacy and conveyed that '*problems*' were reported more often in the community setting than in other areas of pharmacy practice. They acknowledged the advantages of using student cohorts (rather than practitioners) as they '*represent an easier research group to recruit and investigate, and are, in effect, a convenience sample*' (Cooper et al, 2007b:85). However, they also surmised that '*findings*' might not be transferable (between community pharmacy and other contexts) on the basis that '*the pharmacy environment seemed to be important in terms of shaping the types of ethical dilemmas or problems encountered and also relevant in terms of influencing the ethical reasoning of the pharmacist*' (Cooper et al, 2007:85) i.e. even though research with and on practising pharmacists might have been less convenient, they highlighted that it was necessary that community pharmacy specific research be undertaken. Nine of the 20 studies published between 1997 and 2003 and reported in the review, (Appendix 14), were attributed to Latif and colleagues, and they were identified as the only authors to have employed the use of the DIT in empirical ethics research in

pharmacy. Notably Cooper and colleagues observed what they described as a 'chronological change in research approach and method' (2007b:83) over the 19 year period from 1986 to 2005 i.e. a change away from quantitative methodologies, as would have included the use of the DIT, to qualitative studies that adopted interview or focus group methods.

4.2.7. The DIT as used in educational interventions: review of contemporary research.

Contemporary pharmacy specific research, i.e. 'within 5 to 10 years' of this study (Cronin et al, 2008:40), that used the DIT is first summarised. This is followed by consideration of two studies that report DIT scores for Irish graduates and undergraduates students across a range of disciplines (O'Flaherty & Gleeson, 2014; Doyle & O'Flaherty, 2013), providing a rare insight to what might be considered Irish baseline DIT scores. Four publications that report on research in which the DIT was used as a pre-post measure of educational interventions, with any cohort of participants, are then considered.

4.2.7.1. The use of the DIT: pharmacy specific research.

Cognisant of the paucity of research in pharmacy, studies involving pharmacists or pharmacy students in any study were considered, to include: (a) studies that reported DIT scores of pharmacists practising in the community, (b) studies that used the DIT for pre-post evaluation of a specific course or intervention in moral education, and (c) studies that compared students beginning a professional program with students finishing, or at an advanced stage in, that program.

- (a) Roche & Henman (2008) presented summary developmental scores of pharmacists in Ireland, as measured using the DIT2. The study group comprised a convenience sample of pharmacists that attended a series of continuing education sessions, run by ICCPE, in Spring 2008. N2-Scores (m=31.75, SD=16.73, n=128) and P-Scores (m=35.36, SD=17.01, n=141,) were comparable with those reported by Latif & Berger (1997) i.e. mean P-Score in the Latif and Berger study was 36.4 (n=113). However limitations to the Irish study included that the DIT2 was completed at the beginning of a 2 hour evening CPD session, in a limited time-frame, and participant support regarding the format of the DIT2 may have varied with the number of attendees in any given venue.

While the majority of respondents were likely to have been community pharmacists⁵⁴, some may have been practising in hospital pharmacy or in other branches of the profession.

Betty Chaar and colleagues reported the outcome of a study that incorporated the analysis of the DIT completed by a selection of 1500 pharmacists in Australia (Chaar et al, 2009). Participants were randomly selected from the register of pharmacists, and received the DIT surveys by mail. Mean P-Score was reported as 32.88 (n=398, SD = 14.35), which is lower than scores reported by Latif and Berger (1997). The low response rate (31.3%) has the potential to mask differences between responders and non-responders, thereby limiting the inferences that could be made. Chaar and colleagues proposed that this limitation was addressed by confirming that the sample compared with national statistics for the workforce. It was unclear whether the sample recruited was confined to those working in community pharmacies – adding a further potential confound to the interpretation of results.

- (b) Prescott and colleagues (2014) reported that, in a pre-post longitudinal study in which the DIT was used to determine P-Scores for a group of first year pharmacy students in the UK (n=116) that opted to complete the DIT at the beginning (27.2, SD=11.6) and end (20.9, SD 11.6) of their 'first pharmacy course' (Prescott et al, 2014:2), P-Scores decreased significantly ($p<.05$) over the course of the study. The proportion of students that opted out of the study is not reported. P-Scores compared unfavourably with P-Scores previously reported for first year pharmacy students in Canada (40.59, SD= 14.21, n=64) and in the USA (32.76, SD=12.32, n=67) (Latif, 2002a).
- (c) Broeseker (2005: unpublished dissertation) surveyed a convenience sample of third year pharmacy students undertaking an *Ethics in Christianity and Health Care* course at a University in the USA using the DIT2 as a pre-post measure of the impact of the educational intervention. Data were collected over two years of offering the course, which occurred each spring semester (total pre-post matched responses of n=157). Results indicated that P-Scores pre (m=34.85%, SD=13.08) and post (m=33.98, SD=14.89) and N2-Scores pre (m=36%, SD=12.62) and post (m=36.75%, SD=13.11) were not impacted significantly by engagement with the educational intervention. However Broeseker also reported developmental phase indices (Section 3.5.4) results, which indicated that there may have been an impact on whether profiles were

⁵⁴ Although pharmacists in all areas of practice were welcome to attend ICCPE sessions, the organisation's remit was to provide continuing education opportunities for community pharmacists (Section 2.4).

consolidated or in transition during engagement with the educational intervention i.e. 'phase pre intervention ($m=1.47$, $SD=.50$) and post intervention ($m=1.58$, $SD=.50$) where transition=1 and consolidation=2' (Broeseker, 2005:87). It is not known whether Broeseker's dual role, as researcher and 'teacher', impacted on the study outcomes.

- (d) Gallagher (2011) employed a cross-sectional study design to assess moral reasoning, using the DIT, in pharmacy students at four levels of the four year undergraduate degree programme, and in fourteen members of faculty (one of whom was a medical doctor) at a University in the UK. Results indicated a highly significant increasing trend for N2-Scores by student level i.e. how much of the four year degree programme had been completed: level 1, entry to the programme ($m=27.90$, $SD=10.76$, $n=114$); level 2, completed year one ($m=31.71$, $SD=11.05$, $n=97$); level 3, completed year two ($m=33.21$, $SD=10.94$, $n=89$); level 4, completed year 3 ($m=39.96$, $SD=12.44$, $n=32$), and for faculty ($m=48.98$, $SD=9.09$, $n=14$). Gallagher reports that the students 'experienced significant moral growth throughout the course of their studies' (page 374). However, when used in a cross-sectional study design such as this, this conclusion that would not be supported by assessment with the DIT alone (Chapter 3).

The use of the DIT in research undertaken with pharmacists and pharmacy students continues, and recent research undertaken in Ireland, the USA, Australia and the UK has been reported (Prescott et al, 2014; Chaar et al, 2009; Roche & Henman, 2008; Latif & Berger, 1997). However reports of assessment of practising pharmacists using the DIT are rare and studies appear to have used a mix of face-to-face and mail delivery of questionnaires to respondents. No reports of the use of the DIT as a pre-post measure of the impact of engagement with an educational intervention on pharmacists' moral reasoning as measured by the DIT have been identified. This study sought to bridge that gap.

4.2.7.2. The Irish context: beyond the world of pharmacy.

Given that the context of the study group includes that participants were working in Ireland, research in Ireland that incorporated the DIT as a measure, with any cohort and as part of any study design in Ireland, was reviewed. 'Contemporary' publications (Cronin et al, 2008:40), which provide developmental indices scores against which scores obtained by pharmacists participating in this study might be compared, are considered.

Doyle and O'Flaherty (2013) examined the impact of education level (both undergraduate and post-graduate) and type (arts or technical/profession-based) on moral reasoning as measured by the DIT, where the data was collected during 2002 to 2009⁵⁵. Results of their cross-sectional study indicated that there was a significant difference between P-Scores identified for those not educated to degree level (m=28.22, SD=12.25, n=141) and those at degree level (m=33.80, SD=15.43, n=88). However P-Scores for those at post graduate level (m=30.85, SD=14.40, n=68) were not found to be (statistically) significantly different than those at degree level. Doyle and O'Flaherty concluded that '*it is undergraduate education that enhances moral reasoning, while post-graduate education appears to have little further impact*' (Doyle and O'Flaherty, 2013:389). However, it was a relatively small sample size(s) for a cross-sectional design and therefore the probability that some other factor is systematically causing differences between the education level groups ought to be considered. In addition, detail regarding the post-graduate experience, e.g. whether it was primarily 'face to face' or distant learning, was not provided, and this may have impacted on the level of student exposure to the 'moral milieu' of third level education (Bebeau & Monson, 2008; Rest et al, 1999b). Results also indicated that, were Doyle and O'Flaherty also divided participants with degree level education into two categories (arts and science/business/commerce), and reported that the difference between scores was not found to be significant. The study achieved a 48% response rate from which a usable sample of 311 scored DIT profiles was available for analysis. The three scenario version of the DIT was used, and they reported that it was '*administered by hand or by post to 845 individuals in Ireland*' (Doyle and O-Flaherty, 2013:386). Limitations included that non-responders may have been different to responders in some manner that introduced bias to the findings and the test environment, whether the DIT was administered 'by hand' or by 'post' also had the potential to impact on findings.

O'Flaherty & Gleeson reported the use of the DIT2 in a longitudinal study (2002-2006) of moral reasoning '*in a convenience sample of Irish undergraduate university students*' (O'Flaherty & Gleeson, 2014:57). Student cohorts in education, business, humanities, engineering, science and computer science courses completed the DIT2 at the beginning, midpoint and end of their degree course(s). Results indicated that, for the combined group(s) (n=259), there was a significant difference both between P-Scores at the beginning (m=25.91) and end (m=32.87) of the degree and between N2-Scores at the beginning (m=20.42) and end (m=29.78) of the degree course. P-Scores for students

⁵⁵ Confirmed, directly with the authors, that data related to accountants was collected during 2009 and data related to undergraduate student was collected during 2002 to 2006.

undertaking a humanities degree course were highest of the six academic disciplines surveyed at both the beginning ($m=29.42$, $n=36$) and end ($m=37.75$, $n=36$) of the degree course. However, O'Flaherty & Gleeson reported that '*no significant relationships emerged between P-Score and academic discipline*' (2014:65). The authors concluded that, when compared with their international peers, Irish students' gains in P-Scores during university education are similar, but the scores achieved by Irish students at entry to higher education were lower than the average ($m=32.32$) reported from review of an international database held at the CSED (Bebeau & Thoma, 2003).

4.2.7.3. The DIT as a pre-post measure of educational interventions.

Consideration is given to publications, additional to those previously reviewed, that report on research in which the English version of the DIT was used as a pre-post measure of educational interventions with students on undergraduate programmes in an interprofessional healthcare ethics course (Self et al, 2013), physical therapy (Swisher et al, 2012), business (Jones, 2008) and computer science (Staehr & Byrne, 2003).

Self and colleagues (2013) investigated the impact on an interprofessional healthcare ethics course, involving a weekly two-hour session for each of 16 weeks, on N2-Scores of participating medicine ($n=114$), nursing ($n=59$), pharmacy ($n=5$) and chaplaincy ($n=2$) students. Of the 311 students on the course, 58% agreed to participate. Pre intervention N2-Scores were reported for medical students ($m=40.14$, $n=114$), nursing students ($m=37.99$, $n=59$) and pharmacy students ($m=34.70$, $n=5$). Self and colleagues reported that none of the pre-post increases in N2-Scores, for either the combined group, or for the individual groups studying medicine, nursing or pharmacy, were found to be significant. The chaplaincy group ($n=2$) was determined to be too small to analyse reliably. Previous studies had shown increases in scores for students in medicine (Self et al, 1994) and Self and colleagues speculated that the reasons for this study being different to previous studies in this regard might include: (a) that class sizes had increased, (b) there were changes in curriculum content and methods of delivery, (c) students had not previously attended class while also using potential distractors such as laptops, tablets and smartphones and (d) '*most disconcertingly ... students were from several different healthcare professions whereas in previous studies the students were all medical students*' (Self et al, 2013:185). The online version of the DIT2 was used and the study took place in a university in the USA. However, the sample size of pharmacy students was very small and the numbers of pharmacy students that did not participate is not reported. There may

have been differences between non-participants and those in the study. The use of the online version of the DIT2 introduces an additional variable that must be considered when interpreting findings. It is also possible that factors unrelated to the ethics course may have impacted on students undertaking different programmes e.g. course material in other subjects during the time period during which students engaged with the ethics course.

Swisher and colleagues, (2012) investigated the impact of a six-week ethics course, which was designed to stimulate moral reasoning competencies development and which reported to draw on the FCM, on DIT2 scores of 37 final year physical therapy students. The authors referred to the inclusion of '*transformative learning, self-knowledge/reflection, relationships between ethical and clinical knowledge, and responding to ethical disequilibrium*' (Swisher et al, 2012:167) in the pedagogical approach. Of the 54 students that took the course, there was a usable response rate of 69%. Changes in N2-Scores pre ($m=35.2$, $SD=15.3$, $n=37$) to post ($m=39.7$, $SD=16.0$, $n=37$) were found to be significant ($t(36)=-2.94$, $p=.006$). Increases in P-Scores were not found to be significant. Developmental profile and phase indices (Section 3.5.4) pre-post the educational intervention were also reported but changes were not found to be significant for the combined group. However when the 37 students were divided according to whether they were identified, before the course began, as type 7 or as one of the other 6 types (Table 3.5), increases in the N2-Scores of those in the latter group were found to be significant (Pre $m=28.4$; post $m=34.4$; $t(26)=-3.16$, $p=0.004$). The authors concluded that (a) the six-week ethics course, as designed, developed and delivered for their study, could be effective in producing gains in N2-Scores, and (b) the impact on N2-scores reported for different types may support the perception of need for different educational strategies based on differences in types – as had been previously proposed by Thoma & Rest (1999). However the relatively small sample size has the potential to limit the claims that may be made, especially with respect to analysis by type.

Jones (2008) investigated changes in business students' ($n=114$) moral reasoning following five 75-minute classes on business ethics delivered, in a University in the USA, over a period of three weeks. The classes were combined with two assignments that he described as representative of '*a novel pedagogical approach designed to foster ethical reasoning skills*' (Jones, 2008:367) i.e. individual and team-based analysis of, followed by peer review of, each of two specifically prepared cases. His study design included a control group ($n=76$) and there was a nine week gap between pre-intervention DIT completion and the three week period during which the five 75 minute classes were delivered. The post intervention P-Scores were derived from a questionnaire completed one and half weeks

later (i.e. in total, the gap between completion of the pre and post DIT questionnaires was more than three months). The report did not specify whether the DIT1 or the DIT2 was used. Results indicated that increases in P-Scores pre-post this short educational intervention were found to be significant i.e. *'adjusted means were 36.77 vs 31.28: $F(1,187)=5.86, p<.05$ '* (Jones, 2008:374). Jones concluded that this ethics course, as designed, developed and delivered for this cohort of business students, produced gains in P-Scores that analysis found to be significant. He also proposed that the educational intervention comprised *'substantially less training time than the three week minimum shown to be necessary for increasing cognitive moral development by (Schlaefli et al, 1985)'* (Jones, 2008:375). However, the use of control groups (rather than crossover study design), has limitations (e.g. Kirk, 2013; Bryman, 2012; Cohen et al, 2007; Gall et al, 2007). In addition, the extent to which Jones' dual role, as researcher and 'teacher', may have impacted on the study outcomes is unclear.

Staeher & Byrne (2003) used the DIT2 with a cohort of 14 final year undergraduate computer science students in Australia, in a controlled pre-post design incorporating DIT2 questionnaires completed on weeks two and 13 of a semester in which a four week computer ethics component was delivered to students. The intervention both included dilemma discussion and exposed students to Kohlberg's theory. Allocation to test (n=7) and control (n=7) groups was dependent on whether the students had enrolled in a 'professional environment' component during that semester, and was therefore not random. Five usable pairs of pre-post results were available for analysis from each of the test and control groups. *'Results show that the two groups are non-equivalent'* (Staeher & Byrne, 2003:232) i.e. control group N2-Scores pre (m=50.40, n=5) and post (m=56.46, n=5) the educational intervention exceeded those of the test group pre (m=29.37, n=5) and post (m=41.64, n=5) by an average of 18 'points'. The authors report that *'the experimental group exhibited a significantly larger increase in the N2 index than the control group with a treatment effect size of 0.43 indicating a moderate effect'* (Staeher & Byrne, 2003:233). However the small sample size(s) combined with the non-equivalence of the control and test groups, indicated that appropriate caution should be exercised when interpreting results of this study.

4.2.8. Summary.

Review of the literature did not identify any reports of studies where the impact of any educational intervention on the moral reasoning competencies of community pharmacists,

as measured by the DIT, was determined. Neither did it identify that the impact, as measured by the DIT, of any similarly delivered educational intervention has been determined for cohorts of practitioners in other professions.

Nonetheless, literature review did provide guidance as to how an educational intervention might be designed to be more likely to impact on moral reasoning competencies, including that it should:

- be more than three weeks in duration, but not necessarily much longer than 12 weeks duration (Schlaefli et al, 1985),
- incorporate dilemma discussion (e.g. Staehr & Byrne, 2003; Rest & Narvaez, 1994; Schlaefli et al, 1985),
- seek to incorporate the cognitive skills of logic, role-taking and the intellectual construction of concepts of justice (Penn, 1990),
- accommodate participant completion of the DIT, in a consistent manner, at the beginning and end of the intervention (Prescott et al, 2014; Self et al, 2013; Journal of Moral Education Special Issue, 2002) (Appendix 13),
- require participants to consider profession-specific concepts as validated by practitioners (e.g. Bebeau, 2008).

The literature also identified that most of the studies that have used the DIT as a pre-post measure of educational interventions have used student cohorts. Cooper et al (2007b) describe this as 'a convenience sample', as they are 'easier to recruit and investigate', and 'are usually logistically, financially and temporally easier, as they may be closer to the researcher on campus, require less remuneration (if any) for participating, and also have perhaps more time to spare in comparison with practising pharmacists' (Cooper et al, 2007b:85). The researcher in this study therefore accepted that neither recruitment nor retention of participants would be as 'convenient' as a student cohort.

The research environment was also already 'in situ' for Cooper et al's (2007b) 'convenience sample', whereas that 'environment' needed to be created for this study. The creation of a suitable 'learning environment' (Vai & Sosulski, 2011) and appropriate design of the educational intervention – to include the provision of sufficient supports for participants new to the pedagogy employed and timetabling aligned with the ebb and flow of the operation of a community pharmacy in Ireland (Chapter 2) - all required consideration in the design of the intervention for this study i.e. the researcher also accepted that substantial effort would be required in order to make the intervention itself likely to both

impact on moral reasoning competencies development and continue to be attractive to potential participants to the end of the 16 week time-frame.

4.3. The Neo-Kohlbergian influence on the design of the educational intervention.

The design of the educational intervention was therefore underpinned by a number of perspectives related to Neo-Kohlbergian theory including that:

- the DIT, administered to the group both pre and post engagement with an educational intervention is a valid measure of moral reasoning competencies development (Section 3.5),
- active learning techniques and the use of dilemma discussions are favoured (e.g. Penn, 1990; Schlaefli et al, 1985),
- the system for development of a series of profession-specific ICMs as adapted is appropriate to the context of this study (Section 3.5.10), and
- an intervention duration of 16 weeks could, depending on design and pedagogy employed, be appropriate (Schlaefli et al, 1985).

The primary objective of this thesis was to identify whether engagement with an educational intervention impacted on moral reasoning competencies development as measured by the DIT (Jensen & Greenfield, 2012; Swisher et al, 2012; Liu et al, 2012; Penn, 1990) in the study group of community pharmacists. The researcher concluded that pedagogies engaging individual and social-constructivist methodologies (e.g. Sections 1.3, 3.5.5 & 4.2.2), including the forcing of participants to role-play (Penn, 1990) and 'take a position' (Hew & Cheung, 2011), could further support the development of moral reasoning competencies (Thoma et al, 2008; Penn, 1990) in this cohort.

The manner in which five profession-specific ICMs were developed by the researcher for use in this study emphasised the need for individual and social-constructivism by participants (Treleaven & Voola, 2009). All five ICMs were incorporated into the educational intervention. The profession-specific context of the scenarios increased the likelihood that moral development would be impacted (Maeda et al, 2009; Bebeau & Monson, 2008; Thoma et al, 2008). The requirement that each participant first independently identify ethical concepts in the dilemma, and state, with justifications, what action she would take, before rating and ranking given options introduced critical and

independent thinking, logic and role-play (Maeda et al, 2009; Penn, 1990) to the process. The online environment was used to require individuals to record their choices regarding action options when faced with a dilemma, and then, having individually 'taken a position' (Hew & Cheung, 2011; Hrastinski, 2009), to stimulate discussion and debate by requiring groups to post an agreed decision by a defined point in time. The interactive 'social constructivism' designed into the group decision-making regarding most and least preferred action options, accommodated the underlying perspective that moral functioning is developmental and that a multi-dimensional approach must underpin the meta-cognitive demands of postconventional moral reasoning (Bailey et al, 2010; Rest et al, 1999b).

The risk that practitioners might display, during discussions on ethical dilemma scenarios, 'poor professional performance' or 'professional misconduct' is real and has consequences for registered pharmacists as they adhere to the CoC (PSI, 2009) (Section 2.3.1.1). Active management of online discussion fora by a knowledgeable facilitator (in this case, the researcher) and the assurance of confidentiality of participants in the online environment was therefore prioritised at the design stage.

Delivery design incorporated a blended learning format (Vai & Sosulski, 2011), where the researcher interacted as both face-to-face tutor and online facilitator, in order to accommodate the demands of the intervention and the challenges that face-to-face sessions posed for participants living/working in geographically remote locations. Resources and supports, referred to as 'scaffolding' online, were identified to participants during the first (face to face) day of the intervention, and available to participants throughout. As the increased workload⁵⁶ in community pharmacies at month end was familiar to the researcher, these dates were avoided when scheduling activities and task completion dates.

4.4. Summary.

This chapter has provided background to, and summary of, research in which an educational intervention was employed with the objective of impacting on moral reasoning competencies development, as measured by the DIT, relevant to the aims of this study.

⁵⁶ The researcher was a practising community pharmacist and therefore familiar with the PCRS and patient paperwork and billing requirements that add to workload close to the end of each calendar month.

The DIT2 has been validated as an objective measure of moral reasoning in many contexts, and the use of educational interventions to impact on moral reasoning as assessed by the DIT2 is an established validity criterion. Neo-Kohlbergian theory supports the concept of repeated engagement with profession-specific dilemma discussions to facilitate moral development. Although it is known that the use of educational interventions to impact on moral reasoning is effective in undergraduate settings in several disciplines (e.g. Self et al, 2013; Swisher et al, 2012; Bebeau, 2008; Latif & Berger, 1997; Jones, 2008; Staehr & Byrne, 2003), and in personalised programmes for practising dentists (Bebeau & Faber-Langendoen, 2014; Bebeau, 2009a, 2009b), there has been no similar research into moral reasoning competencies development in community pharmacists identified in the literature. Hence, despite the many limitations of a study design involving a group of volunteers engaging with an educational intervention in a blended learning format, this study seeks to bridge this gap.

The objective of this thesis is to investigate whether a profession-specific educational intervention, as designed, developed and delivered during this study, impacts on the development of moral reasoning competencies in community pharmacists in Ireland, and whether the context of the study group, community pharmacists working in Ireland, precludes comparison of DIT2 results with outcomes from other studies. The methodology used to recruit pharmacists to the study, to survey them with the DIT2 and other specifically prepared questionnaires, to develop and deliver the educational intervention and to analyse the outcomes from the study are discussed in Chapter 5.

Chapter 5 - Methods.

5.1. Introduction.

The aim of this chapter is to provide a critical discussion of key issues and challenges which underpin the choice of methodology, to contextualise findings from the literature in the context of the study environment – community pharmacy in Ireland and to detail the methods used in this study.

An overview of the rationale for the choice of research methodology is first provided, followed by presentation of the theoretical and conceptual perspectives underpinning the design of the study. The use of the DIT2 as the assessment instrument, challenges related to the development of the educational intervention and the process used to invite participants to engage in the study are also considered. Details regarding the delivery of the educational intervention are presented, followed by an outline of the analysis plan.

5.2. Overview of methodology.

The aim of this study was to consider the impact of a profession-specific educational intervention, designed, developed and delivered during this study, on moral reasoning competency/ -ies development in community pharmacists in Ireland, as measured by the DIT2. The study sought to investigate whether aspects of theory, as supported by the existing evidence base relating to the Neo-Kohlbergian approach to moral reasoning competencies development, might be generalised to Irish community pharmacists. The choice of methodology was therefore influenced by review of methodologies generally used for studies in the social and behavioural sciences (e.g. Kirk, 2013; Bryman, 2012) and in education (e.g. Cohen et al, 2007; Gall et al, 2007) and by the underpinning theory, i.e. the Neo-Kohlbergian approach to moral development in the professions (e.g. Rest et al, 1999; Rest & Narvaez, 1994; Sections 3.6 and 4.2). The literature search, as updated to December 2014, is represented as a Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) flowchart (adapted format - see Figure 5.1).

5.2.1. Methodologies in social and behavioural sciences and in education.

Social science researchers are particularly influenced by two⁵⁷ schools of thought: (1) 'positivism, the epistemological doctrine that physical and social reality is independent of those who observe it, and that observation of this reality, if unbiased, constitutes scientific knowledge' (Gall et al, 2007:16), and (2) constructivism (also referred to as constructionism), an opposing epistemology which is a doctrine based on the assumption that reality is socially constructed, in the form of interpretations by the individual who participates in it, and that reality is then transmitted to members of a society by various social processes (Gall et al, 2007). Where underpinning assumptions are positivist, the study is commonly referred to as quantitative research, whereas constructivist assumptions underpin what would be termed qualitative research (e.g. Kirk, 2013; Bryman, 2012; Cohen et al, 2007; Gall et al, 2007).

This study takes a 'deductive approach' (Bryman, 2012:19) and the nature of the relationship between Neo-Kohlbergian theory and this research supports the use of a quantitative positivist approach (Kirk, 2013; Bryman, 2012). The approach assumes that the identified competency is a construct that can be assessed (e.g. Cohen et al, 2007; Gall et al, 2007) i.e. in this study, there is a quality associated with individuals that can be properly called 'moral reasoning competency/-ies' and it can account to some degree for performance on the DIT2 (see Sections 3.4 and 3.5, and Table 3.3). Empirical evidence supports the validity and reliability of the DIT2 as a measure of change in moral reasoning scores (e.g. Thoma, 2006; Rest et al, 1999b, 1997b; Thoma & Rest, 1999; and Sections 3.4 and 3.5). The quantitative positivist approach also assumes objectivity i.e. that potential biases will be managed and that an appropriate study design will be employed (e.g. Kirk, 2013; Bryman, 2012; Cohen et al, 2007; Gall et al, 2007).

5.2.2. Study design.

Various pre-post, or 'repeated measures', intervention design(s) were considered for this study, i.e. potentially employing varying numbers of groups exposed to the intervention(s), with or without control groups and with the intervention(s) introduced to groups in different 'orders' (- for a complete list of nine potential designs see Cohen et al, 2007:275). As developmental theories are primarily interested in directional changes within the individual, or how an individual changes over time, pre-post intervention designs, a format

⁵⁷ A third school of thought, phenomenology i.e. 'reality as it appears to individuals' (Gall et al, 2007:491), is sometimes referred to as a key school of thought in social sciences, or education research.

of repeated measures design, are commonly chosen for studies seeking to evaluate the impact of educational interventions on cognitive moral development using, for example, DIT2 scores (e.g. Kirk, 2013; Bryman, 2012; Cohen et al, 2007; Gall et al, 2007; Field & Hole, 2003; Rest et al, 1999b).

In repeated measures designs, each participant is 'measured' or 'observed'⁵⁸ before, and one or more times after, an intervention (Kirk, 2013; Bryman, 2012; Cohen et al, 2007). Repeated measurements are made on the same individuals and analysis can take account of related correlation e.g. with respect to the impact of the intervention on those individuals (Kirk, 2013; Field & Hole, 2003).

Cohen and colleagues specify several key features included in a 'true' experiment (Cohen et al, 2007):

1. One or more control groups.
2. One or more experimental groups.
3. Random allocation to control and experimental groups.
4. Pre-test of the groups to ensure parity.
5. Post-test of the groups to see the effects on the dependent variable.
6. One or more intervention(s) to the experimental group(s).
7. Isolation, control and manipulation of independent variables.
8. Non-contamination between the control and the experimental groups.

Absolute 'random allocation ... to groups' and the 'isolation, control and manipulation of independent variables' was accepted as unlikely in the 'real world' context of this study and the volunteer status of participants (Kirk, 2013; Bryman, 2012; Cohen et al, 2007; Gall et al, 2007).

Random allocation to control and experimental groups increases the likelihood of equivalence, between experimental and control groups, factors or characteristics that might affect the experimental variables in which a researcher is interested (Kirk, 2013; Bryman, 2012; Cohen et al, 2007; Gall et al, 2007; Field & Hole, 2003) i.e. any so-called 'clouding effects' should be present in both groups. Randomised Controlled Trials (RCTs), if

⁵⁸ Naturalistic observation involves '*observing individuals or events in their natural setting without using manipulative interventions or measuring techniques that might intrude on the setting*' (Kirk, 2013:8). It is a passive form of research in that it is the individual that is being observed that determines the events that are available to be recorded. '*The collection of observational data may occur with, and without, research participants' awareness*' (Gall et al, 2007:262).

conducted according to Cochrane studies (The Cochrane Collaboration, 2011), carry the lowest risk of bias across a range of risks and, in particular, reduce 'the risk [that] *'reactivity and experimenter effects'* (Field and Hole, 2003:61), i.e. bias, would threaten internal validity. The Cochrane Collaboration⁵⁹, in reference to standards associated with a RCT is considered to be the 'gold standard' with respect to strict randomisation to groups (Cochrane, 2015a). Where the method of allocation to groups is known, but not considered strictly randomised, Cochrane generally considers such studies as 'high risk' with respect to inclusion in a Cochrane review and refers to these studies as 'quasi-randomised'⁶⁰ (Cochrane, 2015b). Researchers in social sciences and education refer to 'quasi-experiments' (Kirk, 2013) or 'quasi-experimental' design (Bryman, 2012; Cohen et al, 2007; Gall et al, 2007; Campbell & Stanley, 1963). In educational research '*random assignment of participants to control or experimental groups*' is often not possible (Cohen et al, 2007:282) - at best researchers may control who is measured, but lack control over the when and amount of exposure to the independent variable. The use of volunteers, who '*are likely to be a biased sample of the target population*' (Gall et al, 2007:186) and whose attendance at face-to-face days could not be ensured in this study design, further limits the researcher's control of the process of randomisation to groups.

Clarity with respect to the randomisation process supports the process of making valid inferences in experimental research (Kirk, 2013) i.e. '*statistical conclusion validity is concerned with threats to valid inference making that result from random error and the ill-advised selection of statistical procedures*' (Kirk, 2013:16). The use of a Consort flow chart (Consort, 2010) was therefore employed in the study design in order to comprehensively record the process of participant allocation to groups in this study.

Isolation, control and manipulation of independent variables may, in theory, be achieved in laboratory conditions controlling two or more groups in a '*specialty contrived, artificial environment*' (Cohen et al, 2007:274). 'Field' studies, in which the setting is the practice setting ('real world') rather than a laboratory, have less control over experimental

⁵⁹ The Cochrane collaboration defines the standards associated with a Randomised Controlled Trial, (RCT), also called a randomised clinical trial, as guides for decisions related to inclusion of studies in Cochrane Reviews. These are systematic reviews of primary research in human health care and health policy which the Cochrane Collaboration states are internationally recognised as the highest standard in evidence-based health care resources. Trials eligible for inclusion in Cochrane reviews are classified according to the (Cochrane researcher) reader's degree of certainty that random allocation was used to form the comparison groups in the trial (Cochrane, 2015a).

⁶⁰ If the author(s) do not state explicitly that the trial was randomized, but randomization cannot be ruled out, the report is classified as a CCT (controlled clinical trial). The classification CCT is also applied to quasi-randomized studies, where the method of allocation is known but is not considered strictly random, and possibly quasi-randomized trials (Cochrane, 2015b). Where randomisation is uncertain a study would be categorised as 'high risk' by Cochrane.

conditions or extraneous variables than experiments undertaken in laboratory conditions (e.g. Kirk, 2013; Bryman, 2012; Cohen et al, 2007; Gall et al, 2007). Such variables may include participant engagement with the intervention and situational factors – all of which vary for community pharmacists (e.g. Phipps et al, 2011; Cohen et al, 2007).

The use of non-equivalent test and control groups, i.e. studies where groups are not sufficiently 'matched', militate against a researcher being able to attribute changes identified to engagement with the 'educational intervention' (Cohen et al, 2007; Campbell & Stanley, 1963). In this study, where the identity of volunteers was to be kept confidential from the researcher, it would not be feasible to match separate test and control groups. As a result, the use of separate test and control groups was not further considered.

Repeated measures designs require that participants in the experimental groups are tested under two or more 'experimental' conditions (Kirk, 2013; Bryman, 2012; Cohen et al, 2007; Gall et al, 2007; Field & Hole, 2003). In this study participants were tested pre-post engagement with the educational intervention, and pre-post 'no engagement with the educational intervention' (during which time participants are part of a control group). This is a variant of the 'matched pairs' design (Cohen et al, 2007) – but offers more potential as it is exactly the same person receiving different interventions. The design is useful where the researcher cannot be assured that individual differences will not obscure intervention effects (Cohen et al, 2007) as it provides potential for these individual differences to be controlled e.g. participants may begin the study at various levels of moral reasoning competency/-ies development as measured by the DIT2 (Chapter 3 and 4).

A crossover⁶¹ element was added as perceived advantages of this study design included that (1) participants serve as their own controls, thus reducing sample size required, and (2) all subjects are provided with the opportunity to engage with the educational intervention (Kirk, 2013; Bryman, 2012; Cohen et al, 2007; Gall et al, 2007). The educational intervention (the independent variable) was scheduled to be delivered twice in a repeated measures crossover study design i.e. it was delivered once to each group in sequence. As each group would act as the control to the other, participants would complete the DIT2 (the dependent variable) three times, at 16 week intervals, during the study. However, as engagement with the educational intervention was likely to be

⁶¹ Random controlled 'Crossover' trial is used in healthcare/biomedical research only if the 'outcome' (or symptoms of the drug or effect of the healthcare intervention) is reversible with time and a defined wash-out' period must be observed (Cochrane, 2015b). In the field of cognitive moral development experimental research using the DIT2 this concept will not generally be accommodated i.e. the developmental aspect is not (intended to be) reversible (e.g. Rest et al, 1999b).

developmental (e.g. Rest et al, 1999b; Chapter 3 and 4), a carry-over effect following completion of engagement with the educational intervention could not be ruled out and was accepted as a potential confound. Order effects may be a consideration in crossover studies with more than 2 groups and 2 interventions i.e. the order in which the 'interventions' are sequenced may have an effect on the outcomes (Kirk, 2013; Bryman, 2012; Cohen et al, 2007; Gall et al, 2007; Field & Hole, 2003), although random assignment of participants to each sequence (i.e. engagements with the educational intervention prior to acting as a control, or after a period spent acting as a control), has the potential to overcome the impact of such order effects.

It was anticipated at the outset that the sample size in this study would be small (Chapter 4). It is generally agreed that the principle of randomisation has a chance to operate as a powerful control and enable secondary statistical analysis (Kirk, 2013; Field & Hole, 2003) only when large numbers of subjects are included in experiments of this nature. As smaller sample sizes have the potential to bias against findings (Kirk, 2013) as to the impact of engagement with an educational intervention as used in this study, (small) sample size was accepted as a challenge to the study aim. Efforts to determine what might be a 'correct' sample size '*depends on the purpose of the study and the nature of the population under scrutiny*' (Cohen et al, 2007:101). In this study the null hypothesis was that there would be no change in participant moral reasoning scores, as measured by the DIT2, pre-post engagement with the educational intervention delivered during the study, and therefore the effect size is the parameter of primary interest. The general rule of thumb, in correlational research, is that a minimum of 30 participants is desirable (e.g. Tavacol & Sandars, 2014; Kirk, 2013; Cohen et al, 2007; Gall et al, 2007). This number is generally considerably smaller than the sample size that might be determined for a '*definitive randomised controlled trial*' (Campbell et al, 2000:695)⁶².

Reference to small sample size, in the context of this repeated measures crossover study, should be distinguished from use of the term pilot study⁶³ in social science and/ or education research. A pilot study may be used in two different ways; (a) it can be used to pre-test or try-out e.g. data collection methods, research procedures or a self-completion

⁶² e.g. If a researcher was to seek to recruit a sample that would be likely to detect a moderate effect size as determined by Cohen (conservative value of $d=.3$), alpha error probability $p=.05$ and power $=.80$, two-tailed test, the sample size required for this study would be determined as 82 participants (e.g. Kirk, 2013; Field, 2009). '*p values are affected by the size of the treatment effects as well as the size of the sample*' (Kirk, 2013:134). Further details related to effect size, Cohen's effect size d and p -values (alpha error probability) as used in this study are introduced in Section 5.9.

⁶³ Pilot studies are a smaller version of a main study used to test whether the components of the main study can all work together. It includes an assessment of the primary outcome of the RCT (NIHR, 2015).

questionnaire (Bryman, 2012; Cohen et al, 2007; Gall et al, 2007) in order to address logistical issues associated with the research strategy and thereby giving advance warning whether proposed instruments are inappropriate or too complicated and/ or (b) 'pilot study' can refer to feasibility studies⁶⁴, which are small scale version(s) '*done in preparation for a major study*' (Polit et al, 2001:467). The term 'feasibility' study is not commonly utilised in educational research references (e.g. 'feasibility' is not indexed in, for example, Kirk, (2013), Bryman, (2012), Cohen et al, (2007), or Gall et al, (2007). In this study the Virtual Learning Environment (VLE), known as Moodle, used in the delivery of the educational intervention was being piloted in the University. Pre-testing was therefore desirable - to include technical and procedural aspects of the VLE settings, and participant access to resource materials and activities. The use of four⁶⁵ pharmacists, referred to as a 'pre-group'⁶⁶, to complete such pre-testing was therefore introduced to the study design.

In summary, unless experiments take place under laboratory conditions, experimental conditions are likely to differ and these differences have the potential to lead to experimental error where the results might not actually be entirely due to the independent variables in research questions (e.g. Kirk, 2013; Bryman, 2012; Cohen et al, 2007; Gall et al, 2007). Field experiments require active management of features if they are to avoid negative connotations associated with reference to 'quasi-experiments' (e.g. Bryman, 2012; Cohen et al, 2007; Campbell & Stanley, 1963) and with the associated risk that 'findings' from studies with a quasi-experimental design would be justifiably discredited. However some compromise in the experimental design, as compared with 'true' research, may be accommodated in educational research, and quasi-experimental design is '*an apt description when applied to much educational research where the random selection or random assignment is impracticable*' (Cohen et al, 2007: 283).

This research used a repeated measures 'pre-post intervention' design (Kirk, 2013; Bryman, 2012; Cohen et al, 2007; Gall et al, 2007; Field & Hole, 2003) in order to evaluate changes in the moral reasoning scores of community pharmacists in Ireland as measured by a questionnaire form of survey known as the DIT2. The methodological approach

⁶⁴ A feasibility study is a piece of research done before a main study in order to answer the question 'can this study be done?' (NIHR, 2015). It tries out only parts of the design in order to support the development of an RCT i.e. the purpose of most feasibility studies and pilot studies should be to describe information and evidence related to the successful implementation and validity of a planned main trial (Tickle-Degnan, 2012).

⁶⁵ Baker (1994) found that a sample size of 10% to 20% of the sample size for the actual study is a reasonable number of participants to consider enrolling in a 'pilot'.

⁶⁶ This group was referred to as a 'pre-group' – to avoid confusion with reference to the Moodle Pilot undertaken in the HEI, of which this study was a part.

determined to be most suitable was that of a repeated measures crossover study, in which each of the two groups also acted as a comparator for the alternate group (see Table 5.1). Anticipated short-comings in the randomisation process were managed by use of random controlled trial (RCT) methodologies to catalogue participant allocation to groups. The first group engaged with the educational intervention April to August 2011 (n=16) and the second group did so between August and December 2011. This facilitated comparative analysis between similar populations at more than one point in time (pre and post engagement with the intervention) and afforded the study the opportunity to also compare different groups (Kirk, 2013; Bryman, 2012; Cohen et al, 2007; Gall et al, 2007; Field & Hole, 2003; Schlaefli et al, 1985).

It involved participant engagement with a short educational intervention and incorporated measures from the DIT2 taken before and after the intervention, that is, differences between scores from the same individuals, and differences between groups could be compared statistically (Cohen, 1990). This allowed the researcher to describe relationships among variables prior to the intervention, to identify changes in variables during the intervention, and to measure the same variables pre and post a control period.

The educational intervention was designed by the researcher, and developed and delivered specifically for the purpose of this study and the VLE (Moodle) was adapted to accommodate the research study design. The interventional aspect of the study involved tracking participants over a 16 week period as they engaged with the blended learning programme, though the need to maintain confidentiality of participant identity made the study design complex at an administrative level. Community pharmacists in Ireland, who volunteered for the study and for whom there was no remuneration or specific academic credit, were the population under study. Sampling by random selection from the register of pharmacists, where time and financial costs to participants were significant, was not a viable option. Participants, all working in community pharmacy in Ireland for a minimum of three years directly prior to the study, volunteered following invitation through the pharmacy press. Despite perceived limitations with respect to the representativeness of volunteers, and the expectation that attrition rates were likely to be high, the volunteers nevertheless provided a snapshot of the population (of community pharmacists working in Ireland) at a particular point in time.

5.2.3 Literature search.

SCOPUS⁶⁷, Web of Science⁶⁸, PsycINFO⁶⁹, ERIC⁷⁰, CINAHL⁷¹, PubMed⁷², Cochrane⁷³ and ProQuest Dissertation and Theses A& I⁷⁴ databases⁷⁵ were employed to update the literature search to December 2014, as outlined in Appendix 2(a, b, c, d & e). Searches were confined to records in English and date ranges applied were as outlined in Appendix 2b. Additional sources of records included: (a) a search of publications by key⁷⁶ authors in the field (Rest, J., Bebeau, M., Thoma, S., Narvaez, D., Latif, D., Wingfield, J., Cooper, R. and Benson, A.), for whom a full list of publications was retrieved; (b) conference abstracts for the American Educational Research Association (AERA) and the International

⁶⁷ SCOPUS database. Scopus is an abstract and citation database of peer-reviewed literature and quality web sources. Scopus covers more than 15,000 peer-reviewed journals in science, technology, medicine and social sciences. Scopus (like Thomson Reuters' Web of Science) now also offers citation searching.

⁶⁸ Web of Science (all databases), formerly, Web of Knowledge, is a platform providing one source for the tools to access, analyze, and manage research information.

⁶⁹ American Psychological Association. PsycINFO contains nearly two million citations and summaries of journal articles, book chapters, books and dissertations, all in the field of psychology. Journal coverage, which spans from 1872 to the present, includes international material selected from nearly 2,000 periodicals in over 35 languages. This database provides seamless linking to the following two full text collections: PsycARTICLES and Psychology & Behavioral Sciences Collection.

⁷⁰ Education Resources Information Centre USA. This database is sponsored by the U.S. Department of Education to provide extensive access to education-related literature - provides coverage of journal articles, conferences, meetings, government documents, theses, dissertations, reports, audiovisual media, bibliographies, directories, books and monographs.

⁷¹ Cumulative Index to Nursing and Allied Health Literature. CINAHL provides indexing for 2,928 journals from the fields of nursing and allied health. The database contains more than 1,000,000 records dating back to 1981.

⁷² US National Library of Medicine National Institute of Health. PubMed, a service of the National Library of Medicine, provides access to MEDLINE citations. MEDLINE is the U.S. National Library of Medicines (NLM) premier bibliographic database that contains over 19 million references to journal articles in life sciences with a concentration on biomedicine. The records are indexed with NLM Medical Subject Headings (MeSH). MEDLINE is the primary component of PubMed, part of the Entrez series of databases provided by the NLM National Center for Biotechnology Information (NCBI). Time coverage: generally 1946 to the present, with some older material. The subject scope of MEDLINE is biomedicine and health. Increased coverage of life sciences began in 2000. The majority of the publications covered in MEDLINE are scholarly journals.

⁷³ The Cochrane Library is a collection of six databases that contain different types of independent evidence to inform healthcare decision-making, and a seventh database that provides information about groups in The Cochrane Collaboration.

⁷⁴ ProQuest Dissertations & Theses A&I (Abstracting and Indexing): Business, ProQuest Dissertations & Theses A&I: Health & Medicine, ProQuest Dissertations & Theses A&I: History, ProQuest Dissertations & Theses A&I: Literature & Language, ProQuest Dissertations & Theses A&I: Science & Technology, ProQuest Dissertations & Theses A&I: Social Sciences, ProQuest Dissertations & Theses A&I: The Arts. Subject coverage: Multidisciplinary.

⁷⁵ All databases Available at: <http://www.tcd.ie/Library/collections/databases.php#az-s> Accessed between: 10th May 2015 and 24th June 2015).

⁷⁶ James Rest OR Jim Rest OR J Rest OR Darcia Narvaez OR D Narvaez OR Muriel Bebeau OR M Bebeau OR M J Bebeau OR Muriel J Bebeau OR Steve Thoma OR Stephen Thoma OR S Thoma OR Stephen J Thoma OR S J Thoma OR David Latif OR D Latif OR D A Latif OR Joy Wingfield OR J Wingfield OR Richard Cooper OR R Cooper Richard J Cooper OR R J Cooper OR AILSA Benson OR A Benson.

Pharmaceutical Federation (FIP); and (c) websites⁷⁷ of organisations of particular relevance to the context, the practice of community pharmacy in Ireland (Appendix 2e).

The numbers of records identified through the database searches are presented in Appendix 2c. Where given articles were not available further to a database search, alternate methods were used to assure all relevant articles were accessed.

Results were exported into reference management software (EndNote) to enable the researcher to identify and remove duplicates. Inclusion and exclusion criteria were then applied and relevant results extracted as presented in Appendix 2d.

The reference lists in key pharmacy specific publications were scanned for further sources of evidence and added as '*additional records identified through other sources*' (Figure 5.1).

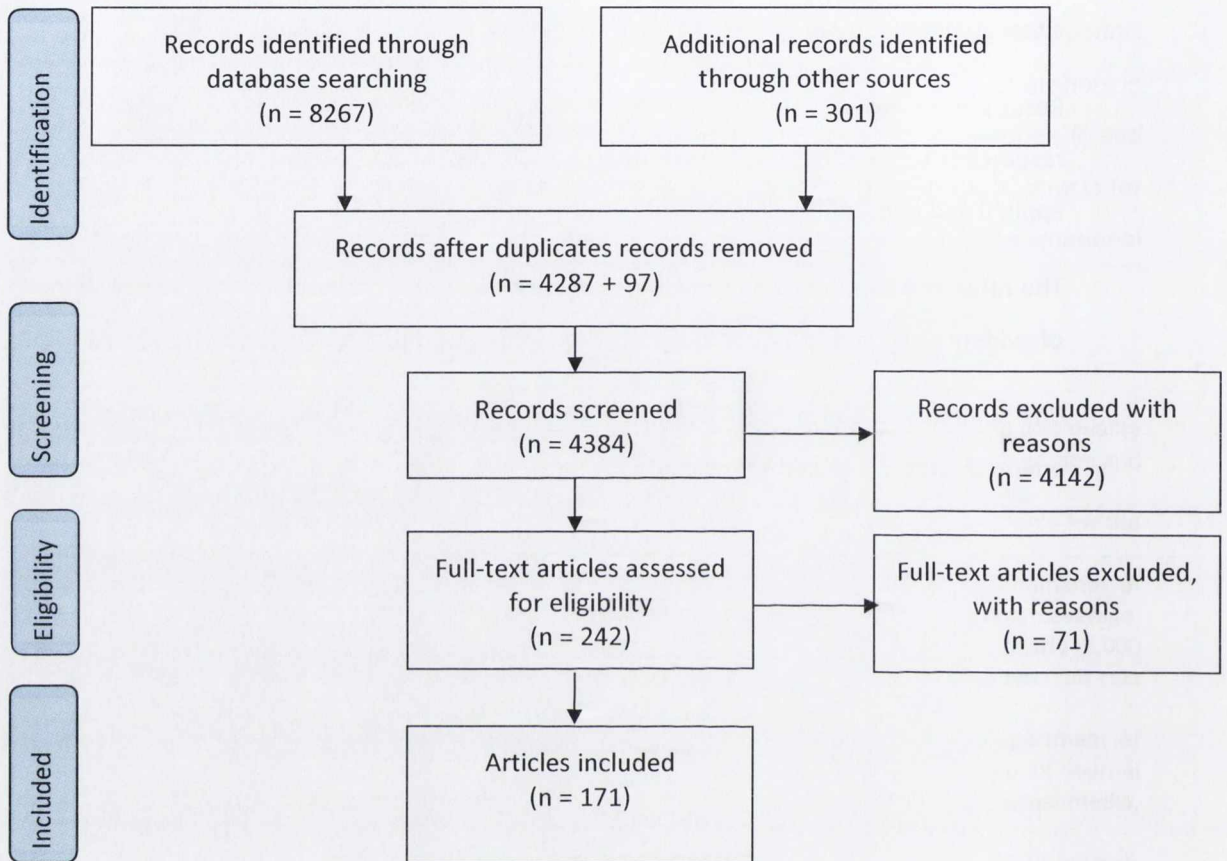
The summary of the process used to identify literature for inclusion is presented, as an adapted form of a PRISMA flowchart⁷⁸, in Figure 5.1.

⁷⁷ Additional websites searched: www.thepsi.ie (The Pharmaceutical Society of Ireland); www.ipu.ie (Irish Pharmacy Union); www.iccpe.ie (Irish Centre for Continuing Pharmaceutical Education – to December 2014); www.iiop.ie (Irish Institute of Pharmacy); from 2013 onwards); <http://www.irishstatutebook.ie/home.html> (Acts of the Oireachtas, statutory instruments and the Legislation Directory); <http://health.gov.ie/> (Department of Health); <http://www.hse.ie/eng/> (Health Services Executive – including the Primary Care Reimbursement service); <https://www.hpra.ie/> Health Products Regulatory Services (www.imb.ie, Irish Medicines Board, to July 2014); <http://www.fip.org/> (International Pharmaceutical Federation); <http://www.pharmacyregulation.org/> (General Pharmaceutical Council); <http://www.rpharms.com/home/home.asp> (Royal Pharmaceutical Society); <http://www.ocpinfo.com/> (Ontario College of Pharmacists); <https://www.acpe-accredit.org/> (Accreditation Council for Pharmacy Education).

⁷⁸ Available at: <http://www.prisma-statement.org/statement.htm> Accessed on 10th May 2015.

Figure 5.1: PRISMA 2009 Flow Diagram [adapted]

Available at: <http://www.prisma-statement.org/statement.htm> Accessed on 10th May 2015



Databases searched: Appendix 2a.
 Database search inclusion criteria: Appendix 2b.
 Number of records identified: Appendix 2c.
 Exclusion criteria (records assessed for eligibility): Appendix 2d.
 Records identified through other sources: Appendix 2e.

Adapted from: Moher et al, 2009.

5.2.4. Outcome measured.

In the process of this research the DIT2, which has been validated as an outcome measure to investigate the impact of an educational intervention on moral reasoning competency/ies (Bebeau & Monson, 2008; Rest et al, 1999b; Schlaefli et al, 1985), was administered by the researcher face-to-face at the beginning and end of the educational intervention or by mail with written instructions when participants acted as controls.

5.2.5. Data Management.

The measure (DIT2) is based on the assumption that individuals with different levels of moral reasoning interpret moral dilemmas differently (Rest et al, 1999b). Correlation and analysis of the interactions between variables in the DIT2 and with demographic and other data collected through survey of participants could therefore be included. Descriptive statistics, one-tailed, independent and paired t-tests, correlations and analysis of variance (ANOVA) were calculated to analyse differences and associations in moral reasoning scores (Kirk, 2013; Field 2009; Field & Hole, 2003; Cohen, 1994, 1990). The Statistical Package for the Social Sciences (SPSS) Version 21, an analytical software package, was used to support data analysis (IBM Corp, 2012).

The study took a quantitative positivist approach (Kirk, 2013; Bryman, 2012; Cohen et al, 2007; Gall et al, 2007; Field & Hole, 2003) where there was an emphasis on a systematic approach to testing, and a belief in the concept of cause and effect. It was anticipated that empirical data, provided by the measure(s) used, would provide explanations for impact(s), caused by the educational intervention, on moral reasoning scores of participants in the study (e.g. Kirk, 2013; Rest et al, 199b; Rest & Narvaez, 1994).

5.2.6. Objective.

The research question proposed is:

Does a profession-specific educational intervention, as designed, developed and delivered during this study, impact on the development of moral reasoning competencies in community pharmacists in Ireland, as measured by the DIT2?

This question is new to community pharmacy in Ireland. In addition ICMs have not heretofore been developed for the community pharmacy setting and the use of a series

of ICMs in a structured educational programme such as used in this study, face-to-face or online, has not been previously reported. Finally, (evaluation of) intervention studies are rare in the community pharmacy context, despite repeated calls for research in this setting (e.g. Benson et al, 2009; Cooper et al, 2008a, 2008b; Wingfield et al, 2004).

5.3. Cognitive moral reasoning development and assessment: The research paradigm.

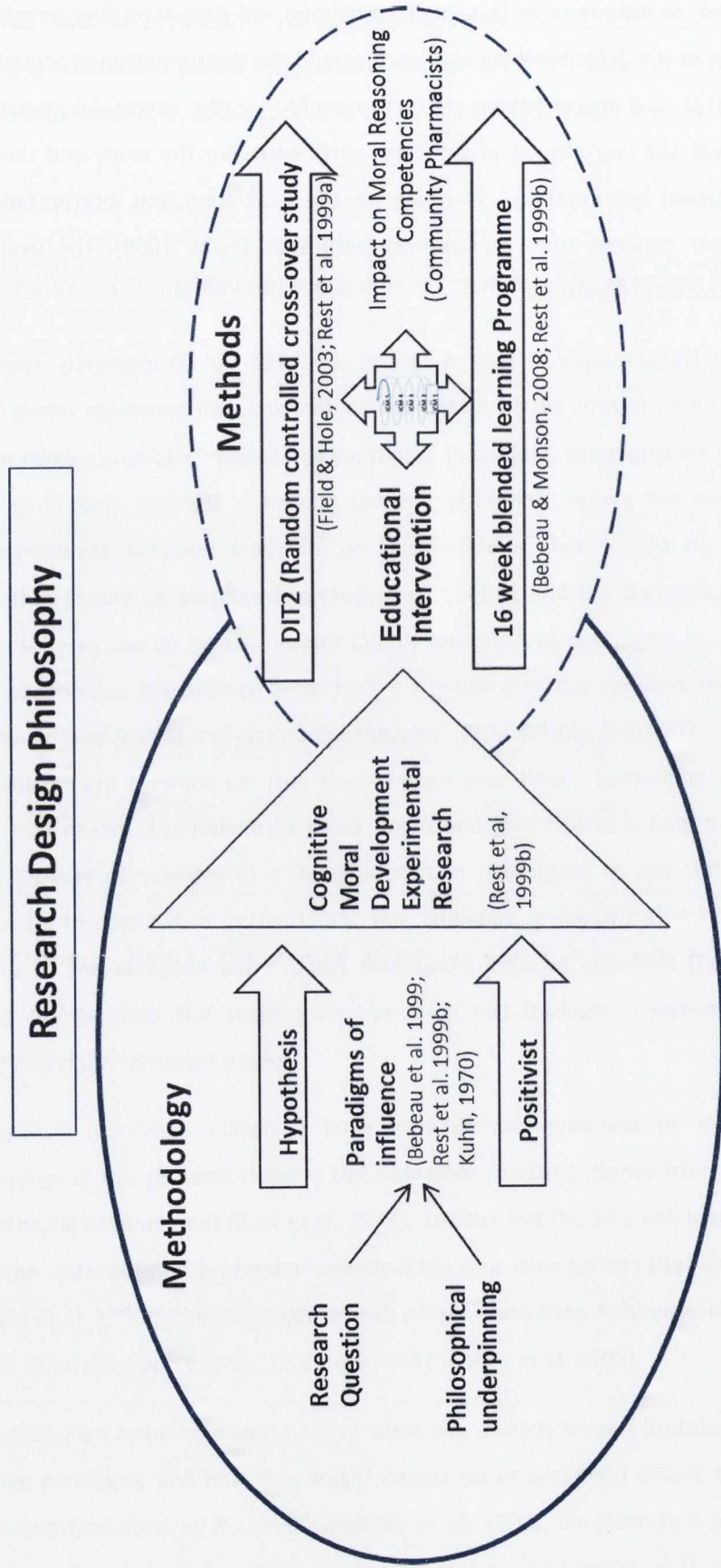
The research paradigm (Kuhn, 1970), or model, is that of experimental research into cognitive moral reasoning development by evaluation of the impact of an intervention study that takes a quantitative positivist approach. In context, paradigms are experimental methods commonly adopted to look at theoretical models, where the word paradigm implies agreement between scientists on the problems that should be studied, the methods that should be employed to study the problem and the theoretical models on which hypotheses can be based. Kuhn's (1970) reference to paradigms in science aligns with the observation that science tends to '*work within a modus operandi that is dictated by commonness of testing and comparing theories*' (Field & Hole, 2003:27). He proposed that paradigms are dynamic i.e. that they change over time. Something extraordinary happens that causes a paradigm to break down and give rise to a new paradigm. He referred, by way of example of a dynamic shift in paradigms, to the conversion from behaviourism to cognitivism in the 1970s, the '*cognitive revolution*' that occurred when limitations of the accepted behaviourist framework became apparent (Kuhn, 1970:28) reflecting change from the socialisation model (Emile Durkheim; Section 3.2) to the cognitive moral development model.

This cognitive revolution played a large part in the evolution of the theoretical underpinnings of this research design. Not only does the DIT2 derive from research into cognitive moral development (Rest et al, 1999a, 1999b), but the 16 week blended learning programme incorporated profession-specific ICMs as a core activity (Bebeau & Monson, 2008; Rest et al, 1999b) thereby aligning with an accepted (Neo-Kohlbergian) approach to cognitive moral development and its assessment (Bebeau et al, 1999).

The research plan included a summary of what was already known (ontology), review of alternative paradigms and how they might impact on or confound efforts to answer the research question (Rest et al, 1999b; Bebeau et al, 1999), consideration of appropriate epistemology (how knowledge comes to exist) for this research question, through to design

(methodology) of the study itself (Section 5.2). Methods used in the research study are detailed, to include tools (e.g. questionnaire(s) and data recording templates), skills (e.g. the use of a VLE for teaching and learning and the interpretation of scored data sets from the DIT2), and the process used in the study (e.g. the successful application for ethics approval, the recruitment of sufficient participants for the study and the delivery of the educational intervention). Planning for the evaluation and interpretation of the data obtained required some competency with SPSS (Field, 2009). The overall approach is summarised in Figure 5.2.

Figure 5.2: Research design philosophy



The research design, a (quasi-)randomised, controlled, repeated measures crossover study, took a systematic approach to the evaluation of the impact of the educational intervention on moral reasoning competency/ -ies development in the community pharmacists recruited to this study. This was not to claim that there was no other means by which moral reasoning competencies could be developed in community pharmacists but *'without systematic research, we are like a physician who takes a patient to a pharmacy and says, "all these drugs are believed to help some people some of the time; take a bunch of them in any order, in any combination, and try them out"'* (Bebeau et al, 1999:21). The research design sought to maximise the potential to link between cause and effect, within the context of the limited resources and constraints associated with a crossover study of this nature (Kirk, 2013; Bryman, 2012; Cohen et al, 2007; Gall et al, 2007; Field & Hole, 2003). Taken together, the Minnesota approach and associated Neo-Kohlbergian theory offer the field a theoretical model and research strategy that can *'help frame research'* (Thoma, 2002:243) indicating that an appropriately designed educational intervention could impact positively on moral reasoning competencies development (Rest et al, 1999b; Bebeau & Monson, 2008). An additional underlying theory was that, without intervention, community pharmacists' moral reasoning competencies, as determined by the DIT, decrease over time (Latif, 2001a; 2000a). Two null hypotheses (Kirk, 2013; Popper, 1959; Field & Hole, 2003) were generated from the research question:

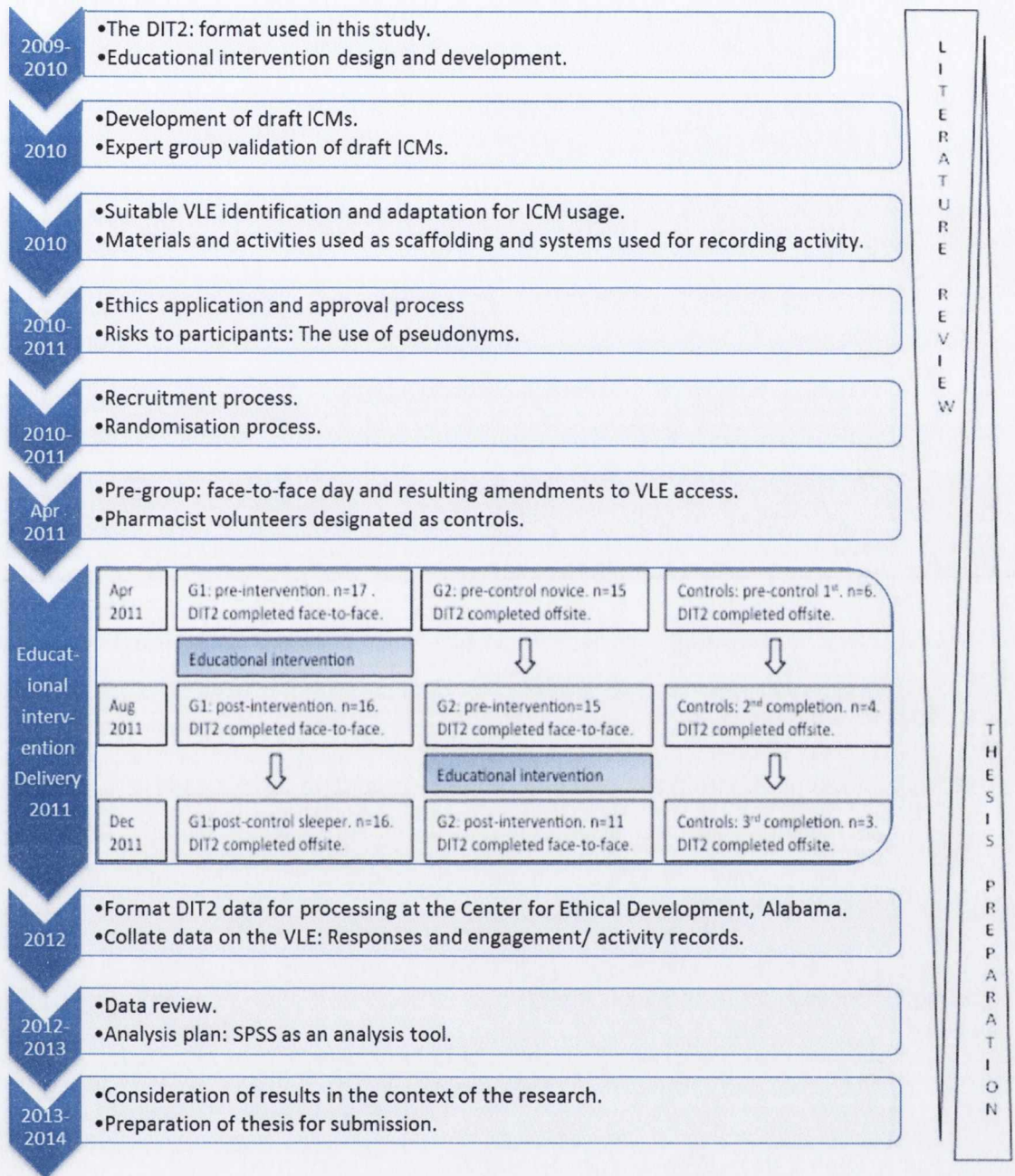
1. Moral reasoning competencies of community pharmacists in Ireland, as measured by the DIT2, are not impacted by the profession-specific educational intervention designed, developed and delivered during this study.
2. The context of the study group, community pharmacists working in Ireland, precludes comparison of DIT2 results with outcomes from other studies.

Null hypothesis significance testing (NHST), which underpins the central belief that scientists, rather than attempting to confirm, may only corroborate or decisively refute hypotheses (Popper, 1959), is the means by which the research question proposed in this thesis is tested. Given the availability of a reliable measure such as the DIT2, we *'can begin to achieve the Popperian principle of representing our theories as null hypotheses and subjecting them to challenge'* (Cohen, 1994:1002).

5.4. Method(s) used to test the null hypotheses.

The methods used sought to test these hypotheses by experimental means i.e. the evaluation and statistical analysis of scores for developmental indices and developmental profile and phase indices derived from completed DIT2 questionnaires (Appendix 10). The DIT2 was completed by participant community pharmacists' pre and post engagement with a profession-specific educational intervention. These methods, and timelines associated with their use, are summarised in Table 5.1.

Table 5.1: Methods used in the research study.



Key: DIT2=Defining Issues Test; ICM=Intermediate Concept Measure; VLE=Virtual Learning Environment; G1=Group 1; G2=Group 2; SPSS=Statistical Package for the Social Sciences.

Preliminary review of the literature supported preparation of a research proposal for this study (March 2010) and search and review of the literature continued throughout the research process.

5.4.1. The study variables.

The format of the dependent variable, the DIT2, its introduction to participants in this study and the process of data collection are outlined. An overview of the design and development of the educational intervention, or independent variable, is also provided.

5.4.1.1. The DIT2 format used in this study.

Supplies of both the DIT2 answer sheet and the instructions booklet were obtained from the CSED in Alabama. In order to adapt The DIT2 (Appendix 10) to the Irish context, question number '5' in the demographic information section of the questionnaire was changed in line with a common modification used in research studies: i.e. on copies of the DIT2 answer sheet used for the study, the question 'Are you a citizen of the USA?' was changed to 'Are you a citizen of Ireland?' Unique identification numbers were allocated for each DIT2 answer sheet to be used in the study.

A short presentation, content guided by Bebeau & Thoma (2003), was prepared for use at the beginning of the first face-to-face onsite day(s) in the 16 week education programme. Scheduling accommodated that participants who preferred additional time (beyond the 20 to 30 minutes that was generally required) in which to complete the DIT2, could take up to 50 minutes. The researcher emphasised that participants should not rush, and were to complete the process for all five stories presented in the DIT2 (Appendix 10).

An address list was maintained for the purpose of supplying copies of the DIT2 survey to those participants acting as controls, would complete the DIT2 offsite. Completed answer sheets and the master list of identification codes linking participants to each DIT2 unique identifier, were stored in a locked cabinet to which only the researcher had access.

5.4.1.2. Educational intervention design and development.

The design and development of the educational intervention (Section 4.3) incorporated the five profession-specific ICMs developed by the researcher (Section 5.4.2) and was delivered in a blended learning format that required participants to attend the School of Pharmacy for a full day face-to-face session at the beginning and end points of the 16 week programme. The content and format of these two days introduced both the concept of ethical dilemmas and reasoning frameworks typically used by healthcare practitioners (Beauchamp & Childress, 2009; PSI, 2009; Beauchamp, 2003; Campbell, 2003; Childress,

1998). The format required participants to complete the DIT2 and either the first or fifth ICM when onsite.

The programme for day one included: (a) assignment of pseudonyms to participants, (b) an introduction to the use of the VLE, the Neo-Kohlbergian approach and programme objectives (Appendix 15), (c) familiarisation with scaffolding for the programme, elements to include online resources, podcasts and presentations (samples included in Appendix 16), bimonthly chatrooms and ongoing discussion forums in the VLE as incorporated into the programme design, and (d) completion of an online questionnaire.

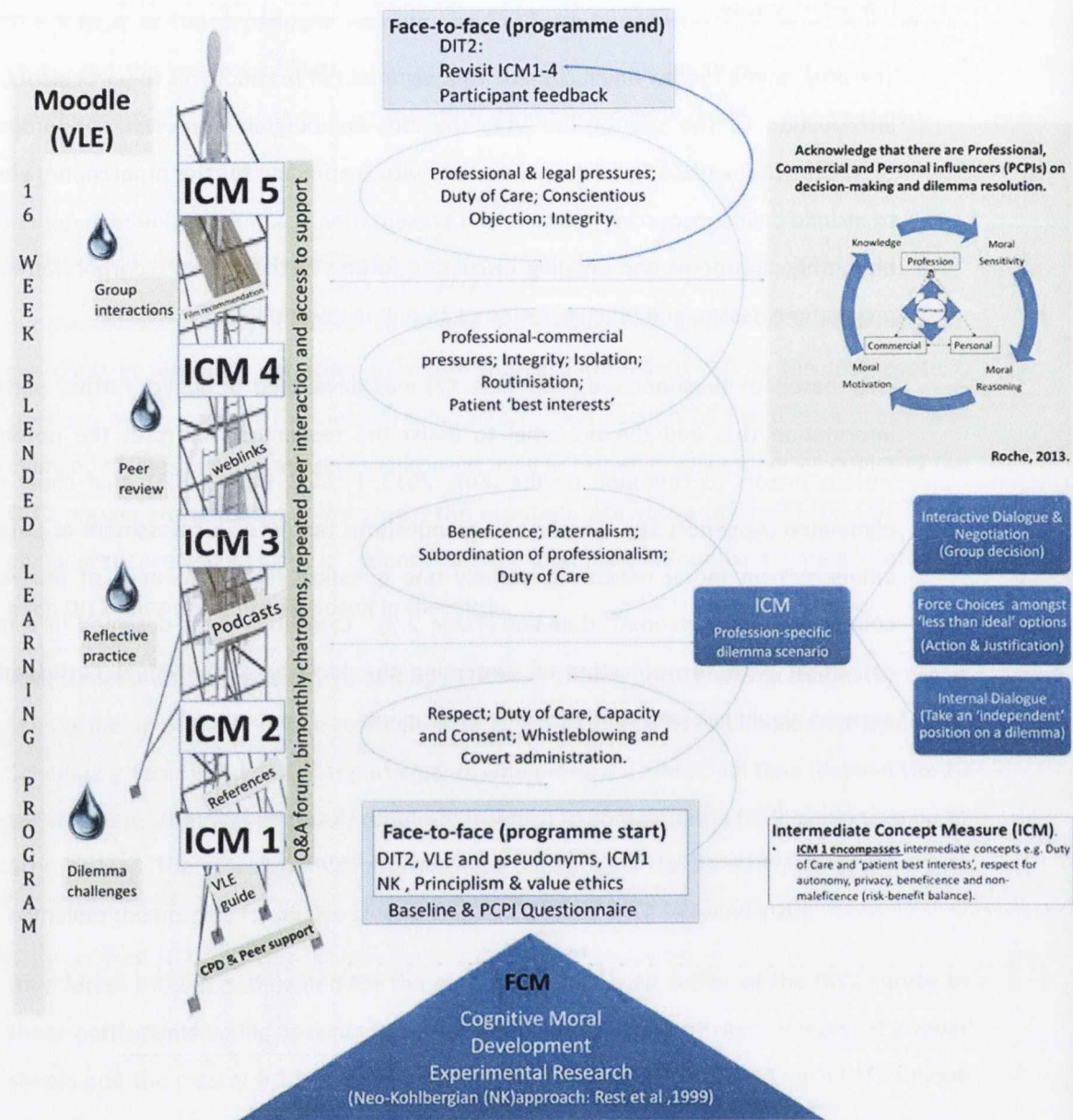
This 'baseline' questionnaire (Appendix 17) was developed to collect further participant information that had the potential to assist the researcher interpret the potential of various factors to confound results (Kirk, 2013; Field & Hole, 2003), that could not be eliminated (Appendix 18). The first three questions targeted an assessment of potential⁷⁹ influencers on moral reasoning, namely one question related to each of professional, commercial and personal⁸⁰ domains (Table 2.9). Questions were designed in a manner consistent with the objective of protecting the identity of individual participants i.e. answers would not necessarily identify participants.

An outline of the programme design is included in Figure 5.3.

⁷⁹ Participant level of 'understanding' of the responsibilities aligned with professional and commercial roles is not assessed.

⁸⁰ Personal values, which do originate early in life (Rest & Thoma, 1985), may vary as a result of family environment, educational experiences and formal participation in religious and secular organizations. Formal education is most often linked to moral reasoning development. Children in Ireland typically attend primary school when aged 4 to 12 years. Primary education in Ireland follows a standard curriculum (with no policy change between 1971 and 1999 (DoE, 1971) and the 'content' (Rest et al, 1999b) of the educational experience would therefore be reasonably standardised (DoE, 1971; INTO, 1996). This question classified the type of primary school attended, thereby seeking to separate participants based on the environment or form (Rest et al, 1999b) of the primary school educational experience.

Figure 5.3: Outline of the 16 week educational intervention.



Extract from: Roche, 2013b

Key: FCM=Four Component Model; DIT2=Defining Issues test; VLE=Virtual Learning Environment; ICM=Intermediate Concept Measures; PCPI=Professional, commercial and personal influencers; CPD=Continuing professional development; Q&A=question and answer.

Regular email reminders to participants were scheduled to co-ordinate with activity release dates and deadlines for completion of various activities and ICMs. All reasonable access to the researcher was facilitated. Dates for online discussion fora, chatrooms and activity completion dates were chosen to avoid times when Irish community pharmacies would be likely to experience higher workloads e.g. close to month-end and bank holidays weekends (Group 2 schedule, Appendix 19).

The five ICM scenarios developed and validated for the study are presented in Appendix 20 and the ICMs were completed in sequence as per the programme schedule (Appendix 19).

VLE functionality that records participant online activity, or the number of 'hits', was activated in a manner that would align records with pseudonyms (rather than responses being anonymous) and all records were available to the researcher for review and analysis.

One potential confound identified was that participants acting as controls might access additional ethics instruction during the period of time they were acting as controls. Hence a further two questions were asked of all participants at the end of a period in which they had acted as a control namely questions '5' and '6' (Appendix 17), in order to quantify any additional instruction that might have led to moral reasoning development during the time spent as a control. These questions were included in the online questionnaire at the end of the 16 week programme for group 2 participants, but were included in a paper format (question '6' referring to group 2) when the DIT2 was circulated by post to group 1 participants for completion in December 2011 (referencing to Group 1/2 as appropriate).

5.4.2. Development of profession-specific Intermediate Concept Measures (ICMs).

A process by which ICMs could be developed and validated as an assessment tool, proposed by Bebeau & Thoma (1999), recommended that the researcher would:

1. Identify key concepts relevant to the profession;
2. identify cases (scenarios) through content analysis, survey of professionals or focus groups;
3. verify the set of scenarios, e.g. by practitioner review, and create a balanced set of four to seven scenarios;
4. develop seven to 12 action and justification options for each scenario, and check for omissions and consistency across the justification and actions;
5. align with a 'key', or summary of whether the researcher considers each option to be in the personal interest (PI), aligned with maintaining rules and norms (MN) or reflective of postconventional (PC) reasoning (See Appendix 21 showing 'intended schema' 'key' for ICM3 action options as PI, MN or PC);
6. organise for a group of sector specific experts to review scenarios, action choices and justification options;
7. regard options not chosen by any reviewer as likely 'distractors' and consider removal or appropriate amendment of these options.

The process described by Bebeau & Thoma (2003) was largely adhered to but adapted in that the five profession-specific ICMs incorporated into the design of the educational intervention were drafted by the researcher who then invited a group of seven pharmacists considered 'expert' to review them. The processes used to develop, and have experts review, these ICMs are described in Sections 5.4.2.1 and 5.4.2.2.

5.4.2.1. Development of draft ICMs.

This study design incorporated the ICMs into a teaching and learning methodology that prioritised individual and social constructivism (Roche et al, 2014) so that reasoning and dialogue was required to negotiate to a point where best and worst options could be ranked by a participant. Twelve action and justification options were developed for each scenario, the intention being that four of these 12 options described actions or justifications that reflected decision-making in the personal interests, four according to the maintaining rules and norms schema and the remaining four were to be indicative of postconventional reasoning. While the writing of these options was a subjective process, and in any of the scenarios it could be argued whether e.g. there are five rather than four options reflective of any one schema, no one obvious best or worst option was provided. In order to minimise any potential impact of gender on participants, the gender of the 'pharmacist' and 'patient' alternated from one ICM to the next in the series e.g. in ICM3 (Appendix 20) Celine was the pharmacist and Charlie was the patient, whereas in ICM4 a male (David) pharmacist and a female patient (Dianne) were written into the scenario.

A list of ten key concepts relevant to the profession was drafted to include the four Principles of Autonomy, Beneficence, Non-maleficence and Justice (Beauchamp & Childress, 2009). The remaining six concepts, numbered '5' to '10' (inclusive) in Table 5.2, were core to the CoC but not specifically referred to in the four principles namely: Duty of Care, Patient Best Interests, Professionalism, Respect, Confidentiality and Consent. These ten concepts were incorporated into the five scenarios used in the ICMs for the educational interventions as primary (i.e. where the concepts are in relatively direct conflict – individually convincing, mutually exclusive and jointly demanding) or secondary (less troublesome to resolve than the primary conflict) dilemmas as outlined in Table 5.2.

Table 5.2: Development of profession-specific ICMs for inclusion in the educational intervention.

	Key concepts for ICMs	ICM1	ICM2	ICM3	ICM4	ICM5	No. of ICMs
1	Autonomy	Primary					1
2	Beneficence		Primary				1
3	Non-maleficence		Secondary			Secondary	2
4	Justice		Secondary		Secondary		2
5	Best Interests (patient)	Secondary		Primary			2
6	Confidentiality			Secondary			1
7	Consent			Secondary		Secondary	2
8	Duty of Care	Primary	Primary		Primary	Primary	4
9	Professionalism	Secondary		Primary	Primary		3
10	Respect				Secondary	Primary	2

As 'duty of care' is the primary value inherent in the CoC, it was considered acceptable that it appeared as one side of the primary dilemma in four of the five ICMs. While these key concepts were an appropriate guide to the development of profession-specific scenarios, additional insights were required to assure that not only were the scenarios themselves likely to trigger discussion and debate amongst peer groups of pharmacists, but also that the five scenarios and action and justification options collectively presented to participants would reflect the broad range of challenges they face in contemporary practice.

Two sources of profession-specific dilemmas, reflective of the Irish context, were reviewed with a view to expanding the range of material for profession-specific scenarios for the ICMs:

- A series of 16 Ethics and Law articles, authored by the researcher and published in consecutive publications of the Irish Pharmacy Journal (IPJ) from 2007 to 2010 (Roche, 2010a, 2010b, 2009a, 2009b, 2009c, 2009d, 2009e, 2008a, 2008b, 2008c, 2008d, 2008e, 2008f, 2008g, 2008h, 2007), presented contemporary reflections on dilemmas facing pharmacists during this period of time.
- Ten scenarios, or case studies, used in CPD programmes delivered during 2009 and 2010 through ICCPE were developed by a joint working group which included nominees from the ICCPE, PSI, IPU, DoH&C and HSE and of which the researcher was the chair. The working group was established in 2008 to engage pharmacists in educational

initiatives aimed at increasing practitioner understanding of the Pharmacy Act (2007) and the programmes developed prioritised implications of the Pharmacy Act for the role of the pharmacist, adherence to the CoC and the introduction of fitness to practice procedures. As these ten scenarios had been collaboratively prepared by the members of the working group, they were considered additional examples of dilemmas likely to be faced by pharmacists during this period of time.

These 26 references (16 IPJ articles and ten scenarios used in CPD events) were reviewed according to a template that included summary of key themes, intermediate concepts therein, and key potential actions and justifications that might be used. A sample of an IPJ article reviewed to this format is provided at Appendix 22.

The approach derived from an established strategy (to ensure the integrity of the ICMs) used in the preparation of dental ICMs (Bebeau & Thoma, 2003). Nonetheless the review involved subjective analysis and interpretation by the researcher and there are limitations to inferences that can be taken from this approach. However, despite any shortcoming associated with the approach, the insights collated provided significant additional examples in support of the development of draft ICMs without compromising the potential value of the series of ICMs to the programme. The subsequent use of the panel of 'experts' to review each ICM provided assurance that the scenarios and options presented would be considered realistic by participants undertaking the educational intervention, at least to the extent that the study aims could be achieved.

5.4.2.2. Expert group validation of draft ICMs.

A total of 12 pharmacists, respected by the researcher for their expertise related to pharmacy practice and education, and actively involved in their chosen field for many years, were identified as 'experts' (Bebeau & Monson, 2008). They were a non-homogenous group comprising six academics involved in teaching practice of pharmacy and/or pharmacy ethics and six community pharmacists, and they were contacted by the researcher with a view to inviting them to contribute to an 'expert' group for the purpose of reviewing the draft ICMs for use in the educational intervention. Seven of these 12 pharmacists committed to the project, three academics and four practitioners, three of them being male. Ages ranged from approximately 30 years to approximately 60 years of age.

Each draft ICM was circulated, in turn and at intervals of approximately two weeks, to this group of 'expert' pharmacists. The experts were asked to respond according to the format for ICM3 provided as an example in Appendix 12. Recommendations provided by experts were collated and integrated as appropriate. An example of their use by the researcher, in relation to the action options related to ICM3, is provided in Appendix 23.

Experts' rating of most and least preferred options were collated and reviewed for evidence of whether or not choices by the seven experts consolidated⁸¹ to three or four most and least preferred options from the 12 options presented i.e. the objective was to identify whether there was general agreement as to which (four) options was within each of the three categories (post-conventional, maintaining norms or personal interest). Significant differences of opinion between the experts did not arise i.e. more than one expert disagreeing with the other six on a given option. Expert responses to ICM3 action choices are provided in Appendix 21. The series of five ICMs were validated in this manner between September and December 2010.

Notwithstanding that several valid recommendations from the experts were introduced, none of these changes affected the balance of concepts and influencers included in the series. As can be seen by comparing the version of ICM3 circulated to experts (Appendix 12) and that used for participants (Appendix 24), the draft scenarios and the action and justification options posed to the participants during the educational intervention were very similar to those reviewed by the experts.

5.4.3. Accommodation of Virtual Learning Environment (VLE) criteria.

Figure 5.3 summarises the nature and range of online activities that were required in order to deliver the 16 week educational intervention. Research throughout the summer of 2010, in pursuit of an online format suited to the delivery of the educational intervention as designed, included a visit to Microsoft to explore whether publicly available packages

⁸¹ Reference to 'consolidation' to categories of action or justification options should not be confused with 'consensus methodologies' (e.g. Delphi process and the nominal group technique, or expert panel), which are commonly used in medical, nursing and health services research (Jones & Hunter, 1995). According to Jones and Hunter, *'the focus of consensus methods lies where unanimity of opinion does not exist owing to lack of scientific evidence or where there is contradictory evidence on an issue'* (1995:377). The Nominal group technique is described as a 'useful way of managing to gain focus within a group of action researchers' and the process *'enables individual disagreements to be registered and to be built into the group responses'* (Cohen et al, 2007:309). The Delphi survey technique is *'the written partner to the nominal group technique'* (Cohen et al, 2007:309). It is a group facilitation technique, which is an iterative process, designed to transform opinion into group consensus (Hasson et al, 2000). This research study did not employ either Delphi survey techniques or nominal group techniques (See section 3.5.10 for further background to the development of the ICMs for use in this thesis).

promoted by them would be suitable. The researcher also visited Helix Health, software vendor to the community pharmacy sector in Ireland, to review whether systems already in pharmacies could be used as a hosting and communication vehicle. Both options would have been expensive to pursue, and neither appeared to be structured to a suitable format for a study of this design. Contact with the technology centre in the HEI itself, to identify whether bespoke software could be written to accommodate the research, indicated that programming costs would be prohibitive. Review of the VLE in use in the HEI at the time, known as WEBCT, concluded that its functionality was not compatible with the requirements of the study design and, in any case, only students registered on approved programmes could be permitted access. The cost of enrolling participants as students in the HEI would have been prohibitive and this option was therefore not further explored. In August of 2010 the researcher became aware that an alternative VLE, Moodle, was being piloted in the HEI during the 2010/2011 academic year. This particular VLE had been used by the researcher in November 2009 in the delivery of a module component on the National Pharmacy Internship Programme (the NPIP, leading to the MPharm, as delivered by the Royal College of Surgeons in Ireland (RCSI) on behalf of the PSI) in a process, designed by the researcher, that incorporated several elements of ICM theory (Roche et al, 2014; Roche & Gallagher, 2012, 2010). Success with the work on the NPIP encouraged the researcher to pursue a place on the HEI Moodle pilot project in order to explore its potential as a platform for the research study. Permission was given for the researcher to become part of the Moodle pilot group for both undergraduate teaching during the 2010/2011 academic year and, if ultimately appropriate, for the purposes of this research study. The commitment given was that there would be access from October 2010 to May 2012. As access subsequent to May 2012 was not guaranteed, the delivery of the educational intervention was scheduled for 2011.

5.4.3.1. Suitable VLE identification and adaptation for ICM usage.

Exploration of the suitability of Moodle as a VLE for delivery of the educational intervention initially focused on the activities supported by the package being piloted in the HEI, namely questionnaires and quizzes, forums to provide a means of asynchronous communication and chats, also known as chatrooms, to provide a means of synchronous communication. Resource folders were also confirmed as suitable for podcasts, weblinks and general upload of documents prepared in word, powerpoint and excel. It was quickly apparent that these would be adequate for the research design.

However, the format of the ICMs, as designed for delivery during the educational interventions, was not accommodated by the existing system. Discussion with an expert from the Moodle hosting company identified that if an existing module known as 'Feedback' had software adaptations applied, it could accommodate the format chosen for the use of ICMs in the intervention. The standard module permitted the researcher to create and conduct surveys to collect feedback, a process which could accommodate the core requirement of ICMs. However, as the module was set to a maximum of four options and a very limited 250 character space for description of options it required an adaptation to facilitate ICMs i.e. to a maximum of 12 options and a word count to accommodate the longest of the action and justification options in the ICMs. Software updates were approved in November 2010.

When availability of a VLE that could accommodate the intervention design was confirmed, development of additional online content and activities was progressed so that the complete VLE was available for use in the research study by November 2010.

5.4.3.2. Materials and activities for scaffolding and systems for recording activity.

The educational intervention was set up as a Module in the VLE and was divided into an introduction and nine 'Topics', or sections (sample at Appendix 16), to include:

- 'Introduction': This included a welcome message (Appendix 25), a weblink to the HEI school of Pharmacy homepage and a podcast prepared by the researcher, using Camtasia software, to remind the participant how to access specific activities and resources on the Moodle site.
- Topic 1: 'Getting started: Pharmacist CPD programme', as outlined in Appendix 16, included the welcome (Appendix 15), Questionnaires (Appendix 17), a folder containing the schedule (Appendix 19), a Moodle guidebook developed by the researcher and the participant information leaflet as approved by the HEI ethics committee (Appendix 26).
- Topic 2: General references and support material (Appendix 16) included a folder with several portable document formats (PDF) of appropriate reading material, a link to the general discussion forum moderated by the researcher and weblinks to four sites considered useful to participants.

- Topics 3 to 7 inclusive: These sections in the VLE accommodated ICMs 1 to 5. The format of online presentation for each ICM followed the outline provided for ICM3 in Appendix 24.
- Topic 8: This facilitated a space where special interest topics, as arose during chatrooms and discussion fora (Appendix 27), would be available to participants throughout the programme by providing in each folder a dedicated discussion forum and relevant background reading material.
- Topic 9: This contained Podcasts and youtube clips under the heading of 'Moral theories in support of decision-making' (Appendix 28). A podcast which introduced principlism in the context of community pharmacy practice in Ireland was prepared by the researcher using Camtasia, a software application for creating video tutorials, to align the visual PowerPoint presentation on the topic with the researcher's voice-over. A third podcast, which introduced participants to the CoC in the context of the programme, was provided by the PSI. Links to online resources offering alternate approaches to moral reasoning were also provided.

The extent to which participants engaged with activities or accessed resources through the VLE during the educational intervention was termed 'doses' of the programme (Appendix 29). Engagement with the 14 online activities facilitated during the two face-to-face days at the HEI and with optional doses availed of during the 16 week programme, i.e. where the participant could choose whether or not to engage in each activity, was measured. Participants were made aware, during the first face-to-face day of the 16 week programme that level of engagement would be compared with the outcomes of the study (development on the DIT2 scores). A maximum score of 31 such optional 'doses' of the educational intervention, as per the list of activities provided in Appendix 29, were available to participants. An excel spreadsheet was formatted in a manner that facilitated recording of each participant's level of engagement.

5.4.4. Ethics approval.

The Faculty Research Ethics Committee (FREC) in the HEI reviews projects involving humans in areas of research and academic activity that require ethical clearance including student projects at postgraduate level. Ethics approval for the research was finalised in February 2011 (Appendix 30).

5.4.4.1. Ethics application and approval process.

The FREC application form was completed in September 2010 to include information related to details of the research study and participant selection, consent and confidentiality (including data protection) and risk, benefit and harm. An approved consent form (Appendix 31) had to be signed by all participants prior to engagement with the study.

The primary question raised by the FREC was regarding the use of pseudonyms to protect participant confidentiality and to correct suggestion that this provided anonymity. Each participant was to use an email address, set up as a 'hotmail' account that identified her by her pseudonym and refer to herself by her pseudonym in all communications related to the educational intervention.

Ethical issues potentially anticipated, by the researcher, included that there was a theoretical risk that

'during online discussions regarding what actions one would take to resolve a professional dilemma, or the justifications a practitioner would use to support a preferred course of action, a participant could expose thinking that indicates an unprofessional approach to the practice of pharmacy (Ethics application 4.1).

It was possible that stress to the participant, or reputational damage, could result from exposure of thinking that indicated an unprofessional approach. In order to lessen this risk, pseudonyms were applied to keep participant identities confidential both online and on completed DIT2 questionnaires.

The ethics application also outlined that participants were to be provided with an opportunity to obtain the P-Score and N2-Score assigned against the DIT2 questionnaire the participant completed at the end of the educational intervention. Each participant was given the option of requesting these results by contacting the researcher from her pseudonym hotmail account, in June 2012 i.e. six months after the second 16 week programme was completed. Results, accompanied by further explanation as to how the scores should be interpreted (Appendix 32), were forwarded to the participant's hotmail account. Emails reminding participants that they had this option were forwarded to all hotmail accounts at that time. However this did give rise to an additional risk, identified in the ethics application as follows: *'That participants would receive DIT2 results that indicate*

their measure of Moral Reasoning as assessed on that occasion would be less than they considered desirable for practising professionals, such information causing them distress' (Ethics application, 4.2). While this was unlikely it was nevertheless a potential risk that required a management plan. The process agreed was that a co-supervisor to the research, Professor Joy Wingfield, confirmed her availability to assist with managing such a situation if it did arise.

5.4.4.2. Risks to participants: The use of pseudonyms.

As online facilitation of groups in the NPIP had highlighted to the researcher the potential for participants to be very explicit about the thought-processes underlying reasoning applied when required to negotiate towards group consensus⁸² as to a single preferred action option from amongst those proposed in response to dilemma scenarios posed (Section 5.4.2; Roche et al, 2014; Roche & Gallagher, 2012, 2010). A means by which the identity behind any online contributions could be kept confidential from the researcher and from other participants was developed, introduced in section 5.4.4.1 as the use of 'hotmail' accounts. Fifty hotmail accounts were set up by the researcher, each with a common plant name such as bay, as follows:

- user name: bay1
- Password: %Bay2mpsi
- hotmail first/last name: baympsi
- email address: baympsi@hotmail.com
- user name on Moodle: Bay

The HEI Moodle pilot co-coordinator acted as gatekeeper in the assignment of participants to pseudonyms. She enrolled each of the Hotmail accounts on Moodle, retained a master list linking pseudonyms to participants and put a card on which was written the pseudonym, email address and password into a sealed envelope addressed to the relevant participant. This was then included with the participant's pack when she arrived for the face-to-face day at the beginning of the programme.

Participants were advised of the security question and answer used to set up all the hotmail accounts and given time during the first face-to-face day to change the password.

⁸² Note that the use of the word 'consensus' in this context does not imply that this study employed 'Consensus methodologies' e.g. Delphi process and the nominal group technique, or expert panel) as are both commonly used in medical, nursing and health services research (Jones & Hunter, 1995). (See section 3.5.10 for further background to the development of the ICMs for use in this thesis).

They were reminded in the letter of invitation (Appendix 33), and the reminder repeated throughout the programme, that if a participant disclosed her true name in a manner that identified her to the researcher or to other members of the discussion forum, it was a requirement of the ethics approval that she would be eliminated from further participation in the study.

Online discussion of dilemmas faced by practising pharmacists has, theoretically, the potential to lead to the disclosure of criminal action or intent, or other material that should raise concern. If such online disclosures were made by a participant, the researcher would have been obliged to identify the participant and address the matter as required by the CoC. The format of the ethics application and approval facilitated that, the supervisor to the PhD (Professor Marek Radomski) would have been alerted and could have arranged for the HEI Moodle administrator to identify the participant from the pseudonym used online. No disclosures of concern were identified during the delivery of the programme(s).

5.4.5. Participant recruitment and randomisation to groups.

The ethics application outlined that tutor pharmacists on the NPIP, i.e. pharmacists that have been registered with the PSI for at least three years, would be invited to participate in the research study. The commitment, to travel to and attend at the HEI for two days without expectation of expense-payments, and to take part in a 16 week online programme without promise of any qualification or recognition, was onerous and completely random selection e.g. from the register of pharmacists was not a valid approach. Volunteers, to a maximum of 80 pharmacists, would be randomly allocated to one of two groups to undertake the educational intervention as part of group 1 (April to August 2011) or group 2 (August 2011 to December 2011).

5.4.5.1. Recruitment process.

The recruitment plan was to invite pharmacists tutoring on the NPIP to take part in the study, and contact with tutors was facilitated by circulation of the invitation by the RCSI (Appendix 33). However the researcher had prompt replies from two tutors stating that they would be interested in engaging with the research study but not in the same year as tutoring an intern, citing workload issues related to tutoring interns as the barrier. Anticipating that this was likely to be a common barrier, the recruitment plan was

amended to the extent that all pharmacists working in Irish community pharmacies and registered for at least three years were invited to volunteer.

The invite to the wider group of pharmacists was initially by means of an article published in the IPJ in December 2010 (Roche, 2011) and, necessitated by an unexpected delay in the circulation of that particular edition of the IPJ, by email to all registered pharmacists. Circulation of this email was facilitated by the Pharmaceutical Society of Ireland (PSI). Each participant was advised that she would have to be available to attend the face-to-face orientation day (dates specified in the Letter of Invitation, Appendix 33), have access to the Internet and be working as a community pharmacist for a minimum of three years. It was identified to pharmacists that up to 40 participants could be accommodated in each of the two groups. There were many inquiries and expressions of interest. A total of 38⁸³ pharmacists actually signed the consent forms to take part in the study. While a larger sample size would have accommodated more secondary analysis of the data, both the research question⁸⁴ and the repeated measures crossover study design were key to supporting the small sample size and they aligned with the expectation that 30 participants would be an acceptable number with which the study could proceed (e.g. Tavacol & Sandars, 2014; Kirk, 2013; Cohen et al, 2007; Gall et al, 2007). Nonetheless, the smaller sample size reduced the probability that the sample recruited would be representative of the population under study.

Pre- and post-intervention DIT2 measures were to be 'paired' by using the pseudonyms on the questionnaires.

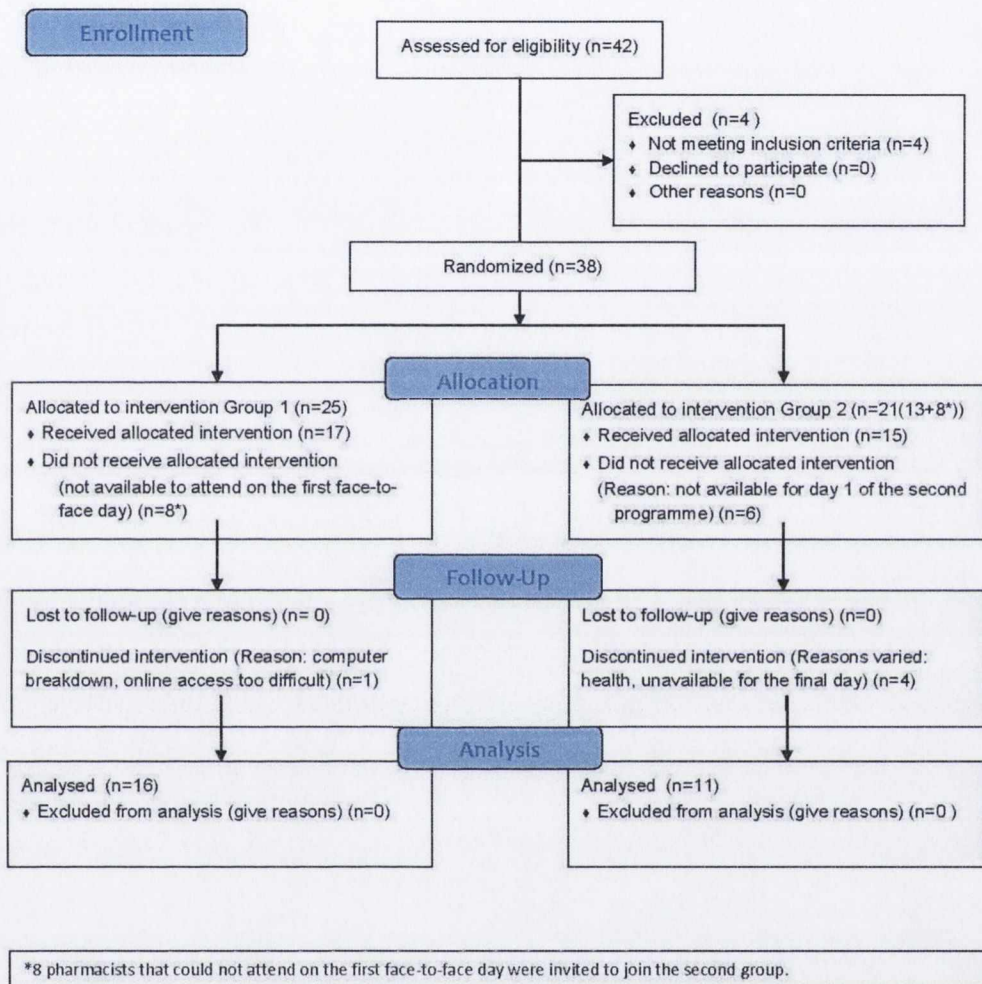
In addition, four pharmacists that had been registered for less than three years (and therefore ineligible to be enrolled in the programme), and who had applied to take part in the study nonetheless, were invited to form a 'pre-group' with the objective of testing the technology itself. This pre-group was not considered part of the study itself and none of the data evolving from their contributions was included in the analysis.

⁸³ When the sample calculation process used in Section 5.2.2 was adapted for the recruited number of 38 participants, the power was identified as .47. As this was a considerably smaller number than the calculated power of .80 participants (e.g. Kirk, 2013; Field, 2009), the smaller number made it less likely that an effect would be determined by statistical analysis. A total of 27 participants completed the study (see Figure 5.4). The power identified for the study group (27 participants) was identified as .35 i.e. the likelihood that an effect would be determined by statistical analysis was further reduced. Further detail related to the analysis plan is introduced in Section 5.9.

⁸⁴ Does a profession-specific educational intervention, as designed, developed and delivered during this study, impact on the development of moral reasoning competencies in community pharmacists in Ireland, as measured by the DIT2?

A Consort (2010)⁸⁵ flow diagram, which details enrolment to the study and the randomisation process, is provided at Figure 5.4.

Figure 5.4: Enrolment to the study and the randomisation process: Consort Flowchart.



Source: Consort 10 (2010) Flow Diagram.

5.4.5.2. Randomisation process.

Microsoft excel formula functionality was used to randomly allocate the 38 pharmacists that signed consent forms to group 1 (65%) and group 2 (35%) using the standard Microsoft randomisation function. Each group acted as a control for the other. As community pharmacists, even when volunteering to take part in such a study, are likely to

⁸⁵ The CONSORT (CONsolidated Standards of Reporting Trials) 2010 guideline is intended to improve the reporting of parallel-group random controlled trial (RCT). (CONSORT 10, 2010).

meet significant barriers to engagement, Prof Joy Wingfield opined that the expectation should be that the study anticipate 'no-shows' or non-completion by a proportion of volunteers, and, while it meant that the allocation of groups could not be described as having been blinded, it was an opinion with which the researcher agreed. Hence 25 (65%) of the 38 pharmacists were invited to avail of the first intervention (April to August) (Figure 5.4). Seventeen of those allocated to group 1 actually attended the first day and those that did not attend the first day (eight pharmacists) were then added to the list of participants invited to take part in the intervention from August to December (Group 2). Randomisation was therefore not absolute, and would not meet the requirements anticipated by the Consort statement (Consort, 2010). The impact of eight pharmacists (32%) that had been randomly assigned to the first group subsequently having the option to join the second group would be an 'unknown' influence on, and has the potential to confound, the outcomes of the study.

5.4.6. Volunteers other than participants in the interventions: The pre-group and the controls.

The pre-group engaged with a 'trial run', of the programme that was primarily intended to test the VLE as a technical platform. Controls were participants that signed consent forms and completed the DIT2 questionnaire on one or more of the three designated occasions i.e. April, August and December 2011, but who did not actually undertake the educational intervention.

5.4.6.1. Pre-group: face-to-face day and resulting amendments to VLE access.

The first face-to-face day for the pre-group was held a week prior to that for the first study group and the schedule for the 16 week programme was otherwise completed in a similar timeframe. It also gave the researcher opportunity to test the scheduling and functionality that would be used to deliver the programme to the study group in a manner that allowed for identification of barriers and limitations prior to engagement with the study group(s). A suitable teaching facility in the HEI, which had 40 computers connected to the Internet, was reserved for all of the face-to-face days. The format, or agenda for the day, was the same for the pre-group and the two study groups (Appendix 34).

Pharmacists in the pre-group were assigned pseudonyms and hotmail accounts in the same way as the test groups (Section 5.2.4.2), and had a separate discussion forum for review of

scenarios. Members of the pre-group accessed each activity and resource that would be available to participants throughout the research study.

No intended changes were made to the educational intervention design following the first face-to-face session.

5.4.6.2. Pharmacist volunteers designated as controls.

Pharmacist volunteers that were recruited to the study but who for various reasons were not available to attend the first face-to-face day of either delivery of the educational intervention, but who were prepared to complete the DIT2 questionnaire on one or more occasions, were designated as controls (n=6).

While DIT2 questionnaires for these six pharmacists were scored by the CSED, the wide range of potential confounds made that particular cohort of responses of questionable reliability (Appendix 18) not least that completion of the DIT2 took place offsite at their own home or place of work for the 'controls' and they never had the advantage of a face-to-face structured approach to the process e.g. defined time, quiet room relatively free of distractions and preceded by the introductory presentation from the researcher. They did not take part in any element of the educational intervention nor did they complete the survey related to professional, commercial and personal influencers. The extent of these differences from the study group, the small number of participants involved (n=6) and the variation between the number of DIT2 questionnaires completed by the individuals within these six, resulted in such a variety of potential confounds that it was decided to not include their scores in further analysis.

5.4.7. Educational Intervention delivery.

Each educational intervention (Figure 5.3) incorporated the five profession-specific ICMs as a core activity (Appendix 20). The programme began with a face-to-face day (Appendix 34), ran for 16 weeks according to the schedule provided (Appendix 19) and finished with a second face-to-face day (Appendix 35). It was delivered twice, consecutively, to participants in the study, the first beginning on April 2011 and the second finishing in December 2011 as summarised in Table 5.1.

5.4.7.1. Educational Intervention delivery to group 1: April 2011 to August 2011.

Seventeen pharmacists attended the HEI on April 27th 2011. The proposed schedule was reviewed with participants and two issues led to amendments.

- Proposed options for the scheduling of chatrooms included one-hour sessions at 8am, 6pm or 9pm, with two or three chatrooms scheduled per month. However as participants unanimously agreed that 9pm would be the preferred time, all researcher facilitated chatrooms on the schedule were changed to that time. Participants could arrange additional chatrooms amongst themselves at any time.
- Scheduling of the final date for the 16 week programme , August 17th 2011, posed difficulty for three participants. Discussion confirmed that other participants had already scheduled the date of August 17th 2011 and that it would inconvenience them to change. It was therefore agreed that the final day would be offered to Group 1 participants on both August 10th and 17th 2011.

Participant access to pseudonym hotmail accounts was verified on April 27th 2011 and each pharmacist completed parts 1 and 2 (Appendix 24) of the first ICM during the day.

All activities included in the educational intervention design proceeded as scheduled. During the second month of the programme participants requested that text reminders regarding chatrooms be sent a few hours before the scheduled time. The researcher asked participants to individually email confirmation that they wanted to avail of such text reminders. All participants gave permission for their mobile numbers to be used for these chatroom reminders and the facility was added as an option for participants in group 2.

One participant withdrew from the programme shortly after it began, and the remaining 16 participants attended the final day of the programme.

5.4.7.2. Educational Intervention delivery to group 2: August 2011 to December 2011.

Fifteen pharmacists attended the HEI on August 24th 2011. The proposed schedule was reviewed with participants and no further amendments were requested. Scheduling of researcher facilitated chatrooms was confirmed with group 2 as 9pm on all dates, and all fifteen pharmacists consented to the use of their mobile phone numbers for receipt of chatroom 'reminder' texts from the researcher. The final face-to-face day, scheduled for December 13th 2011, was considered suitable for all participants.

Group 2 participant' access to pseudonym hotmail accounts was verified on August 24th and all scheduled activities included in the educational intervention design proceeded as scheduled. Three participants withdrew from the programme during the 16 weeks, one further participant could not attend the final day of the programme and the remaining 11 participants attended the final day of the programme.

5.4.8. Data cleaning, scoring and collation.

Completed DIT2 questionnaires for both groups and all controls were checked for consistency e.g. that the sex identified on questionnaires completed by the same participant on different dates remained the same on all three copies of the DIT2. Activity reports and content in the VLE was reviewed for relevant data.

As (Moodle) pilot educational programmes are generally reviewed for quality assurance and planning purposes, and notwithstanding that this review was not for inclusion in this thesis, a baseline of participants' perception of the importance of pseudonyms, VLE skills, face-to-face sessions and moral reasoning competency/ -ies development was obtained by means of a question on the questionnaire (Appendix 17, question 4).

5.4.8.1. Format DIT2 data for processing at the Center for the Study of Ethical Development.

Data from the completed DIT2 questionnaires (Appendix 39⁸⁶) was entered into an excel spreadsheet to a format designated by the CSED and emailed to the CSED for scoring.

A range of developmental indices (Appendix 36) was returned from the CSED as scored data, to include participants' developmental indices (P-Score (Section 3.5.3), N2-Score (Section 3.5.7), MN-Score⁸⁷ and PI-Score⁸⁸ (Bebeau & Thoma, 2003) and those related to type, consolidation and transition (Section 3.5.4) and the U-Score (Section 3.5.6). Processed data returned to the researcher is presented in Appendix 39. The researcher

⁸⁶ Appendix 39: Raw and processed data pertaining to the work conducted in this thesis, from the Centre for the Study of Ethical Development (CSED). An addendum, which accommodates the raw data, is linked to Appendix 39. Appendix 39 is therefore situated at the end of the thesis, and assigned the highest Appendix number employed in the thesis.

⁸⁷ MN-Score: DIT2 'maintaining rules and norms' schema score, which represents the proportion of items selected that appeal to Stage 4 considerations (Table 3.4).

⁸⁸ PI-Score: DIT2 'personal interest' schema score, which represents the proportion of items selected that appeal to Stage 2 and Stage 3 considerations (Table 3.4).

cross-checked processed data against the raw data, i.e. the DIT2 surveys completed by study participants, as found in the Addendum to Appendix 39.

5.4.8.2. Collate data on the VLE: Responses, engagement and activity records.

In order to provide a baseline measure of potential professional, commercial and personal influencers in decision-making (Section 2.5), relevant aspects of participant responses to the pre intervention questionnaire (Appendix 17) were collated for review and analysis.

Records of engagement in the optional activities were accessed on Moodle in order to collate the proportion of 'doses' (Appendix 29) of the educational intervention engaged with by participants.

5.4.9. Data review and analysis.

The aim of this study was to consider whether an educational intervention impacted on moral reasoning competency/ -ies development in community pharmacists in Ireland, as measured by the DIT2. The study employed a repeated measures crossover design to investigate whether aspects of theory, as supported by the existing evidence base relating to the Neo-Kohlbergian approach to moral reasoning competency/ -ies development, might be generalised to Irish community pharmacists. The approach to data analysis was therefore influenced by review of methodologies generally used for crossover studies in the social and behavioural sciences (e.g. Kirk, 2013; Bryman, 2012) and in education (e.g. Cohen et al, 2007; Gall et al, 2007). It was also influenced by the underpinning theory, e.g. the prediction that paired t-tests of measures of post-conventional reasoning on the DIT, pre and post an educational intervention that has been designed to impact on moral reasoning competency/ -ies development, will be statistically significant (Rest et al, 1999b, 1997a and Section 4.9.2). The development of the analysis plan was also guided by Cohen's (1990) key recommendations to include consideration of (1) whether the data is nominal⁸⁹, ordinal, interval or ratio, (2) whether the researcher is describing a population (descriptive statistics) or making inferences about a population from the sample (inferential statistics) and (3) how many variables are included in the analysis.

⁸⁹ Variables included in the dataset following scoring by the Center for the Study of Ethical Development (Appendix 36) are referred to as nominal or scale.

Data generated, including developmental scores and development profile and phase indices as scored by the CSED (Appendix 39), was reviewed for accuracy, i.e. for errors, omissions and missing data, in order to assure that the data could be reliably used in the analysis process. Data was entered into SPSS as appropriate. An analysis plan was established based on the range of data available.

5.4.9.1. Data review.

In order to assure the accuracy of the file used for analysis, Data on DIT2 surveys completed by participants was cross checked against data returned from the CSED. It was also cross-checked against data subsequently entered into SPSS. Scoring of the completed DIT2 questionnaires resulted in the purging, or exclusion from the dataset, of one questionnaire completed by a participant in Group 2 (n=11) in April 2011. This participant was excluded from the control group and the remaining ten members of this group 2 formed the control group for group 1 (Table 5.1 & Figure 5.4).

While DIT2 questionnaires for the six pharmacists that were deemed individual 'controls' during the study were scored by the CSED, the range of potential confounds was so great (Appendix 18) that they were not included in the analysis phase (Section 5.4.6.2; Table 5.1 & Figure 5.4). Participants that did not attend at both of the face-to-face days incorporated into the educational intervention design (one participant in group 1 and four participants in group 2) were also excluded from the analysis phase (Table 5.1 & Figure 5.4).

Data collated from responses and activity on the VLE (Section 5.4.8.1; Appendices 17 & 29) was entered, as appropriate, into SPSS. Entries were cross-checked, prior to their use in analysis, against records available on Moodle.

5.4.9.2. Analysis plan: SPSS as an analysis tool.

The analysis plan was designed to maximise the advantages of the repeated measures crossover design (Section 5.2), and to accommodate RCT methodologies (Cochrane 2015a, 2015b) as appropriate i.e. insofar as reasonably possible, given the limitations associated with the small sample size and the quasi-randomisation of participants (Sections 5.2 &

5.4.5). The approach was guided by the general principle⁹⁰ in statistical analysis that a researcher begins by seeking to use parametric statistic tests, because they are generally more robust, and moves to non-parametric (though less robust) tests if data is determined to be non normal (e.g. Kirk, 2013; Field & Hole, 2003). However, consideration was also given to whether violations in data, even if they did occur, would bias towards the effect under study e.g. only a strong, rather than weak, skewness would have the potential to bias towards the effect under study (Kirk, 2013). The priority was that symmetry was determined as having been maintained. Appropriate normality testing was therefore included in the analysis plan i.e. tests for symmetry, skewness and kurtosis⁹¹, were included in the determination of descriptive statistics, and, in acknowledgement of the relatively large standard deviations aligned with the DIT2, tests for sphericity⁹², (Levene's test) were employed where appropriate. Results of analysis were reported where they were found to be statistically significant. In order to support decisions related to the analysis plan, skew and kurtosis were determined for the combined group 1&2 samples, and for groups 1 and group 2 independently, for relevant variables. Tests for normality of distribution preceded the final decision as to the range of statistical tests that would be employed.

Given that the crossover design of the study resulted in two groups, Chi-square was used to test for association of key categorical variables between groups. Categories were appropriately collapsed to accommodate the test and, where appropriate, numerical scales were adapted. Where one cell in the cross-tabulation contained less than 5 cases, a Fisher's Exact Test⁹³ was also determined.

Support for, and limitations of, the sample size used in this study have been discussed in Section 5.2.2 and 5.4.5.1. However '*p values are affected by the size of the treatment effects as well as the size of the sample*' (Kirk, 2013:134) and '*trivial*' treatment effects can achieve statistical significance if enough participants are included in an experiment.

⁹⁰ Given the small sample size and the use of the DIT2 in the study, an alternate principle i.e. the option of 'normalising the data' by, for example, removal of outliers, would not have been appropriate in this study (e.g. Kirk, 2013; Gall et al, 2007).

⁹¹ Paired t-tests and repeated measures ANOVA, statistical tests generally used with repeated measures designs, stand up well to violations of normality unless the distribution is heavily skewed (Kirk, 2013), i.e. while kurtosis testing was employed and was reported as appropriate, and results assisted with interpretation of the data's normality, a finding of 'significance' did not essentially result in a change to non-parametric tests.

⁹² Sphericity (e.g. Levene's test, as available in SPSS) tests for the assumption of equal variances - an important assumption of repeated-measures ANOVA (Kirk, 2013).

⁹³ Both statistics were determined in order to accommodate difference(s) in approach to the use of Chi-square in analysis between educational/educational psychology and the biomedical sciences (e.g. Kirk, 2013; Cohen et al, 2007; IBM Corp, 2012).

Unfortunately there is 'no measure' of the practical significance of research results, although measures of magnitude can help a researcher make this kind of assessment (Kirk 2013). Two categories of such measures, i.e. measures of strengths of association and measures of effect size (typically standardised mean differences), were therefore particularly relevant to the analysis plan for this study. Effect sizes for ANOVA, eta-squared or partial eta-squared, η^2 was used to measure the strength of association between the independent and dependent variables.

SPSS version 21 (IBM Corp, 2012) was used for data analysis and the report followed American Psychological Association guidelines for reporting statistics (APA, 2010).

Descriptive statistics were planned (Field & Hole, 2003) to include analysis of the sample of community pharmacists recruited to the study: (1) demographics as provided by the DIT2 questionnaire (level of education, sex and age); (2) indicators of professional, commercial and personal influencers as provided by the pre-intervention questionnaire, (3) variables derived from DIT2 questionnaires completed by participants during the study; and (4) level of engagement with the educational intervention. Presentation format emphasised graphic display suited to each type of data (Field & Hole, 2003). Evaluation of whether there were associations between groups was undertaken using Chi-square and/ or Fisher's Exact test as appropriate.

T-tests (one-tailed, independent and paired) were the preferred test as each is the ratio of the difference between means (the experimental effect) as a function of the degree to which those means would differ by chance alone and derive from the null hypothesis that two samples have roughly the same mean (Field & Hole, 2003). The test statistic produced indicated if there was a difference. As the DIT2 had not been independently validated in the Irish community pharmacy setting (Section 3.5.1.2) one-tailed t-tests were employed to compare means of baseline data (Dong, 2011) with the study sample. Independent t-tests supported the comparison of groups. Paired t-tests aligned with the repeated measures crossover study design (Section 5.2).

ANOVA was chosen to investigate interactions between different aspects of the results e.g. interactions between developmental indices and grouping variables. The test provided an F-statistic that compared systematic (related to the intervention) and unsystematic variance (Kirk, 2013; Field, 2009). A large value of F was unlikely to occur if the manipulation had no effect in the population.

P-values indicate the probability of values of at least the observed magnitude (which is generally set at 95%) arising if the null hypothesis, i.e. that there is no association between the dependant and independent variables in this study, was true. P-values were reported for each of the test statistics (Field & Hole, 2003). While $p < .05$ was deemed to be significant for the purposes of reporting, $.05 < p < .10$, indicating statistical tendencies, was also reported.

Each statistic was presented with its standard deviation (SD) (APA, 2010). Where appropriate, effect size (Cohen's d), an objective measure of the magnitude of an observed effect, described by Cohen as '*the primary product of a research inquiry*' (1990:13), was also reported, with the guideline that the t-test threshold for a large effect is $d = .8$, that for a medium effect is $d = .5$ and that for a small effect is $d = .2$.

Effect sizes for ANOVA⁹⁴, referred to as eta-squared or partial eta-squared, are that a large effect is $\eta^2 = .26$, that for a medium effect is $\eta^2 = .13$ and that for a small effect is $\eta^2 = .02$ (Cohen, 1994). Where there was only one predictor, as in the case of analysis for this study, eta-squared and partial eta-squared, as determined using SPSS, were the same. Levene's test was used to confirm acceptable homogeneity of variances for the statistical tests employed.

5.5. Summary.

Key issues and challenges which underpin the choice of methodology and experimental design have been discussed. The research design philosophy has been described as outlined in Figure 5.2 and the combination of the design and methods used are summarised in Table 5.2. Each stage has been described in appropriate detail to facilitate replication of the key aspects of the study. The analysis plan has been outlined in Section 5.4.9.

Results and analysis are presented in chapter 6.

⁹⁴ The ANOVA method has some very important assumptions – especially the assumption of normality. However, as long as the violations are not too severe, ANOVA is fairly robust to violations of this assumption (Kirk, 2013).

Chapter 6 - Results and analysis

6.1. Introduction.

The aim of this chapter is to report on the analysis of data collected during this study.

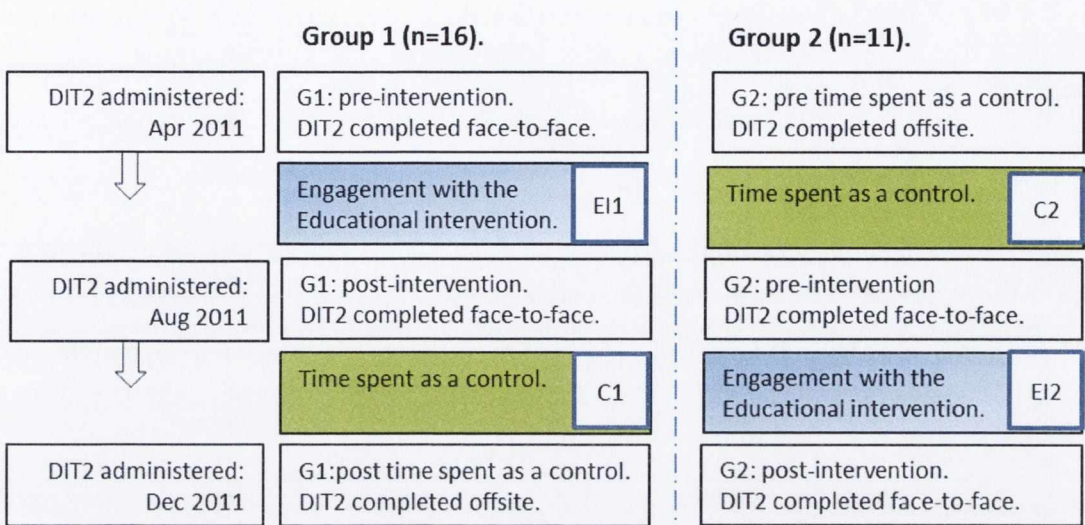
The chapter begins with a review of demographics of the sample of pharmacists recruited to the study and related descriptive statistics are presented before describing the sample in the context of responses to a pre-intervention survey on potential professional, commercial and personal influencers. This is followed by review of variables or indices relevant to the study, included in the DIT2 dataset, indices which were determined by scoring of completed DIT2 questionnaires (Appendix 36). Variables related to delivery of the educational intervention are presented after which changes in key indices pre-post the educational intervention and pre-post time participants spent as 'controls' are considered. Results are then investigated for relationships in the context of the research question.

As identified in Section 5.2.2 and 5.4.5.1 randomisation was not absolute and the impact of eight pharmacists (32%) that had been randomly assigned to the first group subsequently having the option to join the second group would be an 'unknown' influence on, and has the potential to confound, the outcomes of the study. The groups are therefore described and analysed separately (Group 1 and Group 2) and as a composite (Group 1 & 2).

6.2. Analysis of the sample of community pharmacists recruited to the study.

Two separate groups of pharmacists completed the educational intervention. Group 1 (n=16) began in April 2011 and completed the 16 week programme in August 2011 and Group 2 (n=11) began in August 2011 and completed in December 2011 As represented in the extract of Table 5.1, reproduced for convenience.

Table 5.1 (extract) – Educational Intervention: crossover design.



Key: G1= Group 1; G2=group 2; E1=time during which Group 1 engaged with the educational intervention; E2=time during which Group 2 engaged with the educational intervention; C1=time during which Group 1 acted as a control for Group 2; C2= time during which Group 2 acted as a control for Group 1.

Group 1 (n=16) acted as the control group for Group 2 (n=11), in that they completed the DIT2 a third time in December 2011 (see C1 in Table 5.1 (extract)). All participants confirmed, in December 2011, that they had not engaged in any further educational initiatives aimed at developing moral reasoning competencies between August 2011 and December 2011.

Ten members of group 2 acted as the control group for Group 1 (see C2 in Table 5.1 (extract)), DIT2 scores for one member of group 2 having been purged, (Section 5.4.9). All participants confirmed, in August 2011, that they had not engaged in other educational initiatives aimed at developing moral reasoning competencies between April 2011 and August 2011.

Pharmacist age profiles are summarised in Table 2.1 (Section 2.2) and pharmacist area of practice, as self-declared when registering with the PSI, is summarised in Table 2.2 (Section 2.2.1).

6.2.1. Demographics: analysis of the sample(s).

The DIT2 questionnaire (Appendix 10) includes demographic data, responses to which were collated, and, where appropriate, compared with national statistics for pharmacists in Ireland. Data potentially relevant to this study includes level of education, sex and age in years (Appendix 10).

In addition a questionnaire completed, online, by each participant during the face-to-face day at the beginning (Appendix 17) of the 16 week programme provided data included in the sample analysis. Outcomes for each group are presented separately, and as a combined group (n=27).

6.2.1.1. Level of education completed by participants.

Level of education of participants in the two test groups combined (n=27) was identified from completed DIT2 questionnaires as being at professional degree level (n=17), Masters degree level (n=7) or PhD level (n=3). A total 11% (three pharmacists, one of whom was in group 1, of the participants (n=27) hold PhD degrees, while 26% (seven pharmacists, six of whom were in group 1, hold Masters level degrees.

Given that '*Studies of large composite samples (thousands of subjects) show that 30% to 50% of the variance of DIT scores is attributable to level of education*' (Bebeau & Thoma, 2003), the potential impact of educational level is generally reviewed during analysis of DIT2 responses. However reliability is reduced when the full range of levels is not included in the sample. In this study, where the sample size was small and only three educational levels were represented, inferences aligned with level of education are not likely to be reliable. Hence analysis of level of education, as compared with DIT2 indices or scores, was not further analyzed in the context of this study.

6.2.1.2. Sex of participants.

Participants in this study were all volunteers and hence the numbers of males and females participating was not controlled.

A total 74% (20 pharmacists) of participants were female, with proportionally more males in Group 2 (36%/4) than in group 1 (19%/3). However these differences between groups were not found to be statistically significant. Of the 4,793 pharmacists registered with the

PSI in 2011, 62% were female indicating that the sample recruited had 12% more females as compared with national averages for registered pharmacists.

6.2.1.3. Age of participants.

One participant in group 2 declined to supply age so the average provided for the combined group 1 and group 2 is for 26 participants and for group 2 it is ten participants.

The combined group (n=27) age range(s) are provided in Table 6.1, shown as compared with the pharmacist age profile on the PSI register.

Table 6.1: Pharmacist age profile compared with national statistics.

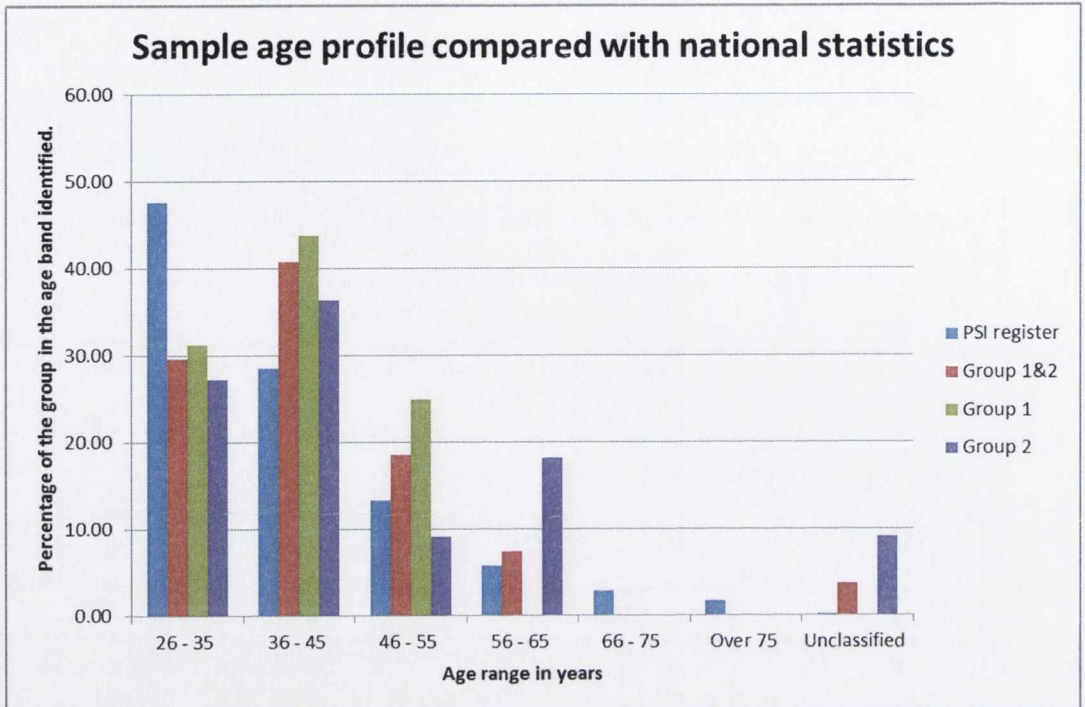
Pharmacist Age Profile: PSI register			PSI excluding 20-25yrs	Group 1&2		Group 1		Group 2	
Age	n=	%		n=	%	n=	%	n=	%
20 - 25	428	8.9%	excluded	excluded		excluded		excluded	
26 - 35	2080	43.4%	47.6%	8	29.6%	5	31.3%	3	27.3%
36 - 45	1245	26.0%	28.5%	11	40.7%	7	43.8%	4	36.4%
46 - 55	580	12.1%	13.3%	5	18.5%	4	25.0%	1	9.1%
56 - 65	256	5.3%	5.8%	2	7.4%	0	0.0%	2	18.2%
66 - 75	124	2.6%	2.9%	0	0.0%	0	0.0%	0	0.0%
Over 75	70	1.5%	1.7%	0	0.0%	0	0.0%	0	0.0%
Unclassified	10	0.2%	0.2%	1	3.7%	0	0.0%	1	9.1%
Grand Total	4793	100.0%	100.00	27	100%	16	100%	11	100%
Mean age	Not provided			40.6 years		39.5 years		42.3 years	
SD	Not provided			8.8 years		7.5 years		10.7 years	

Source: PSI (2011) and demographic data collection of study sample

Table 6.1 identifies that of the 4,793 pharmacists registered with the PSI in 2011, 87% were between 26 and 65 years old and those under 26 years, generally excluded from this study on the basis that participants were required to be a minimum of three years on the register, represent 8.9% of the total (PSI, 2011). Age distribution, i.e. values of skewness and kurtosis, was determined to be acceptably normal.

Comparison with age ranges of those recruited to the study (Table 6.1 and Figure 6.1) indicate that there was some over-sampling in the 36-45 and 46-55 age ranges as there were proportionally more participants in the study than would be found on the PSI register. Likewise there were proportionally less participants in the 26-35 age range than would be found on the PSI register.

Figure 6.1: Study sample age profile compared with national statistics.



Key: N's=27 (Group 1&2), 16 (Group 1), 11 (Group 2).

Note: Age range under 25 years excluded, as this age-group was excluded from the sample.

The age range of participants was similar for the two groups. Group 1 (n=16) age range was 31 to 54 years (mean = 39.5 years, SD = 7.46) while group 2 (n=10) age range was 28 to 60 years, (mean= 42.3 years, SD = 10.70). Participants in group 2 were an average of two years older than those in group 1.

Females (n=20⁹⁵) in the study group ranged in age from 28 to 54 years (mean = 38.4 years, SD = 7.1 years) and males (n=7) ranged from 33 years to 60 years (mean = 46.6 years, SD = 10.5 years).

In order that age could be compared with changes in key developmental indices and in order to further analyse using SPSS, two additional variables were created as follows:

- Age categories 26-35, 36 to 45 and 46 to 65.
- 35 or under and 36 or over⁹⁶.

⁹⁵ As one participant declined to give her age, n=19 for calculation of the mean age of females in the sample.

⁹⁶ Differences between these two groups were not found to be statistically significant.

6.2.2. Demographic data collection and analysis – professional, commercial and personal influencers.

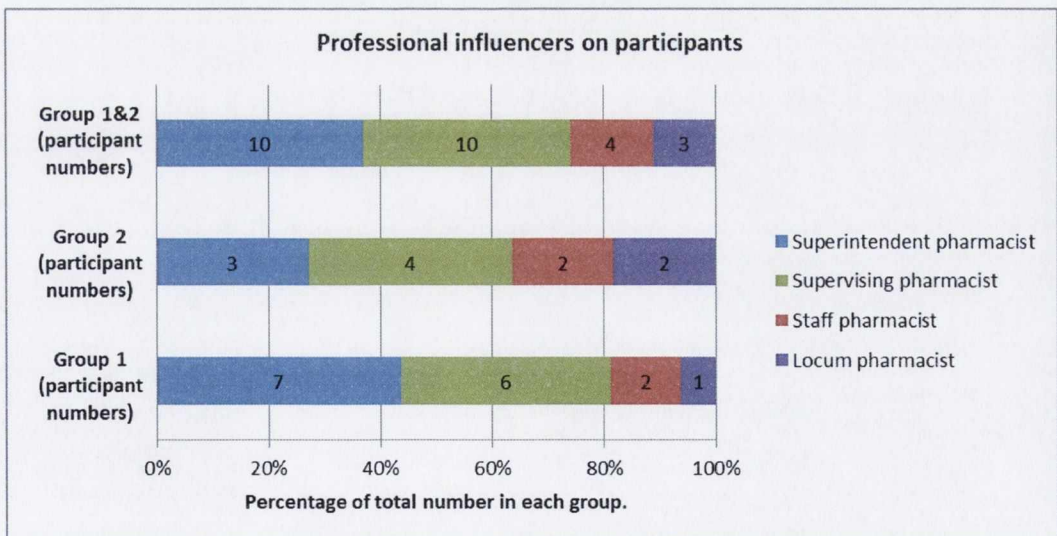
Additional data was collected from participants by means of a questionnaire (Appendix 17) completed during the first day of the 16 week educational intervention.

This pre-intervention questionnaire was designed to include one question related to each of professional, commercial and personal domains (Table 2.9, Section 2.5.3). These questions were intended to facilitate categorization of participants so that potential influencers might be reviewed for relationships with moral reasoning competencies development. The three questions were referred to as being related to professional, commercial and personal influencers. Results are summarized in Figures 6.2, 6.3 and 6.4, and detailed results are provided in Appendix 37.

6.2.2.1. Professional influencers on the pharmacist.

Question 1 (Appendix 17) sought to establish whether the participant was currently employed as a SIP, SVP, staff pharmacist or locum, with participants being advised to tick the highest level of professional responsibility that applied, as presented in Figure 6.2.

Figure 6.2: Professional influencers on participants in the study.



Key: N's=27 (Group 1&2), 16 (Group 1), 11 (Group 2).

Results identified that participants recruited to the study included those with responsibilities of SIP, SVP, staff pharmacist and locum roles (section 2.3.1.1). In the combined group (n=27), ten (37%) of participants were SIPs, ten (37%) were SVPs and the

remaining seven (26%) participants were either staff (four/15%) or locum (three/11%) pharmacists.

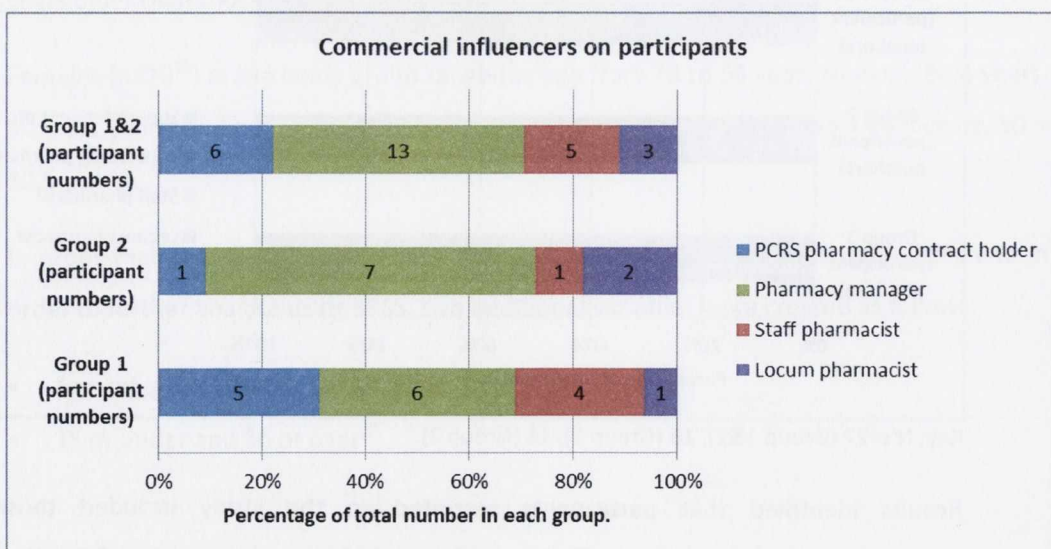
In Group 1 (n=16), seven (44%) of participants were SIPs, six (37%) were SVPs and the remaining three participants were either staff (two/13%) or locum (one/6%) pharmacists. In Group 2 (n=11), three (27%) of participants were SIPs, four (37%) were SVPs, two (18%) were staff and two (18%) were locum pharmacists. Differences between groups, determined on the basis of whether or not participants were SIPs, were not found to be statistically significant.

While both groups had 37% of participants holding the SVP role only, there were proportionally less participants in group 2 holding the SIP role. The relationship between professional roles and the development of moral reasoning competencies, as measured by the DIT2, is reviewed during the analysis stage.

6.2.2.2. Commercial influencers on the pharmacist.

Question 2 (Appendix 17) sought to establish whether the participant currently held the role of contract holder, owner, manager, staff member or locum with participants being advised to tick the highest level of commercial responsibility that applied, as presented in Figure 6.3.

Figure 6.3: Commercial influencers on participants in the study.



Key: N's=27 (Group 1&2), 16 (Group 1), 11 (Group 2).

Results identified that participants recruited to the study included those with responsibilities

related to being a contract holder, manager, staff member or locum. In the combined group (n=27), six (22%) participants were PCRS contract holders, 13 (48%) were pharmacy managers, five (19%) were staff members and the remaining participants (three/11%) were locum pharmacists.

In Group 1 (n=16), five (31%) of participants were PCRS contract holders, six (38%) were pharmacy managers, four (25%) were staff members and the remaining participant one (6%) was a locum pharmacist. In Group 2 (n=11), one (9%) of participants was a PCRS contract holder, seven (64%) were pharmacy managers, one (9%) was a staff member and two (18%) were locum pharmacists. Differences between groups, determined on the basis of whether or not participants were PCRS contract holders, were not found to be statistically significant.

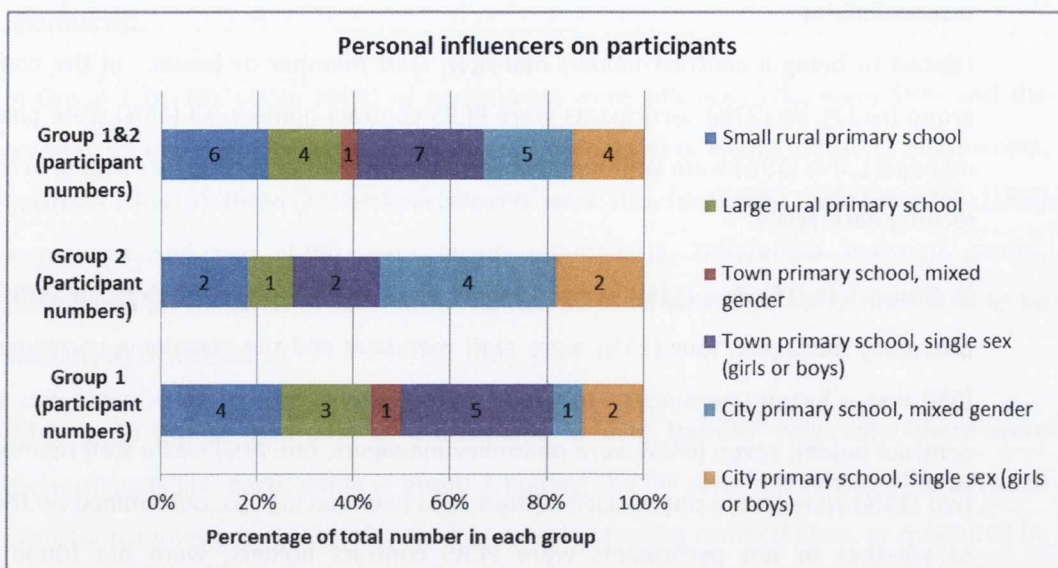
While group 1 participants (five/31%) were more likely to be PCRS contract holders than Group 2 participants (one/9%), a greater proportion of Group 2 participants (seven/64%) were pharmacy managers than Group 1 participants (six/38%). While some participants might have been an owner or majority shareholder in the retail pharmacy business in addition to being a PCRS contract holder, no participant of either group declared herself to be an owner or majority shareholder in the retail pharmacy business without also being a PCRS contract holder.

The relationship between commercial roles and the development of moral reasoning competencies, as measured by the DIT2, is reviewed during the analysis stage.

6.2.2.3. Personal influencers on participants in the study.

Research indicates that early education, such as the primary school setting in Ireland (INTO, 1996; DoE, 1971) may influence the development of personal values in students (Maeda et al, 2009; Rest & Thoma, 1985). It was therefore decided to focus on the primary school setting for Question 3 (Appendix 17). This question sought to differentiate the early educational environment engaged with by participants on the basis of the type of primary school attended when aged four to 12 years i.e. number of teachers in the school, whether situated in a town of greater or less than 3,000 population) or in a city, and whether it was a mixed or single sex school, as presented in Figure 6.4.

Figure 6.4: 'Personal' influencers on participants in the study.



Key: N's=27 (Group 1&2), 16 (Group 1), 11 (Group 2); Small rural primary school=4 or less teacher school, county or town less than 3,000; Large rural primary school=more than 4 teacher school, county or town less than 3,000; town primary school, mixed gender=town population greater than 3,000, mixed male and female students; town primary school, single sex(girls or boys)=town population greater than 3,000, either all male or all female students; City primary school, mixed gender=designated as a city, mixed male and female students; City primary school, single sex (girls or boys)=designated as a city, either all male or all female students.

Results identified that participants recruited to the study had a broad range of primary school educational experiences. In the combined group (n=27), six (22%) of participants attended a small rural primary school, four (15%) attended large rural primary schools, one (4%) attended a mixed male/female school in a town, seven (26%) attended a single sex school in a town, five (19%) attended a mixed school in a city and the remaining four (15%) attended primary school in a single sex school in a city. As rural schools are mixed gender male and female, 11 (41%) of participants attended single sex primary schools.

In Group 1 (n=16), four (25%) of participants attended a small rural primary school, three (19%) attended large rural primary schools, four (37%) attended schools in town, only one of whom attended a mixed male/female school and the remaining three (19%) participants attended primary school in a city, one in a mixed male and female schools and the other two in single sex schools. Seven (44%) of group 1 (n=16) participants attended single sex primary schools. In Group 2 (n=11), two (18%) of participants attended a small rural primary school, one (9%) attended a large rural primary school, two (18%) attended schools in a town both of which were single sex schools, four (37%) attended primary school in a mixed male and female school in a city and two (18%) in single sex schools in cities. Four (37%) of group 2 (n=11) participants attended single sex primary schools.

Differences between groups, determined on the basis of whether or not participants attended a single sex primary school, were not found to be statistically significant.

The relationship between personal, early childhood influences and the development of moral reasoning competencies, as measured by the DIT2, is reviewed during the analysis stage.

Notwithstanding the restrictions arising from the commitment to protect the identity of participants in this study, and therefore restrictions regarding the range of questions that might be asked, these three questions sought to collect and collate participant information that has the potential to support consideration as to whether variation in influences exerted by these factors might correlate with variations in responses to the DIT2 pre-post engagement with the educational intervention.

6.2.3. Validity of control groups: managing potential confounds.

Two further questions posed to participants (Appendix 17: questions 5&6) were included in order to identify participants that had engaged in other educational initiatives designed to improve moral reasoning competencies, or communicated about the content/nature of the study with participants in the alternate group in this study, during the four months that the participants were considered to be part of a control group for this study. These two questions were:

Q.1 : 'Other than completing the DIT2 questionnaire for the pilot project run by Cicely Roche, have you taken part in any formal/structured ethics educational initiatives during the last 4 months? Y/N (If yes please indicate number of hours dedicated to the programme.)'

Q.2 : 'Have you been in contact with/communicated with participants in pilot group 1 about the content/nature of the course during the last 4 months? If so, please specify details?'

Group 1 participants answered these two questions in December 2011, when they finished the period of time when they acted as a control group for group 2 participants. They all confirmed that they had not taken part in any formal/structured ethics educational initiatives during the previous four months, August to December 2011. All participants in group 1 confirmed that they had not discussed the programme with participants in Group 2 during that time period.

Group 2 participants answered these two questions in August 2011, when they finished the period of time when they acted as a control group for group 1 participants but prior to undertaking the educational intervention.

6.2.4. Summary

This section has reviewed the sample recruited to the study according to demographic variables included in the DIT2 dataset that were determined to be directly relevant to the study. While age ranges of participants are higher than on the PSI register (Table 6.1), resulting from over-representation of 35 to 45 year olds in the group of volunteers, the sample is otherwise considered to be representative of community pharmacists in Ireland during 2011. Additional data, as obtained through the use of a study-specific questionnaire which took account of the preference that professional, commercial and personal influencers would be identified, and support categorisation of participants, was also reviewed. While the questions used have not been validated, the questionnaire nonetheless provides some opportunity to provide additional context to support interpretation of variations in DIT2 scores and indices between groups of participants.

In order that professional, commercial and personal influencers as estimated may be investigated for correlation with changes in key developmental indices and in order to further analyse, variables were created as follows:

- Professional influencers: to indicate numbers of participants that hold the role of superintendent pharmacist (SIP), supervising pharmacist (SVP) or are a staff pharmacist or locum pharmacist.
- Commercial influencers: to indicate numbers of participants that own or are a majority shareholder in the pharmacy and/or hold the PCRS pharmacy contract, manage the pharmacy or are employed as a staff pharmacist or locum.
- Personal influencers: to indicate numbers of participants that attended a primary school located in a rural setting, a town or a city.

6.3. Variables derived from DIT2 questionnaires completed by participants prior to engagement with the educational intervention in the study.

This section begins with an overview of variables derived from the DIT2 (section 3.5.8) before presenting summaries of scores derived from participant completion of the DIT2

pre engagement with the educational intervention. Participant scores are compared with 'norms', or baseline figures, provided by Dong (2011) before summarising the overview of the sample in the context of the research question.

6.3.1. Variables derived from the DIT2.

Variables in the dataset following scoring of the DIT2 by the CSED (Appendix 36) included the demographic variables as reviewed in Section 6.2.1. and a series of developmental indices, developmental profile and phase indices, experimental indices and reliability checks. Variables relevant to the research question are summarized and participant scores as obtained pre engagement with the educational intervention are discussed in turn.

6.3.1.1. Developmental indices.

As has been identified earlier in this thesis, DIT2 items cluster around three general moral schemas i.e. arguments that appeal to personal interest (PI), to maintaining social 'rules', norms and codes (MN), or to moral ideals and/or theoretical frameworks for resolving complex moral issues (PC or P-Score) (see Table 3.4, Section 3.5.2.). The proportion of items that appeal to each given stage's considerations (Bebeau & Thoma, 2003), as selected by participants, is reported. Results, reported as percentages, may theoretically be between 1% and 95% (Appendix 8).

The fourth developmental index, the N2-Score, which combines the degree to which PC items are prioritized plus the degree to which PI items receive lower ratings than the ratings given to PC items, is also presented as a percentage. Results may theoretically be between 1% and 95% (Appendix 8). While the N2-Score is now the preferred index for use in reporting DIT2 scores (e.g. Bebeau & Thoma, 2003), previous studies on community pharmacists reported in the literature (e.g. Latif, 2001a, 2000a, 2000c; Latif & Berger, 1997) reported only P-Score's and therefore, in order to facilitate discussion regarding comparisons, both P-Scores and N2-Score are reported throughout this thesis. P-Score and N2-Score distributions, i.e. values of skewness and kurtosis, as determined both prior to participant engagement with the educational intervention and prior to periods during which participants were acting as controls (Table 5.1), were all determined to be acceptably normal.

However as the DIT has not been independently⁹⁷ validated in the Irish Community Pharmacy setting, the study sample was compared with norms across the general population. Norms for graduates for the four developmental indices, as generated from the DIT2 database maintained by the CSED from 2005 to 2009 (Dong, 2011), are provided in Table 6.2.

Table 6.2: Norms (Dong, 2011) of developmental indices derived from the DIT2 for graduates.

Norms for the DIT2: From 2005-2009 – graduates: Dong, Yangxue, University of Alabama, Office for the Study of Ethical Development.					
Developmental Indices		All		Male n=7347	Female n=8030
N2-Score	Mean	41.33	n=15494	39.79	42.75
	SD	14.57		14.43	14.57
P-Score (PC schema – stage 5/6)	Mean	41.06	n=15496	39.12	42.82
	SD	15.22		14.97	15.24
MN-Score (MN schema – stage 4)	Mean	34.07	n=15496	Not reported by Dong	
	SD	14.36			
PI-Score (PI schema – stage 2/3)	Mean	20.61	n=15496	Not reported by Dong	
	SD	11.46			
Type Indicator	Mean	5.33	n=15492	Not reported by Dong	
	SD	1.72			

Key: N2=DIT N2-Score, P=DIT P-Score, MN=DIT MN-Score, PI=DIT PI-Score, Type=DIT Type indicator.

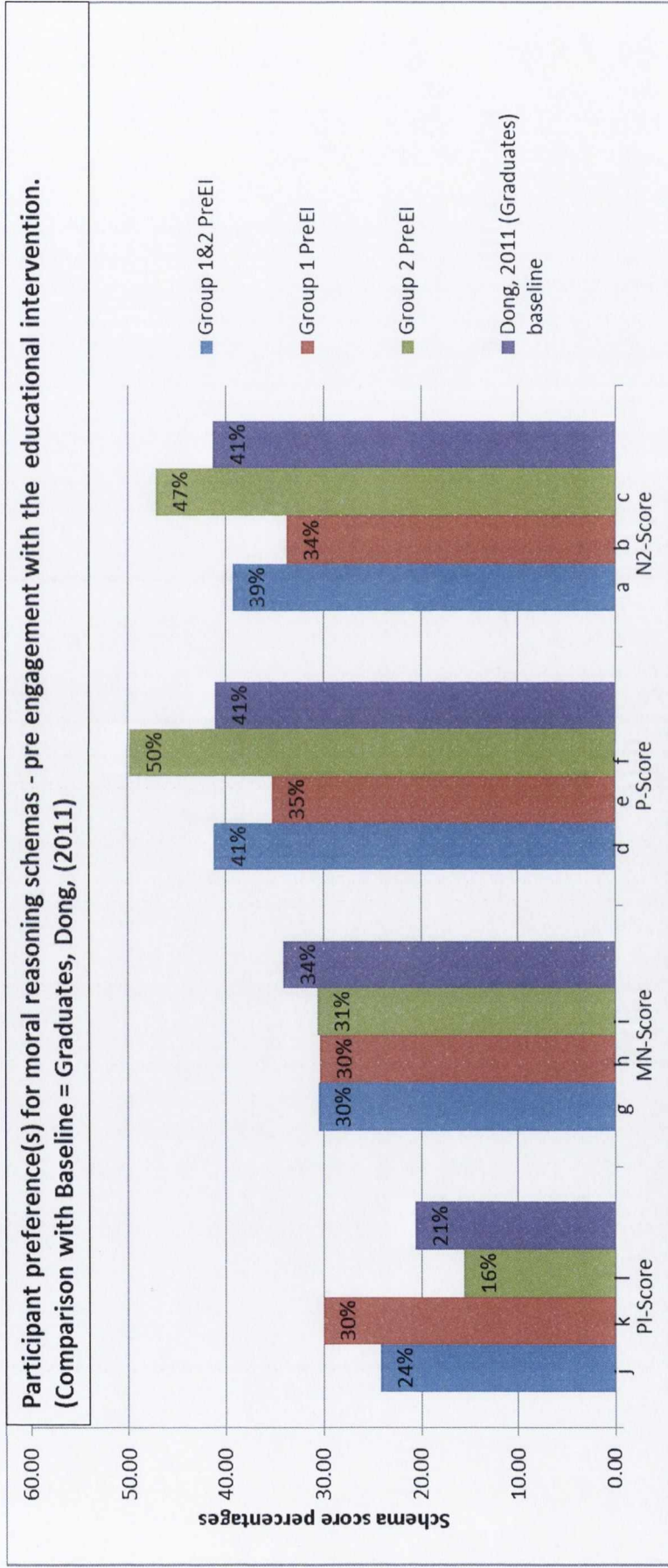
Analysis begins with comparison of the study sample(s) with the norms, or baseline figures, as reported by Dong (2011).

6.3.1.1.1. Comparison of study sample(s) pre-intervention scores with Dong (2011) baseline figures.

An overview of participant preferences as determined pre engagement with the educational intervention, in the combined group 1&2, and in group 1 and group 2 as compared with the baseline averages provided by Dong (2011) is provided in Figure 6.5.

⁹⁷ Validity criteria for the DIT have been discussed in section 3.5.1.2. **Note:** The process of calculating a Cronbach's alpha from developmental score averages across the five stories in the DIT, for the relatively small number of surveys used in this study (Appendix 39), would itself have limitations (Kirk, 2013). For the purpose of illustration, Cronbach's alpha has been determined: Cronbach's alpha = .664.

Figure 6.5: Participant preference(s) for moral reasoning schemas prior to engagement with the educational intervention. (Baseline = Dong, 2011: Graduates).



Key: Baseline=reference to Dong (2011); N2=DIT N2-Score, P=DIT P-Score, MN=DIT MN-Score, PI=DIT PI-Score; Ns=15,494 (Baseline for N2-Score), 15,496 (Baseline for P-Score, MN-Score and PI-Score); 27 (Group 1&2), 16 (Group 1), 11 (Group 2); PreEI=pre engagement with the educational intervention; a - l=reference to Table 6.3.

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Analysis of differences between Dong's baseline scores for developmental indices and scores determined for study group participants as measured directly prior to engagement with the educational intervention, and as presented in Figure 6.5, is summarized in Table 6.3.

Table 6.3: Participant developmental indices scores compared with Baseline scores (Dong, 2011).

Index	Baseline Mean (SD)	PreEI Mean (SD)	t-statistic	Effect size <i>d</i>
Group 1&2				
N2-Score	41.33 (14.57)	39.23 (18.96)	^a 0.57	.12
P-Score	41.06 (15.22)	41.15 (18.44)	^d -0.03	.01
MN-Score	34.07 (14.36)	30.44 (14.49)	^g 1.30	.25
PI-Score	20.61 (11.46)	24.18 (13.69)	^j -1.35	.28
Group 1 PreEI				
N2-Score	41.33 (14.57)	33.79 (17.86)	^b 1.69	.46
P-Score	41.06 (15.22)	35.20 (16.14)	^e 1.45	.37
MN-Score	34.07 (14.36)	30.36 (14.27)	^h 1.04	.26
PI-Score	20.61 (11.46)	30.05 (13.10)	^k -2.88*	.77
Group 2 PreEI				
N2-Score	41.33 (14.57)	47.15 (18.44)	^c 1.05	.35
P-Score	41.06 (15.22)	49.82 (18.81)	^f -1.54	.51
MN-Score	34.07 (14.36)	30.55 (15.49)	ⁱ 0.75	.24
PI-Score	20.61 (11.46)	15.64 (9.71)	^l 1.70	.47

Key: Ns=15,494 (Baseline for N2-Score), 15,496 (Baseline for P-Score, MN-Score and PI-Score); 27 (Group 1&2), 16 (Group 1), 11 (Group 2); * $p < 0.05$; PreEI=pre engagement with the educational intervention; Baseline=reference to Dong (2011); N2=DIT N2-Score, P=DIT P-Score, MN=DIT MN-Score, PI=DIT PI-Score; d =Cohen's d statistic, standard deviations are in parentheses; ^a - ^l=reference to Figure 6.5.

The difference between the baseline measure of PI-Score and the Group 1 sample ($t(15) = 2.88$; $p = .01$, $d = .77$) was found to be statistically significant and the effect size was large. However the PI-Score is the least stable, in the sense that it is derived from fewer items and as such has lower reliability, and least used index. No other differences between the baseline figures as determined by Dong (2011) and participant preferences for moral reasoning schemas pre engagement with the educational intervention were identified as being significant, supporting claims that the sample may be considered comparable with samples held in the database, or referred to in related publications.

As group 2 participants completed the DIT2 for the first time in April 2011, when acting as a control group rather than directly pre engagement with the educational intervention that particular set of DIT2 results related to questionnaires completed directly after recruitment

to the study. Differences between baseline (Dong, 2011) scores and the scores obtained by participants in group 2 prior to their engagement as members of a control group were therefore analysed in order to confirm that group 2 could be considered comparable with samples held in the database, or referred to in related publications, at the point of recruitment to the study. Results of this analysis are reported in Table 6.4.

Table 6.4: Group 2 'Pre time spent as a control' developmental indices score(s) compared with Baseline scores (Dong, 2011).

Index	Baseline Mean (SD)	PreCn Group 2 Mean (SD)	t-statistic	Effect size <i>d</i>
N2-Score	41.33 (14.57)	45.17 (18.44)	0.66	.23
P-Score	41.06 (15.22)	49.48 (18.07)	1.47	.50
MN-Score	34.07 (14.36)	33.77 (10.97)	0.09	.02
PI-Score	20.61 (11.46)	13.54 (14.37)	1.56	.54

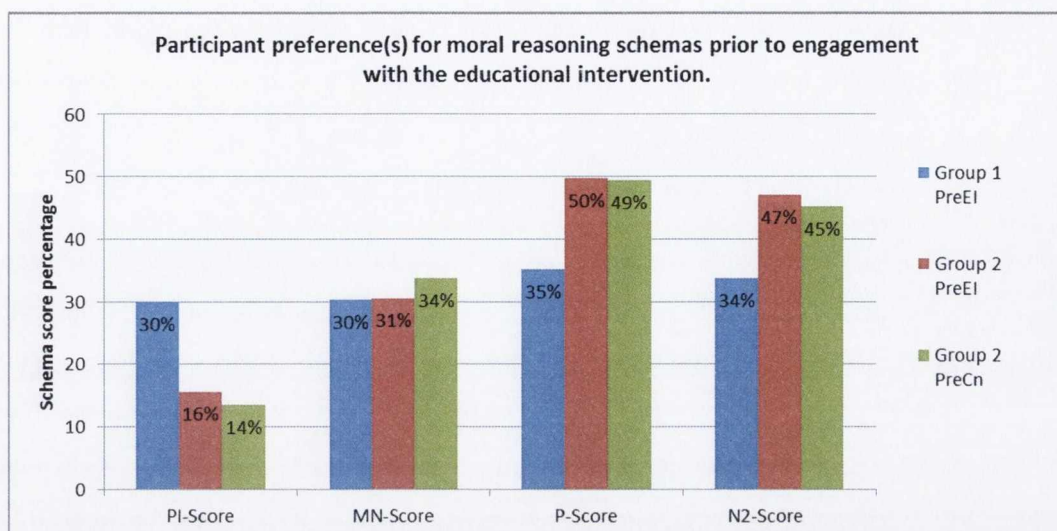
Key: Ns=15,494 (Baseline for N2-Score), 15,496 (Baseline for P-Score, MN-Score and PI-Score), 10 (PreCn Group 2); $p < .05$; PreCn=pre engagement in a control group; Baseline=reference to Dong (2011), N2=DIT N2-Score, P=DIT P-Score, MN=DIT MN-Score, PI=DIT PI-Score; *d*=Cohen's *d* statistic, standard deviations are in parentheses.

No differences between baseline and group 2 pre-control (PreCn) developmental scores were found to be significant and group 2 participants, at the time they were recruited to the study, are considered to have been comparable with samples held in the database.

6.3.1.1.2. Comparison between Group 1 and Group 2: Schema pre-intervention scores.

In order to investigate whether differences between group 1 and group 2 developmental indices are significant, scores for developmental indices obtained by each group prior to engagement with the educational intervention were compared as summarised in Figure 6.6.

Figure 6.6: Participant preference(s) for moral reasoning schemas prior to engagement with the educational intervention.



Key: N2=DIT N2-Score, P=DIT P-Score, MN=DIT MN-Score, PI=DIT PI-Score; N's=16(group 1 PreEI), 11(Group 2 PreEI), 10(Group 2 PreCn); PreEI=pre engagement with the educational intervention; PreCn=pre engagement in a control group.

Analysis of differences between group 1 and group 2 scores for developmental indices, as determined for participants when measured prior to engagement with the educational intervention and as presented in Figure 6.6, is summarized in Table 6.5.

Table 6.5: Comparison between group 1 and group 2 developmental indices scores pre engagement with the educational intervention.

Index	Group 1 PreEI Mean (SD)	Group 2 PreEI Mean (SD)	t-statistic	Effect size <i>d</i>
N2-Score	33.79 (17.86)	47.15 (18.44)	1.89 [^]	.73
P-Score	35.20 (16.14)	49.82 (18.81)	2.16*	.83
MN-Score	30.36 (14.27)	30.55 (15.49)	0.03	.01
PI-Score	30.05 (13.10)	15.64 (9.71)	-3.10*	1.25
Index	Group 1 PreEI Mean (SD)	Group 2 PreCn Mean (SD)	t-statistic	Effect size <i>d</i>
N2-Score	33.79 (17.86)	45.17 (18.44)	1.56	1.01
P-Score	35.20 (16.14)	49.48 (18.07)	2.10*	.83
MN-Score	30.36 (14.27)	33.77 (10.97)	0.64	.23
PI-Score	30.05 (13.10)	13.54 (14.37)	-3.01*	1.20

Key: Ns=16 (Group 1 PreEI), 11 (Group 2 PreEI), 10 (Group 2 PreCn); * $p < .05$; [^] $=.10 > p > .05$; N2=DIT N2-Score, P=DIT P-Score, MN=DIT MN-Score, PI=DIT PI-Score; PreEI=pre engagement with the educational intervention; PreCn=pre engagement in a control group; Baseline=reference to Dong (2011); *d*=Cohen's *d* statistic, standard deviations are in parentheses.

Results of analysis indicate that differences between P-Scores ($t=-2.16$, $p=.04$, $d=.83$) and PI-Scores ($t=3.10$, $p=.01$, $d=1.25$) were found to be significant. The effect sizes for both were large, indicating that the findings, especially in relation to the more stable P-Score, are substantive or important. Differences between pre-intervention N2-Scores between group 1 and group 2 were not found to be significant at the $p<.05$ level, though $p=.07$ indicates statistical tendencies and the effect size was found to be large ($d=.73$).

Where pre-intervention scores for group 2 were determined from DIT2 questionnaires completed by participants in April 2011, results of analysis were similar to those obtained directly pre engagement with the educational intervention. Differences between P-Scores ($t=-2.10$, $p=.047$, $d=.83$) and PI-Scores ($t=3.01$, $p=.01$, $d=1.20$) were found to be significant, and the effect sizes for both were large indicating that the findings, especially in relation to the more stable P-Score, are substantive or important. Differences between N2-Scores between group 1 and group 2 were not found to be significant at the $p<.05$ level.

These analyses compare mean scores for developmental indices for group 1 and group 2 prior to the educational intervention and conclude that statistical tests for differences between the two groups indicate that differences are significant. As the research question posed relates to whether the educational intervention affects the development of moral reasoning competencies of community pharmacists in Ireland, the finding that there may be a difference between the two groups, with respect to baseline scores of key developmental indices, underpins the decision to continue to analyse the two groups jointly and as separate groups, during data analysis.

6.3.1.1.3. Comparison, by gender, of study sample(s) scores with Dong (2011) baseline figures: N2-Score and P-Scores.

Differences between the combined study group and Dong's baseline figures compared by gender were analysed and results are summarised in Table 6.6.

Table 6.6: Male and Female N2-Scores and P-Scores, combined group 1 & 2, compared with Baseline scores (Dong, 2011).

Index	Gender	Baseline Mean (SD)	PreEI Mean (SD)	t-statistic	Effect size <i>d</i>
N2-Score	Male	39.79 (14.43)	35.57 (15.39)	0.73	.28
	Female	42.75 (15.57)	40.52 (20.26)	0.49	.12
P-Score	Male	39.12 (14.97)	35.71 (11.34)	0.80	.26
	Female	42.82 (15.24)	43.06 (20.25)	-0.05	.01

Key: Ns=7,348 (Baseline Male), 7 (Male PreEI), 8,031 (Baseline Female), 20 (Female PreEI); N2=DIT N2-Score, P=DIT P-Score; PreEI=pre engagement with the educational intervention; Baseline=reference to Dong (2011); $p < .05$; d =Cohen's d statistic, standard deviations are in parentheses.

Differences between N2-Scores and P-Scores compared with Dong's (2011) baseline figures, grouped according to whether male or female, were not found to be significant. This finding further indicated that the study sample could be considered comparable with samples held in the database, or referred to in related publications, at the point of recruitment to the study.

6.3.1.1.4. Comparison between males and females in the study group: N2-Scores and P-Scores.

Analysis of differences between mean N2-Scores and mean P-Scores for males and females, obtained pre engagement with the educational intervention, is summarized in Table 6.7.

Table 6.7: Comparison between male and female N2-Scores and P-Scores pre engagement with the educational intervention.

Index	PreEI Male Mean (SD)	PreEI Female Mean (SD)	t-statistic	Effect size <i>d</i>
N2-Score	35.57 (15.39)	40.52 (20.26)	0.59	.27
P-Score	35.71 (11.34)	43.06 (20.25)	0.90	.45

Key: Ns=7 (Male PreEI), 20 (Female PreEI), N2=DIT N2-Score, P=DIT P-Score; PreEI=Pre engagement with the educational intervention; $p < .05$; d =Cohen's d statistic, standard deviations are in parentheses.

Differences between mean N2-Scores and mean P-Scores for males and females, pre engagement with the educational intervention, were not found to be significant.

This differs from a report by Dong (2011) that differences between males and females in (a) N2-Scores for graduates ($F(1,15375) = 160.612, p < .001; d = .20$) and (b) P-Scores for graduates ($F(1,15377) = 230.422, p < .001; d = .24$) were found to be significant. However the effect size was found to be small for both N2-Scores and P-Scores (Dong, 2011), indicating that Dong's findings are not particularly substantive or important.

Mean N2-Scores and mean P-Scores for males were lower than for females, a finding consistent with Dong (2011) Table 6.2. However, further studies, with a larger number of male participants, would be recommended. In addition, females ($n=20$) in the study group ranged in age from 28 to 54 years (mean=38.4 years, $SD=7.1$ years) and males ($n=7$) ranged from 33 years to 60 years (mean=46.6 years, $SD=10.5$ years) (section 6.2.1.3), a difference in average age between genders of 8.2 years.

Dong (2011) did not report baseline figures for MN-Scores or PI-Scores.

6.3.1.1.5. Summary.

This section reviewed developmental indices scores for participants, both in the combined group and in separate groups, as determined pre engagement with the educational intervention. Comparison of developmental index scores obtained with baseline figures prepared by Dong (2011) using the database held at the CSED from 2005 to 2009 indicated that the study sample was comparable with the database.

Comparison of group 1 and group 2 scores indicated that there were likely to be differences between the two groups, thereby prompting the decision to continue to analyse the two groups individually, in addition to the combined group, throughout this thesis.

The average age of males was 8.2 years greater than the average age of females in the study group.

6.3.1.2. Developmental profile and phase indices.

As has been introduced previously, types, Consolidation/Transition (Contrans) and the utiliser score (U-Score) are developmental profile and phase indices (Sections 3.5.4 & 3.5.6) which evolved from systematic examination of large data sets (Thoma & Rest, 1999; Rest et al, 1999a, 1999b). They provide another means by which to examine the effects of

development such as the impact of engagement with an educational intervention on moral reasoning competency/ -ies as measured by the DIT2.

Consolidation on the DIT2 indicates clear preference for a specific schema, be that PI (type 1), MN (type 4) or PC reasoning (type 7) (section 3.5.4). Some respondents show little evidence of discrimination between schema-type items, whereas others seem to clearly distinguish between them and criteria were devised to differentiate participant profiles (Thoma, 2006). A failure to discriminate is viewed as a marker of developmental disequilibrium, or transition between one stage and another, whereas clear discrimination among items is viewed as a marker of developmental consolidation at the schema indicated. Hence the terms 'transition' ('1') and consolidation ('2') are used to classify profiles (Table 3.5). Types 1, 4, and 7 are consolidated profiles whereas types 2, 3, 5 and 6 are transitional profiles. Dong (2011) reports mean type (n=15,492) as 5.33, SD=1.72.

A high U-Score (section 3.3.4) represents consistency between item endorsement and dilemma action choices and the inferred choices implied by item rating whereas a low U-Score represents poor consistency (Bebeau & Thoma, 2003).

Given the potential for developmental profile and phase indices to help explain findings, mean types, numbers consolidated or in transition and mean U-Scores of participants prior to engagement with the educational intervention were summarised in Table 6.8.

Table 6.8: Types, Contrans and U-Score(s) pre engagement with the educational intervention.

Types, Contrans and U-Score: Pre the Educational Intervention					
	Type	Contrans		U-Score	
	Mean (SD)	In Transition (1)	Consolidated (2)	Mean (SD)	range
Group 1&2	5.41 (1.91)	13	14	.17 (.14)	-.08 - 0.62
Group 1	5.00 (2.22)	9	7	.21 (.16)	.00 - 0.62
Group 2	6.00 (1.18)	4	7	.13 (.12)	-.08 - 0.27
Dong (2011)	5.33 (1.72)	Not reported by Dong			

Key: Ns=27 (Group 1&2), 16 (Group 1), 11 (Group 2), 15,492 (Dong 2011); Contrans=discrimination (consolidated) between schemas or failure to discriminate (in transition); Type=a combination of schema and contrans (7 in total); U-Score=the degree of match between DIT2 items endorsed as most important and the action choice on that story; standard deviations are in parentheses.

Type profiles for participants in Group 2 prior to engagement with the educational intervention (baseline) ranged from type 4 to type 7 only, whereas five (31%) of Group 1 participants are type 2 (predominant in PI schema, but transitional). Given that

postconventional reasoning is expected to increase with education level and age, and that all of these participants are practicing pharmacists for at least three years and are at least 31 years old (section 3.5.4), this was an unexpected finding. The average type as reported by Dong ($m=5.33$, $SD=1.72$) was comparable with the averages recorded for the combined group ($m=5.41$, $SD=1.91$). Type distribution, i.e. values of skewness and kurtosis, was determined to be acceptably normal.

The variation in U-Scores, the anticipated range for which is $-.40$ to $.77$ (Thoma & Rest, 1999), ranged from $-.08$ to $.62$ for the combined group 1&2. While U-Scores for group 1 ranged from $.00$ to $.61$, the range for group 2 participants was more limited (i.e. $-.08$ to $.27$). Developmental scores generally fluctuate with shifts in consolidation and transition, and consolidation is generally associated with higher U-Scores. The U-Score may also be considered to increase the predictability of moral reasoning to behavior (Thoma, 1994), including where an intervention fails to show growth in moral reasoning as measured by the N2-Score or P-Score, as the increased focus on justice reasoning in addressing moral dilemmas may indicate an increased likelihood of structural change in the future. U-Score distribution pre engagement with the educational intervention, i.e. values of skewness and kurtosis, was determined to be acceptably normal with the exception of the determination of kurtosis, for which group 1 violated the assumption of normality ($kurtosis=2.807$; $SE=1.091$).

Changes in developmental profile and phase indices during engagement with the educational intervention are presented during the analysis process and then compared with changes in key developmental indices.

6.3.1.2.1. Summary.

This section has presented summaries of variables derived from participant completion of the DIT2 directly pre engagement with the educational intervention and presented results in the light of the potential for the DIT2 to measure moral reasoning competencies of the sample of Irish community pharmacists in the study. The value of the DIT2 to the study derives from its perceived applicability to this cohort and the expectation that it is a valid measure of whether or not the educational intervention impacts on moral reasoning competency/ -ies development. Variables included in the DIT2 that have been identified as being of particular support to the evaluation of the impact of the educational intervention include the developmental indices (N2-Score, P-Score, MN-Score and PI-Score Section

6.3.1.1), and the profile and phase indices (types, whether consolidated or in transition and U-Scores (Section 6.3.1.2).

6.4. The educational intervention: The 'independent variable'.

The educational intervention is outlined in Section 5.4.1.2, and further detail on the FCM (Section 3.3.5) and the development of ICMs (Section 3.3.10) have been provided. While the educational intervention is referred to as an independent variable (Kirk, 2013; Field & Hole, 2003), and, in theory, the participants have therefore either been 'exposed' (by engagement with the 16 week programme) or not, the reality is that the extent and nature of engagement varied between participants.

Notwithstanding that all participants engaged in all activities provided in the two face-to-face days held at each of the beginning and end of the programme, the extent of participant engagement is reviewed by means of identifying the number of activities, or doses (Appendix 29), of the educational intervention voluntarily engaged with by participants that completed the programme.

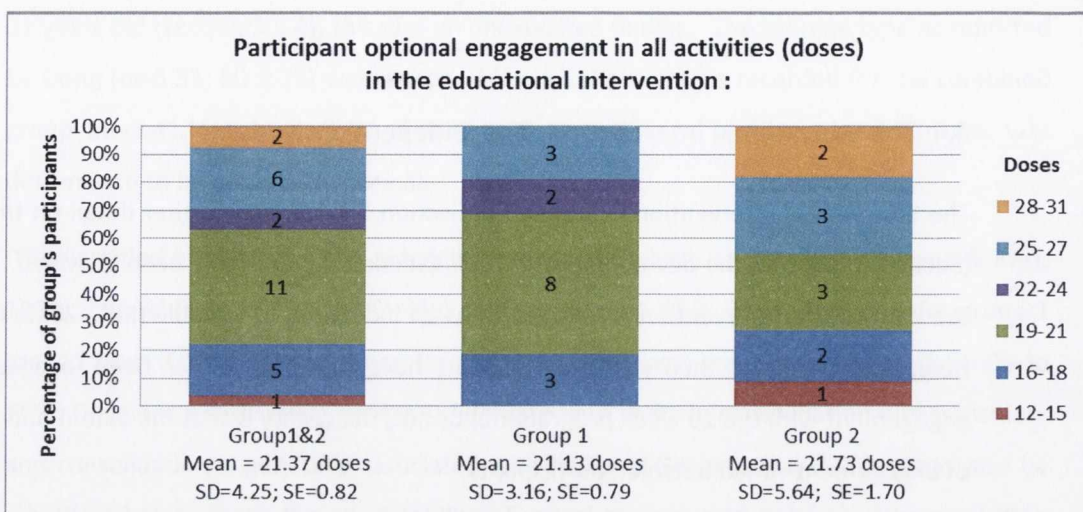
The section concludes with a summary of measures related to the educational intervention that merit further analysis and investigation for relationships with the developmental indices derived from the DIT2.

6.4.1. Review of participant engagement with the educational intervention.

As previously identified, the number of activities, or doses, in the 16 week online programme that participants had the option to choose to engage with ('optional') was identified as 31 (Appendix 29) and activities that participants were 'obliged' to complete during the face-to-face days (14 activities) were excluded from calculation of an SPSS variable related to engagement. While reference to engagement in activities is independent of any evaluation of the quality of contribution, engagement is nonetheless a variable that merits consideration when interpreting how indices derived from the DIT2 may have been impacted by engagement with an educational intervention.

A summary of participant engagement with optional activities available in the educational intervention is presented in Figure 6.7.

Figure 6.7: Participant optional engagement in all activities in the educational intervention. (0-31 'doses').



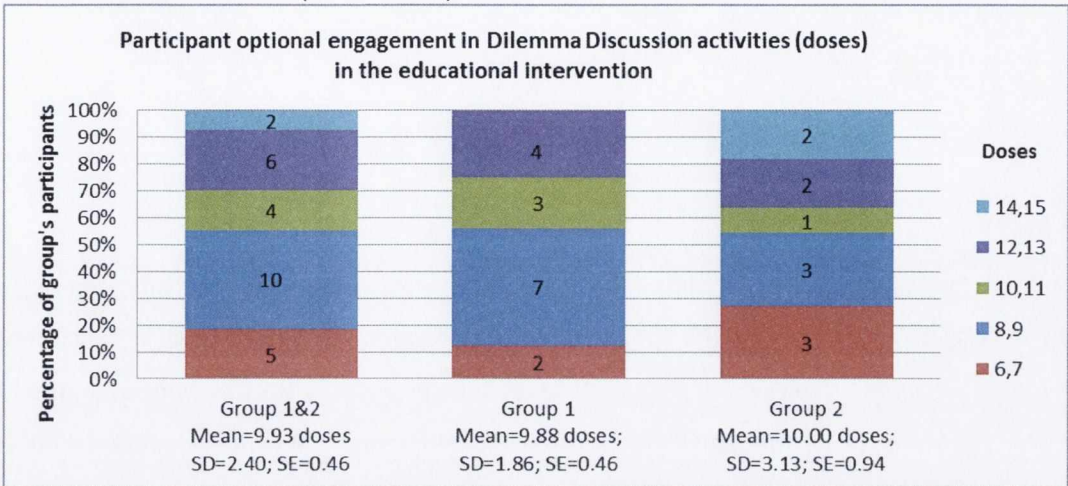
Key: Group 1&2=combined group 1 and group 2; Ns=27(Group 1&2), 16(Group 1), 11(Group 2); SD=standard deviation; SE=standard error.

Participants engaged with, on average, 69% of the 31 optional activities in the programme, the range of engagement being from 39% to 97%. Distribution of 'doses' of the educational intervention, i.e. values of skewness and kurtosis, was determined to be acceptably normal.

Groups 1 (68% engagement) and Group 2 (70% engagement) participants engaged with the educational intervention to a similar extent. Group 1 participants engaged with a range of 16 to 27 'doses' of the 31 optional activities of the programme whereas the range (19 activities) of engagement of group 2 members (12 to 30 'doses') was greater as represented by the higher standard deviation for group 2. Differences between groups, determined on the basis of whether or not participants engaged with 22 or more doses of the educational intervention, were not found to be statistically significant.

As dilemma discussion is proposed as a primary means by which moral reasoning competencies might be developed, participant engagement with elements of the educational intervention directly related to dilemma discussion, (16 of the total 31 optional activities in the educational intervention), is analyzed separately in Figure 6.8.

Figure 6.8: Participant optional engagement in dilemma discussion activities in the educational intervention. (0-16 'doses').



Key: Group1&2=combined group 1 and group 2; Ns=27(Group 1&2), 16(Group 1), 11(Group 2); SD=standard deviation; SE=standard error.

The average participant engaged with 62% of the 16 optional activities related to dilemma discussion in the programme, the range of engagement being from 38% to 94%. Distribution of 'doses' of the educational intervention related to dilemma discussion, i.e. values of skewness and kurtosis, was determined to be acceptably normal.

Group 1 and group 2 participants engaged with activities related to the dilemma discussion to a similar extent (62%). Differences between groups, determined on the basis of whether or not participants engaged with 10 or more doses of the educational intervention related to dilemma discussion, were not found to be statistically significant.

6.4.2. Summary

In addition to engaging with educational activities (n=14) on the two face-to-face days at the beginning and end of the programme, all participants engaged with a minimum of 48% of optional activities in the 16 week programme and a minimum of 38% of the optional activities in the programme related to dilemma discussions (Section 6.4.1). Relationships between engagement in additional doses of the educational intervention and differences in developmental indices arising during engagement with the educational intervention will be further compared with changes in key developmental indices. To facilitate further analysis in SPSS, a variable entitled 'DosesEI-HL' was created to identify whether participation in the optional activities in the educational intervention was high (22 or greater doses) or low (21 or less). In a similar manner, a variable entitled 'DosesDD-HL'

identifies whether participation in optional activities related to dilemma discussion was high (10 or greater) or low (9 or less).

6.5. Effects of engagement with the Educational Intervention.

Changes in developmental indices for the control group were first analysed in order to assess the likelihood that factors other than engagement with the educational intervention impacted on changes in developmental indices during the study. Having accounted for the control groups, the impact of the educational intervention on developmental indices was then determined, followed by review of changes in developmental and profile indices.

In order to evaluate whether some groups are impacted more than others, results were then investigated for interaction, or moderator, effects.

6.5.1. Control group: changes in developmental indices pre-post time spent as a control.

An overview of changes in participant developmental indices as determined post the time spent as a control, in the combined Group 1&2 and separately as group 1 and group 2, as compared with the baseline participant preferences determined pre the time period spent as a control⁹⁸, are summarized in Table 6.9.

⁹⁸ Details of the crossover design are provided in Table 5.1 (extract), as presented in section 6.2.

Table 6.9 Summary of participant preferences for developmental indices pre (PreCn) and post time spent as a control (Post Cn).

Group 1 & 2				
Index	PreCn Mean (SD)	PostCn Mean (SD)	t-statistic	Effect size <i>d</i>
N2-Score	38.64 (17.46)	40.56 (18.94)	0.82	.11
P-Score	42.09 (16.73)	42.38 (18.82)	0.11	.02
MN-Score	29.82 (9.16)	31.38 (14.35)	0.60	.13
PI-Score	25.40 (16.39)	23.31 (14.30)	-0.92	-.14
Group 1				
N2-Score	34.56 (16.05)	36.59 (18.12)	0.65	.12
P-Score	37.47 (14.54)	38.13 (17.52)	0.19	.04
MN-Score	27.34 (7.13)	31.75 (13.54)	1.48	.41
PI-Score	32.81 (13.09)	28.00 (14.73)	-1.79 [^]	-.34
Group 2				
N2-Score	45.17 (18.44)	46.91 (19.42)	0.47	.09
P-Score	49.48 (18.07)	49.20 (19.71)	-0.06	-.01
MN-Score	33.77 (10.97)	30.80 (16.31)	-0.63	-.21
PI-Score	13.54 (14.37)	15.80 (10.22)	0.60	.19

Key: Ns=26 (Group 1&2), 16 (Group 1), 10 (Group 2); N2=DIT N2-Score, P=DIT P-Score, MN=DIT MN-Score, PI=DIT PI-Score; PreCn=pre engagement in a control group; PostCn=post engagement in a control group; [^]= $.10 > p > .05$; *d*=Cohen's *d* statistic, standard deviations are in parentheses.

Pre-post differences for control groups were not found to be significant at the $p < .05$ level for any of the developmental indices. Effect size was found to be primarily small across cases.

While group 1 PI-Score had a p -value of $p = .09$, which indicated a borderline statistical tendency for this measure, the effect size was small and, as this is the least stable index any inferences should be made with caution.

The fact that group 1 acted as a control group in the 16 weeks after completing the educational intervention, resulted in the potential that there may have been a residual or continuing effect of the educational intervention as might have led to a continuing impact on developmental scores. It is a factor that ought to be considered in the design of studies such as this, where the same groups cross over to each act as a control for each other, especially where the educational intervention is delivered over a longer time-frame. However, in this study, the difference between the baseline measure of PI-Score and the Group 1 sample ($t(15) = 2.88$; $p = .01$) (section 6.3.1.1.1) did also pose an additional question as to whether there may have been some difference between group 1 and group 2 at the outset and if any inferences were to be derived they would need to bear all of these statistics in mind.

The overall outcome of review of participant changes in developmental scores during time spent while acting as a control indicated that differences were not found to be significant, and changes observed in the study group(s) were therefore considered to be related to factors associated with the educational intervention.

6.5.2. Effect of the educational intervention on participant developmental indices (schema scores).

This section reviews developmental indices scores for participants, both in the combined group and in separate groups for pre-post engagement with the educational intervention. Levene's test was used to assess homogeneity of variances prior to reporting outcomes of analysis. Changes in developmental indices are summarized.

6.5.2.1. Changes in participant developmental indices (schema scores) during the educational intervention.

Changes in participant preferences for the various developmental schemas, pre-post the educational intervention, are summarized in Table 6.10.

Table 6.10: Participant preferences for developmental schemas pre (PreEI) and post (PostEI) engagement with the educational intervention.

Index	PreEI Mean (SD)	PostEI Mean (SD)	t-statistic	Effect size <i>d</i>
Group 1 & 2				
N2-Score	39.23 (18.96)	41.78 (18.19)	1.21	.14
P-Score	41.15 (18.44)	45.31 (17.70)	1.72 [^]	.23
MN-Score	30.44 (14.49)	24.57 (8.08)	-2.44*	-.50
PI-Score	24.18 (13.69)	28.56 (12.81)	1.77 [^]	.33
Group 1				
N2-Score	33.79 (17.86)	34.56 (16.05)	0.24	.13
P-Score	35.20 (16.14)	37.47 (14.54)	0.61	.15
MN-Score	30.36 (14.27)	27.34 (7.13)	-0.90	-.27
PI-Score	30.05 (13.10)	32.81 (13.09)	0.82	.21
Group 2				
N2-Score	47.15 (18.44)	52.29 (16.40)	2.30*	.29
P-Score	49.82 (18.81)	56.73 (16.01)	2.86*	.40
MN-Score	30.55 (15.49)	20.55 (7.95)	-3.24*	-.81
PI-Score	15.64 (9.71)	22.36 (9.91)	1.85 [^]	.69

Key: Ns=16 (Group 1), 11 (Group 2); N2=DIT N2-Score, P=DIT P-Score, MN=DIT MN-Score, PI=DIT PI-Score; PreEI=pre engagement with an educational intervention, PostEI=post engagement with the educational intervention; *= $p < .05$; [^]= $.10 > p > .05$; *d*=Cohen's *d* statistic, standard deviations are in parentheses.

Differences between the pre-post N2-Score for Group 2 ($t(10)=2.30$, $p=.04$, $d=.29$) and for the P-Score for Group 2 ($t(10)=2.86$, $p=.02$, $d=.40$) were found to be significant at the $p < .05$ level. The effect size for the N2-Score was small and that for the P-Score was small to moderate. Differences between the pre-post P-Score for the combined Group 1&2 ($t(26)=1.72$, $p=.10$, $d=.23$) were found to be significant at the $p=.10$ level, indicating borderline statistical tendencies, but the effect size was small ($d=.23$).

Differences between the pre-post MN-Score for the combined Group 1&2 ($t(26)=-2.44$, $p=.02$, $d=.50$) and for the MN-Score for Group 2 ($t(10)=-3.24$, $p=.01$, $d=.81$) were negative, and found to be significant at the $p < .05$ level. The effect size for the combined Group 1&2 was moderate ($d=.50$) and the effect size for Group 2 was large ($d=.81$) indicating that for group 2, in particular, this was a very important and substantive finding.

Differences between the pre-post PI-Score for the combined Group 1&2 ($t(26)=1.77$, $p=.09$, $d=.33$) and for Group 2 ($t(10)=1.85$, $p=.09$, $d=.69$) were found to be significant at the $p < .10$ level, indicating borderline statistical tendencies. The effect size for the combined Group 1&2 was small ($d=.33$) and the effect size for Group 2 was moderate to large ($d=.69$).

However this is the least stable index and appropriate caution must be exercised if inferences are to be made from PI-Score results.

6.5.2.2. Overview of changes in participant developmental indices (schema scores) during the educational intervention as compared with Baseline figures (Dong, 2011).

Changes in participant schema preferences as determined post engagement with the educational intervention, in the combined group 1&2 and separately in group 1 and group 2, and as compared with the baseline participant preferences pre engagement with the educational intervention indicated that the educational intervention had a positive impact on postconventional reasoning scores.

Trends apparent in Table 6.10 indicated that postconventional reasoning scores, i.e. both N2-Scores and P-Scores, increased following engagement with the educational intervention and that these changes were found to be significant for group 2. Participant preference for the 'Maintaining Norms' schema decreased in the combined group 1&2, and in each of group 1 and group 2, during engagement with the educational intervention. This reduction in MN-Scores was an unexpected finding as Neo-Kohlbergian theory supports an expectation that an increase in P-Scores anticipated as a result of engagement with educational interventions of the design used in this study, will be accompanied by a decrease in PI-Score and an apparently level MN-Score (Rest et al, 1999b, Rest & Thoma, 1999). While the PI-Score, indicating participant preference for the 'personal interest' schema, did indicate an increase, the findings were not found to be significant for this index. The N2-Score increased across the combined and separate groups – although an increase in preference for the personal interest schema (PI-Score) is likely to be reflected in lower N2-Scores as compared with P-Scores.

6.5.2.3. Summary.

This section reviewed developmental indices scores for participants, both in the combined group and in separate groups for pre-post the educational intervention.

Analysis of changes in developmental index scores pre-post the educational intervention indicated that differences in the primary summary scores, the N2-Score and the P-Score, for group 2 were significant at the $p < .05$ level (Table 6.10). These findings are reflective of an impact by the educational intervention. Effect sizes were small to moderate (N2-Score

$d=.29$ and P-Score $d=.40$) indicating that these were findings of some importance. Changes in the P-Score for the combined group 1&2 were significant at the $p<.10$ level, indicating statistical tendencies for this change. However the effect size was small ($d=.23$).

Changes in the MN-Score were significant at the $p<.05$ level for both the combined group 1&2 and group 2 (Table 6.10). Effect sizes were moderate for changes in the combined group ($d=.50$) and large for changes in group 2 ($d=.81$) indicating that for group 2, in particular, these were important and substantive findings.

Changes in PI-Scores at the $p<.10$ level, for both the combined group and group 2 (Table 6.10), indicated statistical tendencies for this change, and the effect size indicated that this had the potential to be an important finding especially in the case of group 2 where the effect size was moderate to large ($d=.69$). However as the PI-Score is the least stable index, caution must be exercised when interpreting these findings.

Analysis of group 1 did not indicate that changes pre-post the educational intervention were significant, and effect size ranged from $d=.13$ to $d=.27$ (small to very small) across the four developmental indices.

The observation that the trend was for MN-Scores to decrease as a result of the educational intervention aligns with an increase in both P-Score and PI-Score i.e. given the requirement to choose four times in order to complete the rating exercise on the DIT2 (Appendix 10), the participant selects a few more 'personal interest items' in order to avoid selecting a 'maintaining norms' item.

6.5.3. Effect of the educational intervention on developmental profile and phase indices.

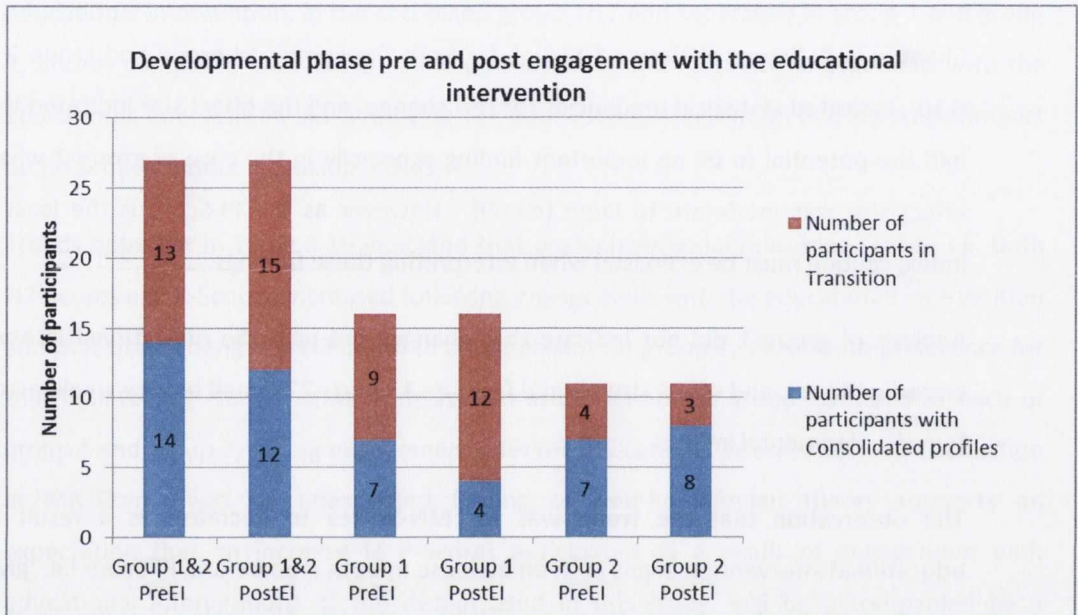
Consolidation/Transition (Contrans), types and the utiliser score (U-Score) are developmental profile and phase indices (Section 3.3.4) which provide another means by which to examine and or interpret the effects of development such as the impact of engagement with educational interventions.

6.5.3.1. Developmental phase: Contrans.

Consolidation on the DIT2 indicated clear preference for a specific schema, be that PI (type 1), MN (type 4) or post conventional reasoning (type 7) (section 3.3.4). As highlighted previously, a failure to discriminate is viewed as a marker of transition between one stage

and another, whereas clear discrimination among items is viewed as a marker of developmental consolidation at the schema indicated. Developmental phase(s) of participants, pre and post engagement with the educational intervention, are presented in Figure 6.9.

Figure 6.9: Developmental phase pre and post engagement with the educational intervention.



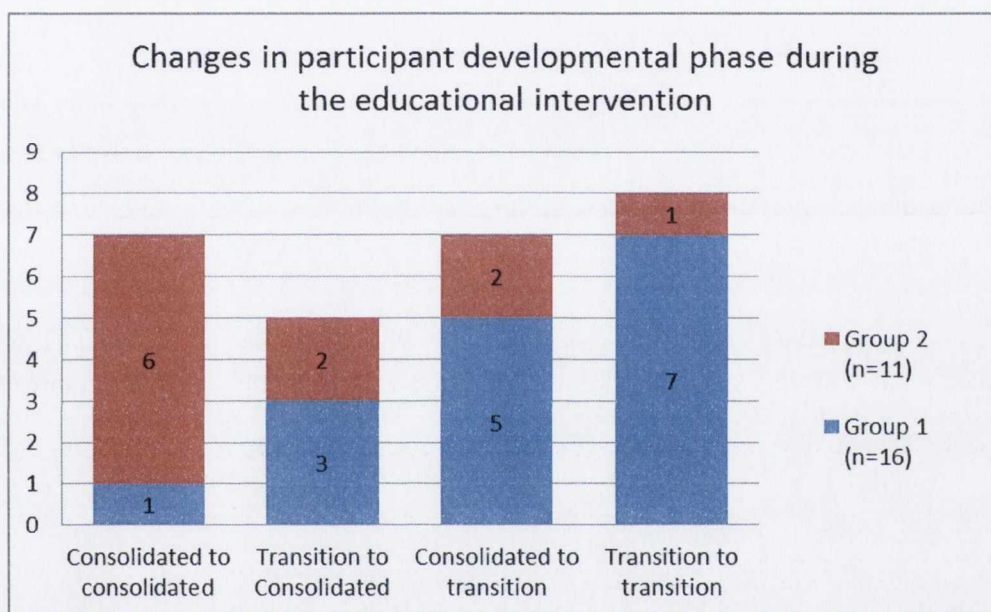
Key: G1&2=combined group 1 and group 2, G1=group 1, G2=group 2; Ns=27(G1&2), 16(G1), 11(G2); PreEI=pre engagement with an educational intervention, PostEI=post engagement with the educational intervention; Transition=DIT developmental phase, Consolidated=DIT developmental phase.

Changes from consolidated to transitional status, pre-post engagement with the educational intervention, were not found to be significant at the $p < .05$ level.

Group 2 participants (7/64%) were more likely to be 'consolidated' than Group 1 participants (7/44%). Group 1 participants (9/56%) were more likely than Group 2 participants (4/36%) to be in 'transition' prior to engagement with the educational intervention. Group 1 participants were also more likely to change to being in transition during engagement with the educational intervention i.e. Group 1 changed 9(56%) PreEI to 12(75%) PostEI, a pattern associated with little growth on the DIT (Section 3.5.4). Differences between groups, determined on the basis of whether participants were found to be consolidated or 'in transition' prior to engagement with the educational intervention, were not found to be statistically significant.

When the summary of Contrans profiles of all participants (n=27), as determined post engagement with the educational intervention, were compared with the summary of profiles of all participants pre engagement with the educational intervention, there were just two additional participants in transition (Figure 6.9). However, as observed from separate consideration of group 1 and group 2 phase changes (Figure 6.10), a total 12 (44%) of the participants changed between consolidated and transition status following engagement with the educational intervention.

Figure 6.10: Changes in participant developmental phase during the educational intervention.



Key: G1=group 1, G2=group 2; Ns=16(G1), 11(G2); Transition=DIT developmental phase, Consolidated=DIT developmental phase.

Five participants (19% of the total sample) in transition prior to engagement with the educational intervention changed to a consolidated profile and seven participants (26% of the total study sample) that began with consolidated profiles were found to be in transition when assessed at the end of the educational intervention. This breakdown of changes in participant profile(s) was therefore more appropriate for comparison purposes than the total numbers provided in Figure 6.10, and was therefore used for analysis of changes in developmental profile and phase indices.

In order to facilitate further analysis of changes in developmental indices a variable (Contrans-ChEI) was created, to summarise developmental phase changes during the educational intervention, as follows:

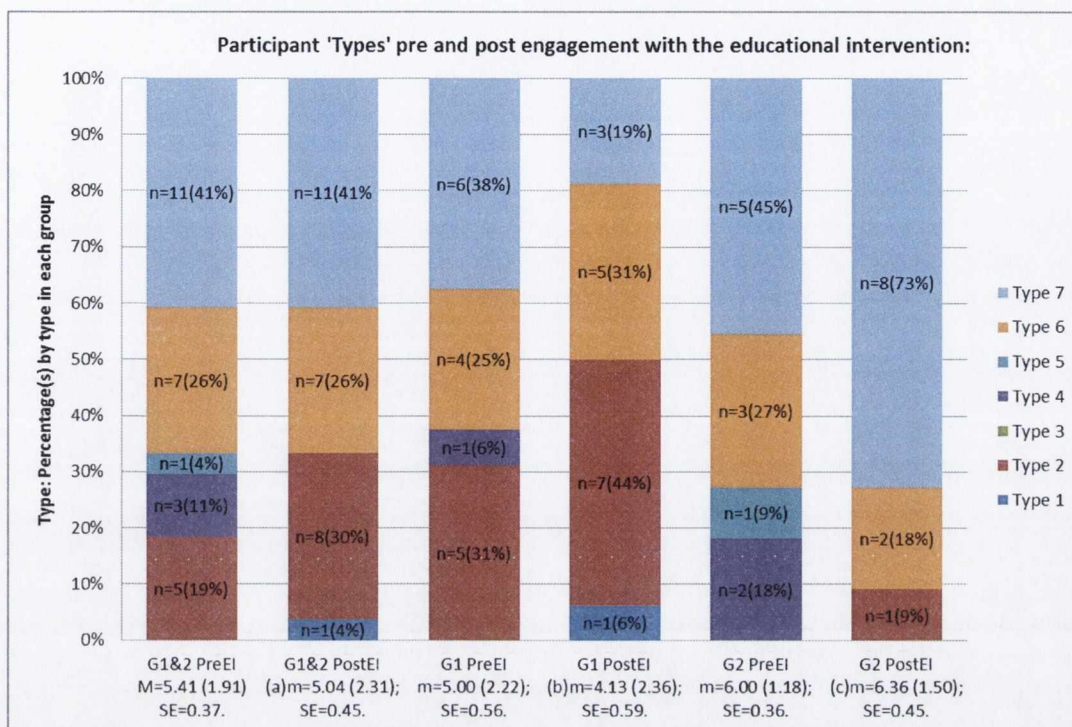
- Participant profiles were consolidated both pre and post engagement with the educational intervention (C-C);
- Participant profiles were in transition pre and consolidated post engagement with the educational intervention (T-C);
- Participant profiles were consolidated pre and in transition post engagement with the educational intervention (C-T);
- Participant profiles were in transition both pre and post engagement with the educational intervention (T-T).

6.5.3.2. Developmental profile: types.

The terms 'transition' ('1') and consolidation ('2') are used to classify profiles known as types (Section 3.5.4, Table 3.5). Types 1, 4, and 7 are consolidated profiles whereas types 2, 3, 5 and 6 are transitional profiles. Dong (2011) reported mean type (n=15,492) as 5.33, SD=1.72.

The percentage of participants in each of the combined and separate groups identified as each type, pre and post engagement with the educational intervention, are summarised in Figure 6.11.

Figure 6.11: Participant 'types' pre and post engagement with the educational intervention (EI).



Key: G1&2=combined group 1 and group 2, G1=group 1, G2=group 2; Ns=27(G1&2), 16(G1), 11(G2); PreEI=pre engagement with an educational intervention, PostEI=post engagement with the educational intervention; Type=type as identified by the DIT2; (a)/(b)/(c)=indicator that a t-test was completed, and is reported in the text. M=average (Standard Deviations in parentheses).

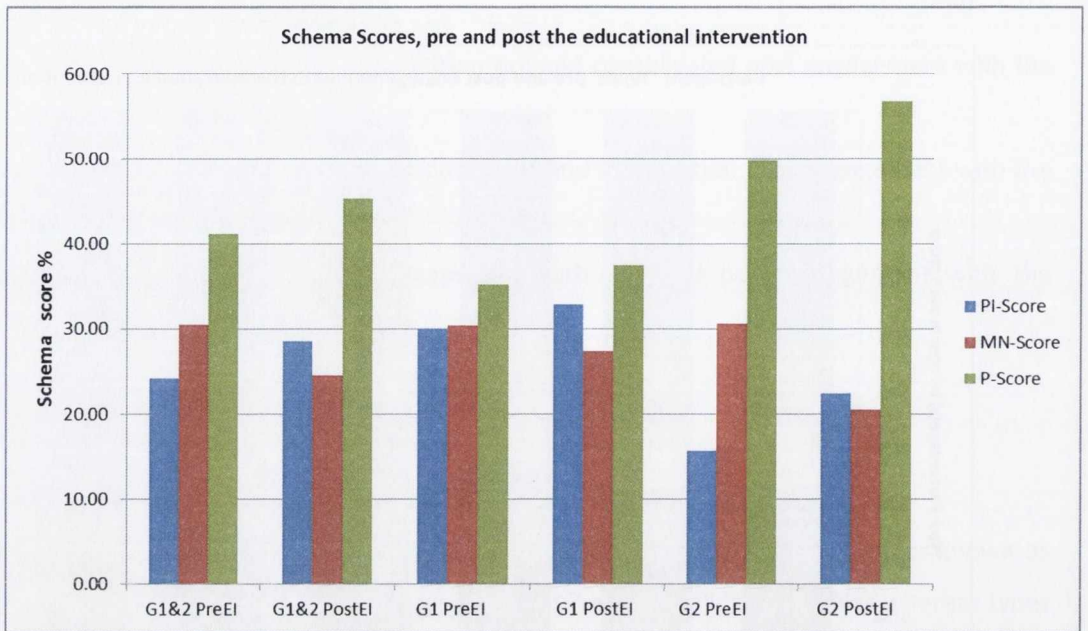
A relationship between groups and types, determined on the basis of whether or not participants were determined to be of a 'type' associated with post-conventional thinking (i.e. type 5, 6 or 7), was found to be statistically significant i.e. group 2 was overly represented by post conventional strategy usage ($c^2(1, N=27) = 4.909, p=.03$; Fisher's exact test⁹⁹ $p<.05$).

Results indicate that pre-post differences were not significant for the (a) combined group ($t = -0.98, p = 0.34, d = .17$) or for either (b) group 1 ($t(15) = -1.54, p = 0.15, d = .38$) or (c) group 2 ($t = 1.08, p = 0.31, d = .27$). Effect sizes were small or small to moderate.

However, review of developmental indices presented in Table 6.10 indicates that while all three groups may be considered modal preEI engagement with the educational intervention, all three groups are bimodal (e.g. high on personal interest schema, low on maintaining norms schema and high on the postconventional schema), post the intervention as represented in Figure 6.12.

⁹⁹ As the cell for group 2, type 1234 contained only one case, Fisher's Exact Test was also reported (Section 5.4.9).

Figure 6.12: Schema scores pre and post engagement with the educational intervention.



Key: G1&2=combined group 1 and group 2, G1=group 1, G2=group 2; Ns=27(G1&2), 16(G1), 11(G2); PreEI=pre engagement with an educational intervention, PostEI=post engagement with the educational intervention; P=DIT P-Score, MN=DIT MN-Score, PI=DIT PI-Score.

The bimodal pattern observed post engagement with the educational intervention is not consistent with 'theoretical expectations' (Thoma & Rest, 1999:328) underpinning types.

Type is generally used to help explain findings further to analysis of consolidation and transition statuses.

6.5.3.3. Utiliser score: U-Score.

As highlighted previously, a high U-Score (section 3.3.4) represents consistency between item endorsement and dilemma action choices and the inferred choices implied by item rating whereas a low U-Score represents poor consistency (Bebeau & Thoma, 2003) i.e. increased U-Scores may indicate an increased likelihood of structural change in the future.

U-Scores determined for participants, pre and post engagement with the educational intervention, are summarized in Table 6.11.

Table 6.11: U-Scores pre and post engagement with the educational intervention.

Group	U-Score PreEI Mean (SD)	U-Score PostEI Mean (SD)	t-statistic	Effect size <i>d</i>
Group 1 & 2	.17 (.14)	.16 (.14)	0.57	.07
Group 1	.21 (.16)	.16 (.13)	1.22	.05
Group 2	.13 (.12)	.16 (.15)	-0.92	.07

Key: Ns=26 (Group 1 & 2), 15 (Group 1), 11 (Group 2); U-Score=DIT utiliser score; PreEI=pre engagement with an educational intervention, PostEI=post engagement with the educational intervention; $p < .05$; d =Cohen's d statistic, standard deviations are in parentheses.

Differences between groups, determined on the basis of whether or not participants were determined to have a U-Score greater than .17 prior to engagement with the educational intervention, were not found to be statistically significant.

Changes in U-Scores determined pre-post engagement with the educational intervention were not found to be significant. However there was a crossed pattern, where the trend was for U-Scores for group 1 to decrease after engagement with the educational intervention, when this group showed an increase in the proportion of participants in transition after engagement with the intervention by comparison with profiles prior to the intervention (Figure 6.9).

The crossed pattern repeated itself on review of the increase in U-Scores for group 2, when this group showed a small decrease in the proportion of participants in transition after engagement with the intervention by comparison with participant profiles prior to the intervention (Figure 6.9).

6.5.3.4. Summary

Developmental scores generally fluctuate with shifts in consolidation and transition, and consolidation is generally associated with higher U-Scores. The U-Score may also be considered to increase the predictability of moral reasoning to behavior, including where an intervention fails to show growth in moral reasoning as measured by the N2-Score or P-Score. While there were significant changes in P-Score and N2-Score for group 2, changes were not as evident for group 1. Further analysis therefore includes consideration of the relationship between developmental scores and developmental phase indices.

An atypical (bimodal) pattern of schema scores was observed, for both the combined group 1&2 and each of group 1 and group 2, post engagement with the educational

intervention which has the potential to impact on the extent to which types may be used help explain findings further to analysis of consolidation and transition statuses.

6.6. Investigation of potential interaction effects on changes in primary developmental indices during engagement with the educational intervention.

In order to investigate whether the educational intervention impacted some sub-groups more than others, and because there were three or more sub-groups identified as relevant in some analyses, repeated measures ANOVA (RMA), producing F-statistics (ratios), were carried out in evaluations in Section 6.6. Levene's test was used to assess homogeneity of variances prior to reporting outcomes of analysis.

Indicators of interactions, or moderator effects, between changes in the developmental indices under investigation (N2-Scores and P-Scores) and relevant demographics (gender and age-group) and decision-making influencers (professional, commercial and personal) are first evaluated. Changes between consolidated and transitional statuses during engagement with the educational intervention are then investigated for indications of interactions with changes in the developmental indices (N2-Score and P-Score). Finally the impact of varying levels of engagement with optional activities available to participants during the educational intervention is considered.

6.6.1. Is there an interaction effect between gender and changes in developmental indices during the educational intervention?

Interactions between participants' developmental indices scores during the educational intervention and gender are summarized in Table 6.12.

Table 6.12: N2-Score and P-Score changes and sex/gender (RMA).

Effect	Index	MS	df	F	p	η ²
Pre-post EI	N2-Score	99.46	1	1.61	.22	.060
	P-Score	303.37	1	3.83	.06	.133
Index Pre-post EI x sex	N2-Score	13.42	1	.22	.65	.009
	P-Score	69.64	1	.88	.36	.034
Error ¹	N2-Score	61.95	25			
	P-Score	79.32	25			

¹ The error term is 'the amount of unexplained variation across the conditions of the repeated measures variable' (Field & Hole, 2003:187).

Key: Pre-post EI=pre-post engagement with the educational intervention; Index=developmental index; N2=DIT N2-Score, P=DIT P-Score; MS=Mean square; df=degrees of freedom; F=F-statistic or F-ratio, a comparison of systematic variance to unsystematic variance; $p < .05$; η^2 =Eta Squared effect size; Ns=7 (male), 20 (female).

The gender by pre-post developmental index interaction was not found to be statistically significant for either N2-Scores ($F(1,25)=.23$, $p=.64$, $\eta^2=.009$) or for P-Scores ($F(1,25)=.40$, $p=.53$, $\eta^2=.016$). Related descriptive statistics are provided in Table 6.13.

Table 6.13: N2-Scores and P-Scores grouped by gender: descriptive statistics.

Gender	Index	PreEI Mean (SD)	PostEI Mean (SD)
Male	N2-Score	35.57 (15.39)	39.81 (12.82)
	P-Score	35.71 (11.34)	43.71 (10.48)
Female	N2-Score	40.52 (20.26)	42.48 (19.97)
	P-Score	43.06 (20.25)	45.88 (19.82)

Key: Ns=7 (Male), 20 (Female); N2=DIT N2-Score, P=DIT P-Score; PreEI=pre engagement with an educational intervention, PostEI=post engagement with the educational intervention; standard deviations are in parentheses.

Descriptive statistics summaries identify that mean N2-Scores and P-Scores increased from pre to post engagement with the educational intervention for both males and females.

6.6.2. Is there an interaction effect between age/age-groups and changes in N2-Score and P-Score during the educational intervention?

Interactions between developmental indices scores during the educational intervention and age group (26-35 years, 36-45 years and 46-65 years) are summarized in Table 6.14.

Table 6.14: N2-Score and P-Score changes and age-groups (26-35 years, 36-45 years and 46-65 years) (RMA).

Effect	Index	MS	df	F	p	η ²
Pre-post EI	N2-Score	102.33	1	1.65	.21	.067
	P-Score	250.23	1	2.88	.10	.111
Index Pre-post EI x age groups	N2-Score	64.14	2	1.04	.37	.083
	P-Score	15.44	2	.18	.84	.015
Error	N2-Score	61.92	23			
	P-Score	87.04	23			

Key: Pre-post EI=pre-post engagement with the educational intervention; Index=developmental index; N2=DIT N2-Score, P=DIT P-Score; MS=Mean square; df=degrees of freedom; F=F-statistic or F-ratio, a comparison of systematic variance to unsystematic variance; $p < .05$; η^2 =Eta Squared or effect size; Ns=9 (26-35 years), 10 (36-45 years), 7(46 years or older).

The age-groups (26-35 years, 36-45 years and 46-65 years) by pre-post developmental index interaction was not found to be statistically significant for either N2-Scores ($F(1,23)=2.42$, $p=.11$, $\eta^2=.174$) or for P-Scores ($F(1,23)=1.71$, $p=.20$, $\eta^2=.129$). Related descriptive statistics are provided in Table 6.15.

Table 6.15: N2-Scores and P-Scores grouped by age-groups: 26-35 years, 36-45 years and 46-65 years: descriptive statistics.

Index	Age group ¹	PreEI Mean (SD)	PostEI Mean (SD)
N2-Score	26-35 years	40.47 (22.60)	47.10 (20.23)
	36-45 years	44.24 (12.60)	43.51 (14.67)
	46 years or older	26.54 (16.70)	29.15 (15.54)
P-Score	26-35 years	43.56 (23.23)	49.94 (20.96)
	36-45 years	43.20 (13.27)	46.00 (14.85)
	46 years or older	30.74 (13.74)	34.86 (13.41)

¹One Participant declined to give age.

Key: Ns=9 (26-35 years), 10 (36-45 years); 7 (46 years or older); N2=DIT N2-Score, P=DIT P-Score; PreEI=pre engagement with an educational intervention, PostEI=post engagement with the educational intervention; standard deviations are in parentheses.

Review of Table 6.15 highlighted that there was a crossed interaction of 26-35 year old and 36-45 year old N2-Score outputs. Given that 50% of the pharmacists on the register of the PSI were under 35 years of age, interaction effects between developmental indices scores during the educational intervention and age group (26-35 years; 36 years and over) are summarized in Table 6.16.

Table 6.16: N2-Score and P-Score changes and age-groups (26-35 years, 36 years and older) (RMA).

Effect	Index	MS	df	F	p	η ²
Pre-post EI	N2-Score	155.74	1	2.58	.12	.097
	P-Score	278.71	1	3.34	.08	.122
Index Pre-post EI x age groups	N2-Score	105.30	1	1.75	.20	.068
	P-Score	27.28	1	.33	.57	.013
Error	N2-Score	60.29	24			
	P-Score	83.56	24			

Key: Pre-post EI= pre-post engagement with the educational intervention; Index=developmental index; N2=DIT N2-Score, P=DIT P-Score; MS=Mean square; df=degrees of freedom; F=F- statistic or F-ratio, a comparison of systematic variance to unsystematic variance; $p < .05$; η^2 =Eta Squared or effect size; Ns=9 (26-35 years), 17(36 years or older).

The age-groups (26-35 years, 36 years and over) by pre-post developmental index interaction was not found to be statistically significant for either N2-Scores ($F(1,24)=0.82$, $p=.37$, $\eta^2=.033$) or for P-Scores ($F(1,24)=1.09$, $p=.31$, $\eta^2=.043$).

Review of Table 6.15 also highlighted that the 46 year or older category's N2-Scores pre ($m=26.54$, $SD=16.70$, $n=7$) and post ($m=29.15$, $SD=15.54$, $n=7$) engagement with the educational intervention were each more than 13 points lower than the corresponding scores for each of the age-groups under 46 years. P-Scores pre ($m=30.74$, $SD=13.74$, $n=7$) and post ($m=34.86$, $SD=13.41$, $n=7$) engagement with the educational intervention were each more than 11 points lower than the corresponding scores for each of the age-groups under 46 years.

6.6.3. Are there interaction effects between professional (SIP or other), commercial (owner or other) and/or personal influencers (rural, town or city setting for primary school education) and changes in developmental indices during the educational intervention?

Interaction effects between developmental indices scores during the educational intervention, and indicators of professional, commercial and personal influencers, as included in questions in the survey completed by participants pre engagement with the educational intervention, were analyzed as follows:

- (a) whether the professional responsibilities held by the participant were those of an SIP, and SVP or a staff/locum pharmacist (Appendix 17),
- (b) whether the commercial responsibilities held by the participant were those of a PCRS contract holder, pharmacy manager or staff or locum pharmacist (Appendix 17) and

- (c) whether or not the 'personal' influence on the participant at primary school age was that of a school in a rural setting, a town or a city (Appendix 17).

Interaction effects between developmental indices scores during the educational intervention, and professional, commercial and personal influencers outlined are summarized in Table 6.17.

Table 6.17: N2-Score and P-Score changes and professional, commercial and personal influencers (RMA).

Effect	Index	MS	df	F	p	η^2
Professional influencers						
Pre-post EI	N2-Score	85.44	1	1.34	.26	.053
	P-Score	238.09	1	2.83	.11	.105
Index Pre-post EI x Professional influencers	N2-Score	18.32	2	.29	.75	.023
	P-Score	16.18	2	.19	.83	.016
Error	N2-Score	63.57	24			
	P-Score	84.17	24			
Commercial influencers						
Pre-post EI	N2-Score	74.96	1	1.15	.29	.046
	P-Score	238.15	1	2.80	.11	.105
Index Pre-post EI x Commercial influencers	N2-Score	1.56	2	.02	.98	.002
	P-Score	6.05	2	.07	.93	.016
Error	N2-Score	64.96	24			
	P-Score	85.02	24			
Personal influencers						
Pre-post EI	N2-Score	94.11	1	1.65	.21	.064
	P-Score	242.24	1	2.96	.10	.110
Index Pre-post EI x Personal influencers	N2-Score	95.72	2	1.68	.21	.123
	P-Score	43.09	2	.53	.60	.042
Error	N2-Score	57.12	24			
	P-Score	81.93	24			

Key: Pre-post EI=pre-post engagement with the educational intervention; Index=developmental index; N2=DIT N2-Score, P=DIT P-Score; MS=Mean square; df=degrees of freedom; F=F-statistic or F-ratio, a comparison of systematic variance to unsystematic variance; $p < .05$; η^2 =Eta Squared or effect size; Ns Professional Influencers=10 (SIP), 10 (SVP), 7 (Staff/locum); Ns Commercial Influencers=6(Contract), 13 (Manager), 8 (Staff/locum); Ns Personal Influencers=10 (Rural), 8 (Town), 9 (City).

None of the professional (SIP, SVP or staff locum), commercial (contract holder, manager or staff locum) and personal (primary school setting as rural, town or city) influencers by pre-post developmental index interaction were found to be statistically significant i.e. for N2-Scores for professional ($F(1,24)=.46$, $p=.64$, $\eta^2=.037$), commercial ($F(1,24)=1.48$, $p=.25$, $\eta^2=.110$) or personal ($F(1,24)=.07$, $p=.93$, $\eta^2=.006$) influencers or for P-Scores for

professional ($F(1,24)=.29, p=.75, \eta^2=.024$), commercial ($F(1,24)=.96, p=.40, \eta^2=.074$) or personal ($F(1,24)=.20, p=.82, \eta^2=.017$) influencers .

Related descriptive statistics are provided in Table 6.18.

Table 6.18: N2-Scores and P-Scores grouped by professional, personal and personal influencers: descriptive statistics.

Influencer	Index	Group	Age in years Mean (SD)	PreEI Mean (SD)	PostEI Mean (SD)
Professional Influencers	N2-Score	SIP	42.2 (8.6) *	36.44 (20.75)	40.90 (18.32)
		SVP	38.4 (8.6)	38.06 (18.01)	38.69 (19.72)
		Staff/Locum	41.6 (9.7)	44.90 (19.30)	47.47 (17.10)
	P-Score	SIP	42.2 (8.6) *	39.72 (20.76)	45.20 (17.62)
		SVP	38.4 (8.6)	40.00 (16.11)	42.15 (18.90)
		Staff/Locum	41.6 (9.7)	44.86 (20.39)	50.00 (17.74)
Commercial Influencers	N2-Score	Contract	46.2 (7.5)	29.30 (14.53)	31.96 (16.12)
		Manager	36.8 (8.0)^	39.79 (20.65)	42.73 (19.65)
		Staff/locum	42.1 (8.9)	45.78 (17.88)	47.61 (16.09)
	P-Score	Contract	46.2 (7.5)	32.53 (12.57)	37.33 (16.23)
		Manager	36.8 (8.0)^	43.23 (20.32)	46.42 (19.06)
		Staff/locum	42.1 (8.9)	44.25 (18.96)	49.50 (16.62)
Personal Influencers	N2-Score	Rural	41.4 (7.7)*	38.36 (19.91)	42.23 (17.47)
		Town	35.0 (5.0)	35.56 (17.38)	42.18 (17.31)
		City	44.7 (10.3)	43.47 (20.57)	40.94 (21.65)
	P-Score	Rural	41.4 (7.7)*	40.92 (19.69)	45.60 (18.18)
		Town	35.0 (5.0)	36.75 (17.37)	43.94 (17.81)
		City	44.7 (10.3)	45.33 (19.13)	46.22 (19.14)

*n=9, as one participant declined to give age.

^n=12 as one participant declined to give age.

Key: SIP=Superintendent pharmacist, SVP=supervising pharmacist; Staff or locum=staff pharmacist or locum pharmacist, Contractor=holds a PCRS pharmacy contract, Manager=pharmacy manager; Rural=attended primary school a rural setting, Town=attended primary school in a town, City=attended primary school in a city; N's Professional Influencers=10 (SIP), 10 (SVP), 7 (Staff/locum); N's Commercial Influencers=6(Contract), 13 (Manager), 8 (Staff/locum); N's Personal Influencers=10 (Rural), 8 (Town), 9 (City); N2=DIT N2-Score, P=DIT P-Score; PreEI=pre engagement with an educational intervention, PostEI=post engagement with the educational intervention; standard deviations are in parentheses.

Review of pre and post N2-Scores and P-Scores by professional, commercial and personal influencers indicates that there is a crossed interaction of SIP and SVP outputs for N2-Score and P-Score with professional influencers, and a crossed interaction of rural, town and country schools for N2-Score with personal influencers. As previously noted, when plotting interactions and the lines on the plot cross, this usually indicates a significant interaction

effect (Field & Hole, 2003). This raises the question as to whether the intervention may have varied in its impact depending on which professional or personal influencers existed, although not to the extent that the findings were statistically significant.

N2-Scores and P-Scores improved from pre to post engagement with the educational intervention for all categories, and with respect to each of the three influencers, with one exception i.e. the N2-Score for the group of participants that attended primary school in a city (personal influencer) decreased from pre ($m=43.47$, $SD=20.57$) engagement with the educational intervention to post ($m=40.94$, $SD=21.65$) engagement with the intervention.

The lowest score obtained by any group was that determined for those holding PCRS contracts (commercial influencers) pre engagement with the educational intervention. This group also had the highest average age ($m=46.2$ years, $SD=7.5$). Their N2-Scores ($m=29.30$, $SD=14.53$) and P-Scores ($m=32.53$, $SD=12.57$) were both more than 10 points lower than average scores for pharmacy managers, who, in turn, were determined to have lower scores than for staff/locum pharmacists (Section 6.6.3, Table 6.18). A similar, though less dramatic, trend was seen with professional influencers i.e. where SIPs had lower N2-Scores and P-Scores than SVPs who, in turn, had lower scores than staff/locum pharmacists (Section 6.6.3, Table 6.18). Personal influencers trended from the lowest N2-Scores and P-Scores being determined for those who attended primary school in a town, through those for those that attended in a rural school setting to the highest for those who attended city schools with the (already noted) exception that the N2-Score for those who attended a primary school in a city decreased from pre ($m=43.37$, $SD=20.57$) to post ($m=40.94$, $SD=21.65$) engagement with the educational intervention.

N2-Scores for PCRS pharmacy contract holders, determined both pre ($m=29.30$, $SD=14.53$) and post ($m=31.96$, $SD=16.12$) engagement with the educational intervention, were more than 6 points less than for any category listed under any of the other three influencers for that score, and for P-Scores pre ($m=32.53$, $SD=12.57$) and post ($m=37.33$, $SD=16.23$) engagement with the intervention the difference was at least 4 points.

6.6.4. Is there an interaction effect between developmental phase indices (Contrans) changes during the educational intervention and changes in developmental indices (N2-Score and P-Score) during the educational intervention?

Interaction effects between N2-Scores and P-Scores scores during the educational intervention and whether participant profiles were consolidated or in transition directly

prior to and post engagement with the educational intervention, were analyzed using four groups created as follows:

- Participant profiles were consolidated both pre and post engagement with the educational intervention (C-C);
- Participant profiles were in transition pre and consolidated post engagement with the educational intervention (T-C);
- Participant profiles were consolidated pre and in transition post engagement with the educational intervention (C-T);
- Participant profiles were in transition both pre and post engagement with the educational intervention (T-T).

Interaction effects are summarised in Table 6.19.

Table 6.19: N2-Score and P-Score changes and changes in participant developmental phase status during engagement with the educational intervention (RMA).

Effect	Index	MS	df	F	p	η^2
Pre-post EI	N2-Score	156.79	1	3.07	.09	.118
	P-Score	340.25	1	4.72	.04	.170
Index Pre-post EI x Contrans ChEI	N2-Score	128.85	3	2.52*	.08	.247
	P-Score	131.77	3	1.83*	.17	.193
Error	N2-Score	51.12	23			
	P-Score	72.05	23			

Key: Pre-post EI=pre-post engagement with the educational intervention; Index=developmental index; Contrans ChEI=change in phase, whether consolidated or in transition, during engagement with the educational intervention N2=DIT N2-Score, P=DIT P-Score; MS=Mean square; df=degrees of freedom; F=F-statistic or F-ratio, a comparison of systematic variance to unsystematic variance; * $p < .05$; η^2 =Eta Squared or effect size; C=Consolidated, T=Transition; Ns=7(C-C), 5(T-C), 7(C-T), 8(T-T).

Interaction effects between developmental phase changes and pre-post developmental indices during engagement with the educational intervention were highly significant for both N2-Scores ($F(1,23)=8.46$, $p=.001$, $\eta^2=.525$) and for P-Scores ($F(1,23)=7.58$, $p=.001$, $\eta^2=.497$). The effect sizes were large. These are important and substantive findings.

Related within subject descriptive statistics are provided in Table 6.20.

Table 6.20: N2-Scores and P-Scores, pre and post the educational intervention, grouped by participant developmental phase status changes during engagement with the intervention.

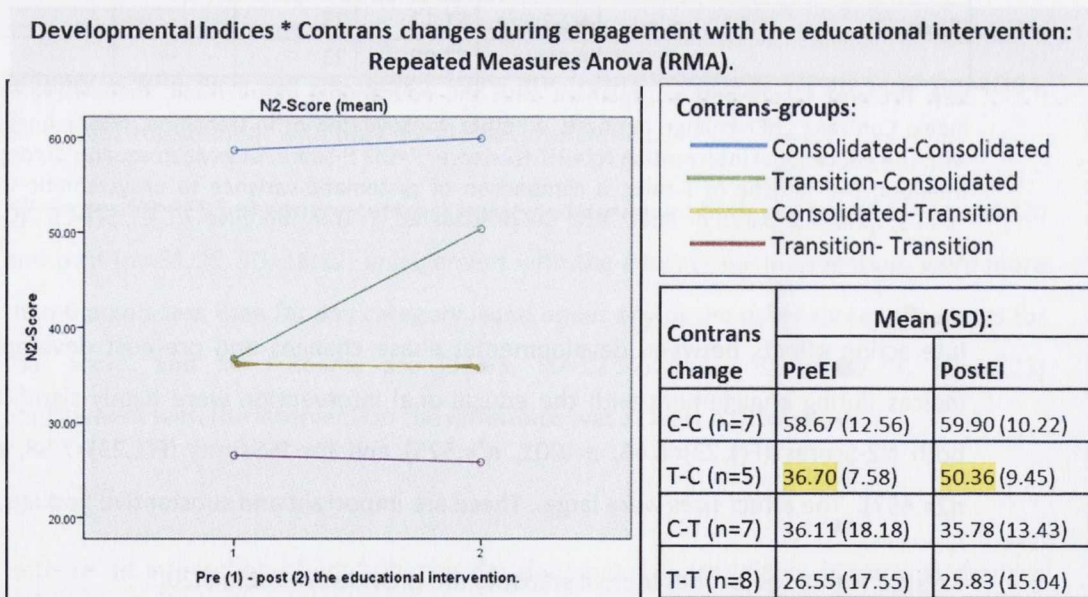
Index	Contrans change	Age in years Mean (SD)	PreEI Mean (SD)	PostEI Mean (SD)
N2-Score	C-C (pre-post EI)	38.5 (7.7)*	58.67 (12.56)	59.90 (10.22)
	T-C (pre-post EI)	43.6 (11.3)	36.70 (7.58)	50.36 (9.45)
	C-T (pre-post EI)	40.3 (8.7)	36.11 (18.18)	35.78 (13.43)
	T-T (pre-post EI)	40.5 (9.1)	26.55 (17.55)	25.83 (15.04)
P-Score	C-C (pre-post EI)	38.5 (7.7)*	60.57 (14.91)	62.29 (12.72)
	T-C (pre-post EI)	43.6 (11.3)	37.60 (5.73)	52.80 (10.64)
	C-T (pre-post EI)	40.3 (8.7)	35.43 (14.68)	38.86 (11.99)
	T-T (pre-post EI)	40.5 (9.1)	31.39 (18.47)	31.44 (15.74)

*n=6, as one participant declined to give age.

Key: N2=DIT N2-Score, P=DIT P-Score; C=Consolidated, T=Transition; Ns=7(C-C), 5(T-C), 7(C-T), 8(T-T); PreEI=pre engagement with an educational intervention, PostEI=post engagement with the educational intervention; standard deviations are in parentheses.

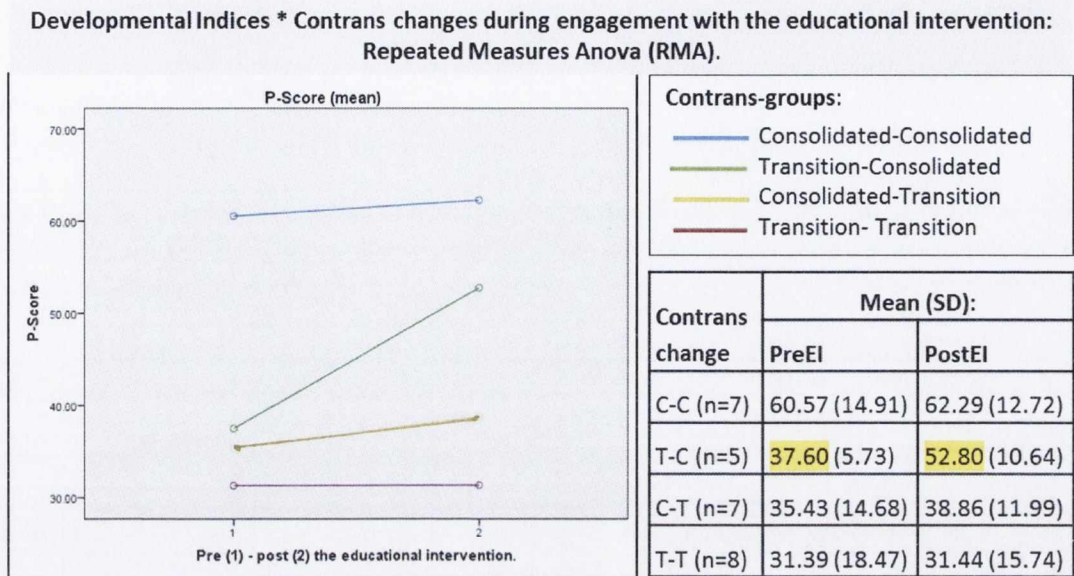
To assist with interpretation of the interaction effect, plots of the phase-change groups (C-C, T-C, C-T and T-T), and the change in developmental indices during engagement with the educational intervention, are provided in Figures 6.13 (N2-Score) and Figure 6.14 (P-Score).

Figure 6.13: N2-Score changes, during the educational intervention, for each of the phase-change groups (C-C, T-C, C-T and T-T).



Key: N2=DIT N2-Score; Ns=7(C-C), 5(T-C), 7 (C-T), 8 (T-T); N2=DIT N2-Score, P=DIT P-Score; C=Consolidated, T=Transition; PreEI=pre engagement with an educational intervention, PostEI=post engagement with the educational intervention; standard deviations are in parentheses.

Figure 6.14: P-Score changes, during the educational intervention, for each of the phase-change groups (C-C, T-C, C-T and T-T).



Key: P=DIT P-Score; Ns=7(C-C), 5(T-C), 7 (C-T), 8 (T-T); N2=DIT N2-Score, P=DIT P-Score; C=Consolidated, T=Transition; PreEI=pre engagement with an educational intervention, PostEI=post engagement with the educational intervention; standard deviations are in parentheses.

Review of Figure 6.13 and Figure 6.14 revealed that the impact of the intervention varied for participants who were associated with different developmental phase status changes e.g. there were larger average variations in both N2-Score and P-Score Pre-post engagement with the educational intervention for the T-C group than for the other three groups in this analysis (C-C, C-T and T-T). To interpret the interaction effect, pairwise comparisons indicated that the two groups that changed status (i.e. from transition to consolidation (T-C) and from consolidated to transition (C-T)) accounted for the interaction, or moderating, effect(s). Of particular note was the group that changed from transition to consolidation (T-C) i.e. this group evidenced the most pre to post change. The group that began in transition and for whom status did not change during engagement with the educational intervention (T-T) showed a very small decrease in N2-Score and a very small increase in P-Score.

Given that the interaction has been found to be highly significant for N2-Scores and for P-Scores (Table 6.19), and that the T-C group accounted for most of the interaction (Table 6.20, Figure 6.13 and Figure 6.14), comparison of characteristics of the T-C group with all other participants was undertaken. Characteristics of each of the T-C group and ‘the rest of the participants’, in terms of group number, demographics (sex and age), influencers reported (professional, commercial and personal) and levels of engagement with the educational intervention, were determined. A summary of findings is presented in Table

6.21. The small sample size of the T-C group (n=5) limits the inferences that should be made when interpreting Table 6.21.

Table 6.21: Comparison of demographics, influencers reported and levels of engagement with the educational intervention: (T-C) compared with (T-T + C-T + C-C).

Variable	Identifier	T-C (n=5)	T-T+C-T+CC (n=22)	Total (n=27)
Group	1	2	14	16
	2	3	8	11
Demographics.				
Sex	Male	2	5	7
	Female	3	17	20
Age in years		43.6 (11.3)	39.9 (8.2)	40.6 (8.8)
Influencers reported.				
Professional influencers	SIP	3	7	10
	SVP	0	10	10
	Staff or locum	2	5	7
Commercial influencers	Contractor/owner	2	4	6
	Manager	2	11	13
	Staff or locum	1	7	8
Personal influencers	Rural	3	7	10
	Town	1	7	8
	City	1	8	9
Engagement with the educational intervention.				
Doses total	Mean (SD)	23.40 (4.39)	20.91 (4.19)	21.37 (4.25)
Doses dilemma discussion	Mean (SD)	11.00 (2.12)	9.68 (2.44)	9.93 (2.40)

Key: Ns=5(T-C), 22(T-T + C-T + C-C); C=Consolidated, T=Transition; T-C=in transition pre engagement with the educational intervention and consolidated post the intervention; SIP=Superintendent pharmacist, SVP=supervising pharmacist; Staff or locum=staff pharmacist or locum pharmacist, Contractor=holds a PCRS pharmacy contract, Manager=pharmacy manager; Rural=attended primary school a rural setting, Town=attended primary school in a town, City=attended primary school in a city; Doses=number of optional activities engaged with; standard deviations are in parentheses.

There were proportionally more of this T-C group in group 2 than in group 1. Key differences in demographics were that there were proportionally more males and the average age was close to four years older. There were no SVPs in the T-C group and proportionally more participants attended primary school in the rural setting. The T-C group also engaged with more total activities and dilemmas discussion activities. Relationships between the T-C group and 'all other participants', as determined according to appropriate adaptation¹⁰⁰ of the variables presented in Table 6.21, were not found to be significant – whether chi-square or Fisher's exact test was employed.

¹⁰⁰ i.e. Professional influencers: SIP versus the rest; Commercial influencers: Owner/contract holder versus the rest; Personal influencers: Single sex primary school versus mixed gender primary school; doses total:

6.6.5. Are there interaction effects between high/low levels of engagement with optional activities in the educational intervention and changes in N2-Scores and P-Scores during the educational intervention?

Interaction effects between changes in developmental indices scores during the educational intervention and 'DosesEI-HL' (22 or greater doses of the optional activities in the educational intervention) or low (21 or less doses), or 'DosesDD-HL' where high relates to ten or greater doses of the dilemma discussion optional activities in the educational intervention) or low (nine or less doses), are summarized in Table 6.22.

As clarified previously, these optional activities are in addition to the 14 (compulsory) activities undertaken during the face-to-face days at the beginning and end of the programme. The minimum number of optional activities engaged with by participants was 12/31 (39%), while that for the 'Dilemma Discussion' activities was 6/16 (38%).

Table 6.22: N2-Score and P-Score changes and level of engagement in optional activities in the educational intervention (RMA).

Effect	Index	MS	df	F	p	η ²
Optional overall activities, as engaged with by participants:						
Pre-post EI	N2-Score	70.16	1	1.13	.30	.043
	P-Score	214.56	1	2.61	.12	.095
Index Pre-post EI x Doses EI-HL	N2-Score	6.68	1	.11	.75	.004
	P-Score	.21	1	.00	.96	.000
Error	N2-Score	62.22	25			
	P-Score	82.09	25			
Optional dilemma discussion activities, as engaged with by participants:						
Pre-post EI	N2-Score	90.59	1	1.45	.24	.055
	P-Score	241.67	1	2.96	.098	.106
Index Pre-post EI x Doses DD-HL	N2-Score	3.54	1	.06	.81	.002
	P-Score	10.04	1	.12	.73	.005
Error	N2-Score	62.35	25			
	P-Score	81.70	25			

Key: Pre-post EI=pre-post engagement with the educational intervention; Index=developmental index; Doses EI-HL=optional overall activities in the educational intervention high (>21) or low (<22); Doses DD-HL=optional dilemma discussion activities in the educational intervention high (>9) or low (<10); N2=DIT N2-Score, P=DIT P-Score; MS=Mean square; df=degrees of freedom; F=F- statistic or F-ratio, a comparison of systematic variance to unsystematic variance; $p < .05$; η²=Eta Squared or effect size; Ns=10(overall high), 17(overall low), 12(dilemma discussion high), 15(dilemma discussion low).

whether or not 22 doses or higher; doses related to dilemma discussion: whether or not 10 doses or higher.

Doses of the educational intervention voluntarily engaged with by pre-post developmental index interaction effect was not found to be statistically significant for either N2-Scores ($F(1,25)=0.20, p=.66, \eta^2=.008$) or for P-Scores ($F(1,25)=.17, p=.69, \eta^2=.007$).

Doses of the educational intervention directly related to dilemmas discussion and voluntarily engaged with by pre-post developmental index interaction effect was not found to be statistically significant for either N2-Scores ($F(1,25)=0.53, p=.48, \eta^2=.021$) or for P-Scores ($F(1,25)=.67, p=.42, \eta^2=.026$).

Related within subject descriptive statistics are provided in Table 6.23.

Table 6.23: N2-Scores and P-Scores grouped by engagement with ‘Doses’ of the educational intervention (Doses EI-HL/Doses DD-HL): descriptive statistics.

Engagement (Doses)	Index	Doses	Age in years Mean (SD)	PreEI Mean (SD)	PostEI Mean (SD)
All optional Activities	N2-Score	High>21	42.9 (7.8)*	41.72 (14.08)	43.36 (18.71)
		Low<22	39.35 (9.2)	37.77 (21.60)	40.86 (18.40)
	P-Score	High>21	42.9 (7.8)*	43.00 (14.82)	47.00 (17.97)
		Low< 22	39.35 (9.2)	40.07 (20.63)	44.32 (18.03)
Optional Dilemma Discussions	N2-Score	High>9	40.9 (8.3)^	36.15 (18.26)	39.27 (20.19)
		Low<10	40.3 (9.3)	41.70 (19.78)	43.79 (16.87)
	P-Score	High>9	40.9 (8.3)^	37.67 (18.31)	42.79 (19.94)
		Low<10	40.3 (9.3)	43.94 (18.69)	47.33 (16.12)

*n=9, as one participant declined to give age.

^n=11, as one participant declined to give age.

Key: N2=DIT N2-Score, P=DIT P-Score; Ns all optional activities=10 (High >21 doses), 17 (Low <22 doses), Ns Optional Dilemma Discussion=12 (High >9 doses), 10 (Low<10 doses); Doses=the extent to which participants engaged with activities or accessed resources through the VLE during the educational intervention; PreEI=pre engagement with an educational intervention, PostEI=post engagement with the educational intervention; standard deviations are in parentheses.

Level of participant engagement with optional activities in the educational intervention was higher for the older age-group.

6.6.6. Summary.

Key findings included that interaction effects between changes in participant N2-Scores and P-Scores during engagement with the educational intervention and developmental phase changes during engagement with the educational intervention were found to be highly significant ($p=.001$), and the effect sizes were very large. Most of the effect came from the group that was in transition before and consolidated after the educational

intervention (group T-C) although interpretation should take note of the fact that the sample size is small (T-C: n=5). Least impact (of engagement with the educational intervention) was observed in the group that began and finished in transition.

A crossed interaction was observed in developmental indices for age-groups, and with respect to professional and personal influencers. However findings were not significant in either case.

6.7. Summary of findings in the results and analysis chapter.

This chapter reviewed demographics of the sample of pharmacists recruited to the study and presented related descriptive statistics before describing the sample in the context of responses to a pre-intervention survey on potential professional, commercial and personal influencers. This was followed by review of variables or indices relevant to the study, included in the DIT2 dataset. Variables related to delivery of the educational intervention were presented after which changes in key indices pre-post engagement with the educational intervention and pre-post time participants spent as 'controls' were considered.

The key finding was that engagement with the educational intervention impacted on participant developmental indices derived from the DIT2 and changes observed were found to be significant (Section 6.5.2).

Differences were observed between group 1 and group 2 in terms of demographics, DIT2 scores at recruitment, professional, commercial and personal influencers (PCPIs) and the impact of the intervention on DIT2 scores. These differences have been highlighted where they occurred (Section 6.2.1.2, 6.2.2, 6.3.1.1.2, 6.3.1.2, 6.5.2.1 and 6.5.3).

Results were then investigated for relationships in the context of the research question i.e. Indicators of interactions between changes in the developmental indices under investigation (N2-Scores and P-Scores) and key variables related to participants in the study, as obtained by means of RMA.

Key findings are discussed in Chapter 7.

Chapter 7 - Discussion

7.1. Introduction.

The aim of this chapter is to summarise key findings further to analysis of data gathered and to then relate key findings to the research question, in the context of the literature and the study group, and as they align with the research question and hypotheses, namely:

Research question:

Does a profession-specific educational intervention, as designed, developed and delivered during this study, impact on the development of moral reasoning competencies in community pharmacists in Ireland, as measured by the DIT2?

Hypotheses:

1. Moral reasoning competencies of community pharmacists in Ireland, as measured by the DIT2, are not impacted by the profession-specific educational intervention designed, developed and delivered during this study.
2. The context of the study group, community pharmacists working in Ireland, precludes comparison of DIT2 results with outcomes from other studies.

The sample size of 27 limited a more fine-grained analysis of the secondary variables (Section 5.4.5.1). For example the sample size limited the extent to which joint effects (e.g. age and professional role(s) held, or professional and commercial roles held) could be considered, and required that some categories be collapsed in order to assure adequate sizes of sub-groups during analysis. Inferences derived from analysis, and subsequent interpretation of findings, accommodated this limitation. The study provides solid findings related to whether the educational intervention impacted on moral reasoning competency/ -ies development as measured by the DIT2.

7.2. Key Findings.

(1) Engagement with the educational intervention impacted on participant developmental indices derived from the DIT2 and changes observed were found to be significant (Section 6.5.2). Some aspects of the changes in developmental indices observed did not match theoretical expectations.

1. Post conventional reasoning scores (N2-Score and P-Score) increased following engagement with the educational intervention (Section 6.5.2);

2. 'Maintaining Norms' and 'Personal Interest' schema scores changed during engagement with the educational intervention;
 3. MN-Scores decreased, in a manner found to be statistically significant, following engagement with the educational intervention (Section 6.5.2.2);
 4. N2-Scores were found to be less than P-Scores, and the differences between the two summary scores were greater than might have been anticipated (Section 6.5.2.1, Table 6.10);
 5. A bimodal pattern of schema scores, in which both PI-Scores and P-Scores were greater than MN-Scores, was observed post engagement with the educational intervention (Section 6.5.3.2).
- (2) Engagement with the educational intervention impacted on participant developmental profile and phase indices derived from the DIT2 (Section 6.5.3) as was apparent following consideration of each of:
1. developmental phase (Contrans) pre-post engagement with the educational intervention,
 2. types pre-post engagement with the educational intervention, and
 3. U-Scores pre-post engagement with the educational intervention.
- (3) Interactions were observed between developmental phase indices changes (during engagement with the educational intervention) and N2-Scores and P-Scores during engagement with the educational intervention (Section 6.6.4).
- (4) N2-Scores and P-Scores were lower for the 46 year or older group than those for younger age-groups and crossed interactions were observed between the 26 to 35 year old and 36 to 45 year old age-groups and changes in N2-Scores (Section 6.6.2).
- (5) Participants self-reported a range of professional, commercial and personal influencers, as determined by answers to questions posed pre engagement with the educational intervention, and crossed interactions were observed between some of these variables and N2-Scores and P-Scores (Section 6.6.4). Trends (Section 5.4.9.2) associated with sub-groups of participants, as categorised within each 'influencer' and as related to changes in N2-Scores and P-Scores, were also observed.

- (6) Variations in participant level of engagement with activities in the educational intervention were not significant and no interaction effects between engagement in activities on N2-Scores and P-Scores was identified (Section 6.6.5).

These findings are set in context by confirmation that (a) the sample of community pharmacists recruited to the study was determined to be representative of the database held at the CSED (Dong, 2011) (Section 6.3.1), thereby facilitating appropriate comparisons with other studies; (b) the sample of community pharmacists recruited to the study was determined to be generally representative of the register of pharmacists in Ireland (PSI, 2011) in terms of gender and age (Section 6.2.1), and (c) changes in developmental indices determined for participants pre-post time spent as a control were not found to be significant (Section 6.5.1), thereby supporting a claim that any changes observed in the study were likely to have been as a result of engagement with the educational intervention (Kirk, 2013; Cohen et al, 2007; Gall et al, 2007; Field & Hole, 2003).

Findings that highlight differences between group 1 and group 2 at the point of recruitment to the study (Section 6.2 and 6.3) and with respect to the impact of the educational intervention (Section 6.5) were identified for several analyses in this study. As previously discussed (Sections 5.2, 5.3 and 5.4.5.1), the quasi-randomisation of participants, as aligned with the recruitment process used, was likely to have been at least partly responsible for these differences. However, Staehr & Byrne (2003) reported a difference of more than 20 points in N2-Scores, between undergraduate computer science students allocated to the test (n=5) and control groups (n=5), as determined pre engagement with the educational intervention, thereby establishing that differences in group profiles when recruited to a study do not necessarily preclude such groups from each acting as the other's control (Section 4.2.7.3). Findings that included differences between group 1 and group 2 were highlighted where they occurred.

7.2.1. Engagement with the educational intervention impacted on participant developmental indices derived from the DIT2 and changes observed were found to be significant.

Findings included that changes in participant schema preferences as determined pre-post the educational intervention, in the combined group 1&2 and separately in group 1 and group 2, indicated that the educational intervention had a positive impact on post-conventional reasoning scores (N2-Score and P-Score) (Section 6.5.2). These changes were found to be significant in group 2, and effect sizes were small to moderate. Changes in group 1 were not found to be significant.

Participant preference for the 'Maintaining Norms' schema decreased in the combined group 1&2, and in each of group 1 and group 2, during the educational intervention and changes in the combined group 1&2 and in group 2 were found to be significant. Effect sizes were moderate to large.

Participant preference for the 'personal interest' schema increased in the combined group 1&2, and in each of group 1 and group 2, during the educational intervention, although changes were not found to be significant.

These findings, indicative of a variety of impacts of the educational intervention, addressed the research question in this study i.e. the educational intervention had an impact on the moral reasoning competencies of the study group, as measured by the DIT2 and provide evidence against, in particular, the first hypothesis.

The impact on group 1 would appear to have been different to the impact on group 2.

7.2.1.1. Increases in post-conventional reasoning scores.

Neo-Kohlbergian theory predicts that paired t-tests of measures of post-conventional reasoning on the DIT, pre and post an educational intervention that has been designed to impact on moral reasoning competency/ -ies development, will be statistically significant (Rest et al, 1999b, 1997a and Section 4.9.2). Findings from this study, where group 2 N2-Scores and P-Scores were found to be significant, supported that prediction¹⁰¹.

While changes for N2-Scores and P-Scores for the combined group 1&2 were not determined to be statistically significant ($p < .05$), P-Score changes¹⁰² for the combined group did show statistical tendencies. However, this overall assessment (group 1&2 combined) masked differences between groups 1&2 (Table 6.10, Section 6.5.2.1). Taken together, these findings demonstrate that the educational intervention impacted on post-conventional reasoning scores in a manner predicted by Neo-Kohlbergian theory.

The actual increases in mean N2-Score for group 1&2 (2.55 points) and group 2 (5.15 points) and in mean P-Score for group 1&2 (4.16 points), group 1 (2.27 points) and group 2 (6.91 points) compare favourably with reports of short interventions that impacted on moral reasoning as measured by the DIT (Section 4.2.7.2) e.g. findings resulting from a 6

¹⁰¹ N2-Score ($t(10)=2.30$, $p=.04$, $d=.29$) and P-Score ($t(10)=2.86$, $p=.02$, $d=.40$) changes for group 2 were found to be significant and effect sizes were small to moderate (Table 6.10, Section 6.5.2.1).

¹⁰² P-Score ($t(26)=1.72$, $p=.10$, $d=.23$), $.50 < p < .10$.

week ethics course with undergraduate physical therapy students reported an N2-Score increase of 3.5 points (Swisher et al, 2012) and findings from a three week ethics course with undergraduate business students reported a P-Score increase of 5.49 points (Jones, 2008). It is important to consider also that while tests of statistical significance are the cornerstone of the quantitative positivist approach utilised in this study (Kirk, 2013; Field & Hole, 2003), '*even small gains on these measures ... are of theoretical and practical interest*' (Schlaefli et al, 1985:320), indicating that the increase in N2-Score for group 1 (0.77 points) may also be an important finding.

Given that the study used a controlled repeated measures crossover design (Sections 5.2 and 5.3), and that changes in these developmental indices during time spent as a control were not found to be significant for any of the three groups, the study findings provide confirmation that the profession-specific educational intervention, as designed, developed and delivered during this study, impacted on the development of moral reasoning competencies in community pharmacists in Ireland, as measured by the DIT2.

7.2.1.2. Changes in 'Maintaining Norms' and 'Personal Interest' schema scores.

Neo-Kohlbergian theory predicts that as moral reasoning competencies develop '*the importance of the personal interest schema lessens, the maintaining norms schema becomes modal and the postconventional schema starts to advance further*' (Derryberry & Thoma, 2005:91). The focus on the maintaining norms schema generally remains constant. This aligns with the expectation that, for a given cohort, mean N2-Scores and P-Scores will be very similar (Rest et al, 1999b, 1997a, 1997b).

The intervention impacted on MN-Scores and PI-Scores during engagement with the educational intervention, i.e. MN-Scores decreased for group 1, group 2 and the combined group 1&2, while the PI-Scores increased for all three groups (Table 6.10, Section 6.5.2.1). MN-Score decreases¹⁰³ were found to be statistically significant ($p < .05$) for both the combined group 1&2 and for group 2, with moderate to large effect sizes. None of the PI-Score increases were found to be significant.

The trend that MN-Scores decreased as a result of engagement with the educational intervention demonstrated that participant reliance on criteria outside the individual (rules, norms and codes, Section 2.3) declined after the intervention. As this was an

¹⁰³ MN-Score decreases were found to be statistically significant ($p < .05$) for both the combined group 1&2 ($t(26) = -2.44, d = .50$,) and for group 2 ($t(10) = -3.24, d = .81$).

indication that change had begun, it provided further evidence that the educational intervention had an impact. Nonetheless, the pattern (i.e. that MN-Scores decreased, in a manner found to be statistically significant) is atypical.

7.2.1.3. The decrease in participant preference for the 'Maintaining Norms' schema.

The 'maintaining norms' schema prioritises *'the role of social norms in organising and maintaining order in society'* (Thoma, 2002:241) and on *'maintaining the existing legal system'* (Bebeau & Thoma, 2003:19).

Features underpinning the schema include that (a) there is agreement that these 'rules, norms and codes' are appropriate, in the first instance, (b) there is a duty on the individual to 'keep the law' in place, and (c) once imposed, there will be consistent application of both the 'rules' and any related sanctions across society (Rest et al, 1999b; Narvaez & Bock, 2002).

The research findings anomaly observed in the study may be partly explained by the complex network of 'rules, norms and codes' that impacted on the practice of pharmacists working in community pharmacies in Ireland in 2009 - 2011 (Section 2.5). The most relevant 'rules, norms and codes' were considered, in Chapter 2, to include (a) the introduction of the Pharmacy Act (2007) and the associated implication that a charge of professional misconduct or, indeed, bankruptcy, could lead to a pharmacist being removed from the register of pharmacists (Section 2.3.1), (b) the introduction of a statute-based code of conduct against which a pharmacist's standard of practice could be judged (Section 2.3.2) (PSI, 2009), and (c) healthcare, education and services delivery policy changes; each of which had placed additional demands on the community pharmacy sector in Ireland (Section 2.4). It is possible that these changes forced pharmacists to contemplate the 'existing legal system' (Bebeau & Thoma, 2003) as a changing entity and, as such, to question whether underlying 'social norms' remained intact.

During the research period (2009-2011), (a) average community pharmacy income reduced by at least 7%¹⁰⁴ (HSE, 2011, 2010) - from the supply of prescription medicines through the GMS, DPS and LTI schemes alone, (b) the average number of dispensed items, through the GMS, DPS and LTI schemes, increased by 5% per pharmacy (HSE, 2011, 2010), (c) there

¹⁰⁴ Variable DPS deductibles were charged at pharmacy level during this time. A conservative approach has been taken to accommodate these changes – i.e. the lower reduction, reflecting 'net cost' reduction of 7% rather than 13%, is used in discussion (Section 2.2.2).

were an average of 900 patient-visits to community pharmacies in 2011 (Grant Thornton, 2012), and (d) pharmacists, on average, worked alone (i.e. without peers) for at least 80% of the working week (Section 2.2.1 and 2.2.3).

Reductions in pharmacy income (HSE, 2011, 2010) followed changes in Irish legislation (FEMPI Act(s), 2013, 2011, 2010, 2009) which, without agreement, facilitated numerous instances of unilateral reduction in fees paid to community pharmacies who had contracts with the Health Service Executive (HSE) to dispense and supply medicines under the provisions of the Health Act(s) (2007, 2004 & 1970). The Health ((Pricing and Supply of Medicinal Goods) Act (2013) continued this trend.

When combined, the impact of these legislative changes had the potential to affect community pharmacists' 'norms' (Thoma, 2002) so that community pharmacists' affiliation to existing 'rules' was potentially eroded. Commercial viability was reduced not only through regulation changes in Ireland, but also through national and global economic recession (2008 to 2012) as a result of the economic crash i.e. 'Firms ...implemented widespread and severe changes in pay and conditions in response to the recession' (Roche et al, 2013:14). This resulted in a reduction in the discretionary income as might have been available to purchase, for example, medicines supplied without prescription or sundry items for sale in the retail area(s) of community pharmacies. Thus, the concept of 'maintaining order in society' (Thoma, 2002:241) had the potential to be challenged as citizens and businesses adjusted to new commercial realities and pharmacists, as members of a shifting society, may have interpreted that 'norms' could be 'bargained' in a new 'social order'.

An alternative explanation may derive from the possibility that participants perceived that change on the DIT2, further to engagement with the educational intervention, was anticipated. A move away from 'maintaining norms' options would have required that volunteer participants choose either 'personal interest' or 'post conventional' options 'in lieu' (Section 5.2.2 & 5.9.2). Where moral reasoning competencies had not developed to the extent that (some) post-conventional options were preferred by the participants, then 'personal interest' options would have been the only available alternative. Consideration of this alternative explanation derives insight from Thoma and colleagues (1999), who drew on the empirical base to rebut¹⁰⁵ suggestions by Emler and colleagues (Emler & Palmer-Canton, 1998; Emler et al, 1983) that the DIT could be faked by participants pretending to

¹⁰⁵ Note: Thoma and colleagues also declare their 'expectation that, as a social science measure, DIT scores are 'probably influenced' to some extent by several factors, and include religious ideology, political attitude, socio-economic status and social milieu in the list of potential influencers' (Thoma et al, 1999:103).

assume a particular political ideology (see Section 3.5.1.2) and reminded the reader that 'classical measurement theory holds that the test items and instructions are an integrated whole' (Thoma et al, 1999:108). Thoma and colleagues referred to the hypothetical outcome of a study that would ask participants to fake by choosing only 'even' or 'odd' items on the DIT (Appendix 10) and used the finding that a 'manipulation of test instructions can produce a range of DIT scores, both higher and lower than under standard conditions' (Thoma et al, 1999:108) to signpost that manipulation of test instructions (Emler & Palmer-Canton, 1998; Emler et al, 1983) invalidates the very process that the measure is intended to study. Hence any potential that participant behaviour might be impacted by instructions would merit recommendation for further study.

Regardless of the explanation for the decrease in participant preference for the 'Maintaining Norms' schema, the overall outcome was that participants chose more 'post-conventional' than 'personal interest' options – as evidenced by the increase in N2-Scores and P-Scores during engagement with the educational intervention.

7.2.1.4. Comparison of summary scores: N2-Score or P-Score.

Meta-analysis¹⁰⁶ of findings from pre-post educational intervention studies as undertaken by Rest et al (1997a), reported that N2-Score and P-Scores were highly correlated i.e. Cronbach's alpha is mid-80s to low 90s (Mechler & Thoma, 2013; Thoma, 2006; Rest et al, 1997a). Dongs' (2011) analysis supported claims that the two summary scores were likely to be similar e.g. when N2-Scores for graduates¹⁰⁷ were compared with P-Scores¹⁰⁸, the mean N2-Score was 0.27 points greater than that reported for the mean P-Score.

As Neo-Kohlbergian theory predicts that the N2-Score generally outperforms the P-Score on six criteria of construct validity (Rest et al, 1999a, 1997a) (Section 3.5.7, Table 3.3) the N2-Score is the preferred summary score. It is also a factor that facilitates comparison between research outcomes from studies using the DIT2 with studies that used the DIT1, as is the case with the comparison between the work on community pharmacists by Latif & Berger (1997) and this study.

The variation between P-Scores and N2-Scores seen in this study are greater than those in Dong's baseline figures (Dong, 2011) e.g. post intervention combined group 1&2 N2-

¹⁰⁶ Meta-analysis of studies in dentistry (Bebeau & Thoma, 1994), nursing (Duckett & Ryden, 1994), liberal arts (Penn, 1990) and medicine (Self & Baldwin, 1994).

¹⁰⁷ N2-Scores for graduates are (m=41.33, SD=14.57, n=15,494).

¹⁰⁸ P-Scores for graduates are (m=41.06, SD=15.22, n=15,496).

Scores¹⁰⁹ and P-Scores¹¹⁰ differ by 3.53 points (Section 6.5.2, Table 6.10). While the decrease in MN-Scores and increase in PI-Scores are consistent with such variation, and therefore the finding is not unexpected in the context of this study, it could nonetheless be considered an anomaly in the context of the underpinning Neo-Kohlbergian theory.

Review of the literature provided little assistance to attempts to interpret variation between N2-Scores and P-Scores i.e. the majority of studies that investigated the impact of educational interventions (or, indeed, undergraduate programmes) on moral reasoning as measured by the DIT report only one or other of the summary indices (e.g. Self et al, 2013; Jones, 2008; Staehr & Byrne, 2003, Latif & Berger, 1997). David Latif's numerous publications appear to have reported only P-Scores in publications from 1997 to 2008 (Appendix 14) and the subsequent publication reported only N2-Scores (Latif, 2009). Hence it may be that this finding (of variation between N2-Score and P-Score and/or atypical patterns of change in MN-Score or PI-Score), while not predicted by Neo-Kohlbergian theory, may be within the data collected for other studies but not reported. Study design(s) of interventions studies has generally focused on the determination and/or investigation of one or other summary score and comparison between N2-Scores and P-Scores is not typically reported in the field of study.

Swisher et al (2012) did determine both N2-Scores and P-Scores, and reported that for the 37 USA based physical therapist undergraduates included in the study, the pre intervention N2-Scores ($m=35.2$, $SD=15.3$) were lower than their P-Scores ($m=37.3$, $SD=14.4$) by 2.1 points. O'Flaherty & Gleeson (2014), in their longitudinal study of 259 undergraduate students (at a University in Ireland between 2002 and 2006), reported that the first year student N2-Scores ($m=20.42$ ¹¹¹) were 5.49 points lower than their P-Scores ($m=25.91$, $SD=11.07$). Roche & Henman (2008), reported that for 141 pharmacists, who completed the DIT2 when they attended a CPD event, their N2-Score ($m=31.75$, $SD=16.73$) was 3.61 points lower than the observed P-Score ($m=35.26$, $SD=17.01$). These three reports, i.e. by Swisher et al (2012), O'Flaherty & Gleeson (2014) and Roche & Henman (2008) provided additional examples of studies where reported N2-Scores and P-Scores differed more than might have been anticipated from the underpinning Neo-Kohlbergian theory. However none of the three reports provided interpretation of differences between these two summary indices or reported analysis of MN-Scores or PI-Scores. As a result, they do not help explain the differences in N2-Scores and P-Scores in this study.

¹⁰⁹ N2-Scores are ($m=41.78$, $SD=18.19$, $n=27$).

¹¹⁰ P-Scores are ($m=45.31$, $SD=17.70$, $n=27$).

¹¹¹ Standard deviation not reported for N2-Score in this publication. It is reported for P-Score.

7.2.1.5. Consideration of the pattern of schema scores.

Neo-Kohlbergian theory predicts that schema scores will be 'modal', i.e. they will 'peak' around a 'single mode' or schema (Thoma & Rest, 1999). In a study of multiple cross-sectional and longitudinal samples of data, Thoma & Rest (1999) reported that 98% of samples were modal. As represented in Figure 6.12 (Section 6.5.3.2) all three groups, i.e. the combined group 1&2 and each of group 1 and group 2, may be considered to have been modal, i.e. with one obviously preferred schema, pre engagement with the educational intervention. However, when analysed post the intervention, schema scores for all three groups were bimodal (e.g. high on personal interest schema, low on maintaining norms schema and high on the post-conventional schema). The bimodal pattern observed post engagement with the educational intervention, for both the combined group 1&2 and each of group 1 and group 2, was therefore not consistent with theoretical expectations underpinning the Neo-Kohlbergian approach.

However, in the bimodal pattern(s) of schema score changes observed (Section 6.5.3.2, Figure 6.12) pre-post engagement with the educational intervention is a representation of the decrease in MN-Score and increase in PI-Score, in the context of an overall increase in N2-Score and P-Score during engagement with the educational intervention, as already discussed in Sections 7.1.2.1, 2, 3 and 4.

Interpretation of developmental indices may be further supported by consideration of developmental profile and phase indices observed (Thoma, 2006; Rest et al, 1999b; Thoma & Rest, 1999), as discussed in Section 7.2.2.

7.2.2. The impact on participant developmental profile and phase indices (Contrans, type and U-Score) during engagement with the educational intervention.

The index of consolidation and transition (Contrans) moral type index (Section 3.5.4) and utiliser score (Section 3.5.6) capture aspects of moral reasoning development not directly assessed by consideration of the four developmental indices (Thoma, 2006). Bailey et al (2010:8) propose that '*programmes of study or professional experience may have an independent effect*' [impact] on developmental profile and phase indices and these should therefore be assessed by researchers. Findings include that participant developmental phase, type and utiliser score (U-Score), i.e. the developmental profile and phase indices, were impacted as a result of engagement with the educational intervention. Changes were not found to be significant (Section 6.5.3.2, Figure 6.11 and Table 6.11).

7.2.2.1. Developmental phase (Contrans) pre-post engagement with the educational intervention.

Prior to engagement with the educational intervention, group 1 participants (56%) were more likely to be 'in transition' than group 2 participants (36%) (Section 6.5.3.1, Figure 6.9). Findings included that participant phase, i.e. whether reasoning was consolidated at a preferred schema or in transition between schemas, changed for 12 (44%) of the participants during engagement with the educational intervention (Section 6.5.3.1, Figure 6.10). The impact of the intervention therefore included that the proportion of group 1 participants in transition post the intervention increased to 75%, whereas the proportion of group 2 participants in transition post the intervention reduced to 27% (Section 6.5.3.1, Figure(s) 6.9 & 6.10).

During consolidation, an individual will experience increased clarity in the preferred moral reasoning schema i.e. that particular schema is integrated to her information processing and readily recognized (Thoma, 2006; Derryberry & Thoma, 2005) (Section 3.5.4). The result is that the individual depends less '*on environmental cues in the activation and articulation of the moral [reasoning] schema*' (Derryberry & Thoma, 2005:104) and she is more likely to be effectively self-regulated and self-informed in her moral reasoning. In contrast, an individual in transition is likely to struggle in situations where she must process conflicting information, especially when there is limited time available for activating a relevant moral reasoning process (Derryberry & Thoma, 2005; Thoma & Rest, 1999). Decision-making within strict time-constraints is common for community pharmacists in Ireland (Chapter 2).

Movement into transitional statuses, as was observed for group 1 participants as they engaged with the educational intervention, has the potential to lead to '*increased moral confusion*' (e.g. Thoma et al, 2008; Thoma 2006). The findings for phase changes for group 1 participants therefore represent a pattern associated with little growth on the DIT (Thoma, 2006; Thoma & Rest, 1999). This is consistent with the finding that changes for post-conventional reasoning scores (Section 7.2.1) for group 1 participants were not found to be significant.

7.2.2.2. Types pre-post engagement with the educational intervention.

The average type recorded for the combined group 1&2¹¹² (Section 6.5.3.2., Figure 6.11) prior to engagement with the educational intervention was comparable with baseline figures reported by Dong (2011)¹¹³. However, average type decreased¹¹⁴ as a result of engagement with the intervention. Type profiles for participants in group 1 also decreased¹¹⁵ from pre to post engagement with the educational intervention. Group 2 average type increased¹¹⁶ from pre to post engagement with the educational intervention. None of the changes in type was found to be significant.

Types categorise individuals at various locations on the transition and consolidation cycle (Section 3.5.4) thereby reflecting whether an individual relies upon a clear schema or is torn between competing schemas (Thoma & Rest, 1999). As Neo-Kohlbergian theory predicts that change will be developmental (Thoma, 2006; Rest et al, 1999b), i.e. that participants will generally move through the scale from type 1 to type 7 (Table 3.5), the decrease in average type for group 1 (and for the combined group 1&2) was atypical.

Consideration of type profiles as determined pre engagement with the educational intervention reveals that participants in group 2 ranged from type 4 to type 7 only, whereas 5 (31%) of group 1 participants were type 2 (predominant in PI schema, but transitional) (Section 6.5.3.2., Figure 6.11). Very few adult respondents to the DIT are generally classified as type 1 or type 2 (Rest et al 1999a, 1999b; Thoma & Rest, 1999). Validity criteria for the DIT (Section 3.5, Table 3.3) include that (1) the measure is able to distinguish between groups who ought to differ on a measure of moral reasoning development, as in the case of those educated to professional (e.g. pharmacist) level, and (2) longitudinal gains across years in higher education or lifespan (Thoma, 2002; Rest et al 1999a, 1997b). Given that all of these participants had been registered pharmacists for at least 3 years, and were at least 31 years of age (section 6.2.1.3, Table 6.1), the finding that 5(31%) participants in group 1 were type 2 is an unexpected finding. The finding has the potential to support Latif's prediction that community pharmacists are an exception to the expectation that moral reasoning competencies, as measured by the DIT, increase with age (Latif, 2001a, 2000a; Latif & Berger, 1997).

¹¹² Combined group 1&2 average type pre engagement with the intervention: (m=5.41, SD=1.91, n=27).

¹¹³ Baseline type figures reported by Dong (2011): (m=5.33, SD 1.72, n=27).

¹¹⁴ Combined group 1&2 average type post engagement with the intervention: (m=5.04, SD=2.31, n=27)

¹¹⁵ Group 1 average type decreased from pre (m=5.00, SD=2.22, n=16) to post (m=4.13, SD=2.36, n=16) engagement with the educational intervention.

¹¹⁶ Group 2 average type increased from pre (m=6.00, SD=1.18, n=11) to post (m=6.36, SD=1.50, n=11) engagement with the educational intervention.

7.2.2.3. U-Scores pre-post engagement with the educational intervention.

A U-Score assesses a participant's preference for, or utilisation of, a Kohlbergian moral framework and therefore provides '*evidence that individuals differ in their utilisation of moral information*' (Thoma & Rest, 1999:324). Neo-Kohlbergian theory predicts that the higher the U-Score, the greater the correspondence between decisions about what ought to be done in a situation and the specific items on the DIT selected to justify that choice (Thoma & Rest, 1999).

U-Scores may be positively or negatively skewed i.e. +.1=high utilisation and -.1=low utilisation (Thoma & Rest, 1999). If U-Scores determined for a group in advance of the delivery of an educational intervention indicated that e.g. U-Scores were low, the design of educational interventions could be adapted accordingly. Such a finding might prompt the addition of exercises to e.g. target the '*importance and utility of moral concepts in social decision-making*' (Thoma & Rest, 1999:331) in what might be termed more 'concrete situations' than the dilemma discussion approach more traditionally employed. 'Concrete situations', in this context, would refer to problem-solving where the 'answer' is fairly obvious, and can be found in a literal interpretation of the CoC or the law. The range of U-Scores in the study, -.08 to .62, was well within the anticipated range of -.40 to .77 (Thoma & Rest, 1999). Group 1 demonstrated a higher utilisation (m=.21, SD=.16) than group 2 (m=.13, SD=.12) pre-engagement with the educational intervention.

Variation in U-Scores, which signpost '*whether the intervention increased the focus on moral considerations*' (Bailey et al, 2010:9), is a measure, available within the DIT2, that has the potential to determine whether an educational intervention has an impact on moral reasoning competency/ -ies development. Average U-Scores for the combined group 1&2 decreased¹¹⁷ slightly from pre to post engagement with the educational intervention (Section 6.5.3.3, Table 6.11). U-Scores for Group 1 also decreased¹¹⁸ from pre to post the intervention, whereas U-Scores for group 2 increased¹¹⁹ from pre to post engagement with the educational intervention. None of the changes in U-Score was found to be significant. The 'positive' impact observed on the U-Score for group 2, during engagement with the educational intervention, aligned with theoretical expectations

¹¹⁷ Combined group 1&2 average U-Scores decreased from pre (m=.17, SD=.14, n=27) to post (m=.16, SD=.14, n=27) engagement with the educational intervention.

¹¹⁸ Group 1 U-Scores decreased from pre (m=.21, SD=.16, n=16) to post (m=.16, SD=.13, n=16) engagement with the educational intervention.

¹¹⁹ Group 2 U-Scores decreased from pre (m=.13, SD=.12, n=11) to post (.16, SD=.15, n=11) engagement with the educational intervention.

(Section 6.5.3.3, Table 6.11). The impact on U-Scores determined for Group 1 was, however, negative.

Changes in U-Scores also align with an individual's (changed) 'location' in the consolidation and transition cycle and, as such, have the potential to extend understanding of the developmental process as it related to the context in this study (Thoma & Rest, 1999) i.e. a crossed-pattern was identified in the trend for U-Scores for group 1 to decrease after engagement with the educational intervention, when this group showed an increase in the proportion of participants in transition after the intervention by comparison with profiles prior to the intervention (Section 7.2.2.2). The crossed pattern repeated itself on review of the increase in U-Scores for group 2, when this group showed a small decrease in the proportion of participants in transition after the intervention by comparison with participant profiles prior to the intervention (Section 7.2.2.2). These crossed patterns aligned with Neo-Kohlbergian theory which proposes that '*consolidated patterns are related to higher U-Scores and the effect is fairly strong*' (Thoma & Rest, 1999: 329).

The U-Score is intended to be used as a moderator variable i.e. to increase the predictability of moral reasoning to implementation (Thoma & Rest, 1999), as interpreted in conjunction with summary indices on the DIT2. Findings from studies in other professions, e.g. medicine (Sheehan et al, 1980), Dentistry (Bebeau, 2009a, 2009b), Nursing (Krichbaum et al, 1994), Physical Therapy (Sisola, 2000) and teachers (Chang, 1994, indicated that higher scores on the DIT2 correlated positively with professional behaviour and/or improved patient care. Duckett & Ryden, (1994) found that DIT scores as senior freshman '*predicted to job performance ratings [in senior years] (r=.58 (n=48, p<.001), whereas general aptitude scores predicted only r-.42 and grade point average (GPA) predicted only r=.29*' (Rest et al, 1999b:105). More recently reported research indicates that higher scores on the DIT2 were associated with '*acknowledging an error, providing more detailed explanations and taking personal responsibility*' in physicians in training at John Hopkins Hospital (Putnam Cole et al, 2013:580). However it is not clear why the DIT '*predicts so well in some multiple regression studies to later job performance, but not in others*' (Rest et al, 1999b:106).

Nonetheless, the demonstration of a relationship between higher scores on the DIT and improved patient care and/or a more positive approach to error disclosure would be likely to further support the prioritisation of moral reasoning competencies development in community pharmacists, amongst others. However similar correlations have not been investigated in the context of community pharmacists. Until appropriately designed studies

for pharmacists are undertaken and reported, extrapolation from U-Scores, as interpreted in conjunction with developmental indices and profiles, will be a rare support to predictions as to likely professional behaviour post completion of the DIT2.

Neo-Kohlbergian theory also predicts that changes in developmental phase indices (as found during engagement with the educational intervention) may interact with, or moderate, changes in N2-Scores and P-Scores (Thoma, 2006; Thoma & Rest, 1999; Rest et al, 1999b), as discussed in Section 7.2.3.

7.2.3. Interactions were observed between developmental phase indices changes (during engagement with the educational intervention) and changes in N2-Scores and P-Scores during engagement with the educational intervention (Section 6.6.4).

Individuals at different developmental¹²⁰ phases happened to be a part of the study i.e. their normative growth was picked up by the DIT2 completed pre engagement with the educational intervention (Section 6.5.3.1, Figure 6.9). Findings indicated that the impact of the intervention on post-conventional reasoning scores varied for participants who were associated with different developmental phase status changes, i.e. whether consolidated (C) or in transition (T) pre and post engagement with the educational intervention (C-C, C-T, T-C or T-T) (Section 6.6.4, Table 6.19). Changes in participant N2-Scores and P-Scores, as investigated using RMA, were both found to be highly significant¹²¹ (Section 6.6.4, Table 6.19). The effect size was large in both cases, thereby highlighting that these were important and substantive findings. This is consistent with recent evidence supporting the expectation that participants' DIT2 scores change at different rates based on current developmental phase (Bailey et al, 2010; Thoma, 2006; Thoma & Rest, 1999).

Further comparisons of the phase-change groups (C-C, T-C, C-T and T-T), and the change in developmental indices during engagement with the educational intervention, (Section 6.6.4, Figures 6.13 and 6.14) revealed that the T-C group evidenced the most pre to post change whereas the group that began in transition and for whom status did not change during engagement with the educational intervention (T-T) showed a very small decrease in N2-Score and a very small increase in P-Score.

¹²⁰ Developmental phase pre engagement with the educational intervention was determined to be that 14 participants were consolidated and 13 participants were in transition (Section 6.5.3.1, Figure 6.9).

¹²¹ Changes in N2-Scores ($F(1,23)=8.46$, $p=.001$, $\eta^2=.525$) and P-Scores ($F(1,23)=7.58$, $p=.001$, $\eta^2=.497$ (RMA)).

This finding aligned with research that found that those who moved from transition to consolidation '*changed at a faster rate than all other patterns*' (Thoma, 2006:81). The proposal that transition may be a state that is potentially ripe for change (Thoma, 2006; Thoma & Rest, 1999) suggested that transition may be a status that is most open for change whereas a consolidated perspective is more difficult to reach. This helped explain the comparatively large increase in post-conventional reasoning scores for the group that changed from being in transition to (being) consolidated following engagement with the educational intervention (Section 6.6.4, Table 6.19).

However it is not possible to state whether the intervention itself led to the increased N2-Scores and P-Scores or that the intervention led to the change (from transition to consolidated status) and the consolidated status then clarified the participant's responses to the DIT2 post engagement with the educational intervention. In addition it remains unclear why some of those that began in transition moved to a consolidated phase during the educational intervention (Table 6.10), but others remained in transition and did not significantly improve post-conventional reasoning scores i.e. the group that began in transition and remained in transition was not 'impacted' by the educational intervention to the extent that might have been expected by an underpinning theory that anticipates transition is a status ripe for change. It is possible that the design and/or delivery of the educational intervention disadvantaged some of the participants that were in transition pre engagement with the educational intervention (e.g. Section 3.3, 4.3, 5.4.1.2, 5.4.2 and 5.4.3) or, that some participants were more ripe for change than others or, indeed, that some participants 'in transition' engaged in a more interactive manner than others.

It is also possible that participants who moved from consolidated status to being in transition may have been starting development that would be found to be significant over time, whereas those that began and ended in consolidated status, especially where they were type 7, may have found the intervention less challenging or that it confirmed their perspective.

Further research studies, with a larger sample size and designed to investigate the educational intervention itself (see Section 7.2.3), would have the potential to specifically target secondary analysis of data and might more comprehensively explain the relationships between phase changes and N2-Score and P-Score increases during engagement with educational interventions.

Interactions between participant characteristics, i.e. age, gender, categories of professional, commercial and personal influencers, and levels of engagement with the

educational intervention, and changes in N2-Scores and P-Scores for those participants, were not found to be significant. However, several crossed interactions and trends were observed. These are discussed in Section(s) 7.2.4, 7.2.5 and 7.2.6.

7.2.4. N2-Scores and P-Scores were lower for the 46 year or older group than those for younger age-groups; crossed interactions were observed between the 26 to 35 year old and 36 to 45 year old age-groups, and changes in N2-Scores (Section 6.6.2).

Neo-Kohlbergian theory proposes, amongst the criteria used to determine validity of the DIT (Section 3.5, Table 3.3), that there will be longitudinal gains across lifespan (e.g. Thoma, 2002; Rest et al, 1999a, 1997b). The 46 year or older category N2-Scores pre and post engagement with the educational intervention were each more than 13 points lower¹²² than the corresponding scores for each of the age-groups under 46 years. P-Scores pre and post engagement with the educational intervention were each more than 11 points lower¹²³ than the corresponding scores for each of the age-groups under 46 years. The observation that post-conventional reasoning scores for the older age group are less than those for younger cohorts is not consistent with this aspect of Neo-Kohlbergian theory. In support of Latif's claims (2001a), Herington and Weaven (2008) report that, while moral reasoning 'abilities' did seem to rise with age, once participants passed the age of 50 years old, P-Score declined. While Herington and Weaven do acknowledge that the results may have been an artefact of the small sample size for this age category – n=3 and n=7). They nevertheless draw on research completed in the early 1990's to propose that some '*some factor within the work environment was promoting lower levels of moral reasoning ability*' (Herington & Weaven, 2008:509). Both the study findings from this study, and the proposal by Herington and Weaven (2008), have the potential to support Latif & Berger's (1997) claim that community pharmacists are an exception to the expectation that moral reasoning competencies increase with age and that scores decline with 'tenure' in the community pharmacy setting (Latif, 2001a). Nonetheless it may also be that the environment, i.e. the 'moral milieu' (Bebeau & Monson, 2008; Latif, 2000a), selects for individuals of a particular orientation, and individuals of alternate orientations either do not enter the profession, or else enter and quickly leave.

¹²² N2-Scores for the 46 year or older category pre (m=26.54, SD=16.70, n=7) and post (m=29.15, SD=15.54, n=7) engagement with the educational intervention.

¹²³ P-Scores for the 46 year or older category pre (m=30.74, SD=13.74, n=7) and post (m=34.86, SD=13.41, n=7) engagement with the educational intervention.

Suggestions that undergraduate experiences for older pharmacists (Latif, 2000a) and/ or older accountants (Herington & Weaven, 2008) might have been sufficiently different to that experienced by younger members of the profession(s) to impact on their comfort with respect to the completion of a survey instrument such as the DIT might translate to the older pharmacists in this study i.e. the 46 year or older participants, who were at least 20 years post their formal training, might have been less familiar with the use of the psychometric measures such as the DIT2, and reduced familiarity may have disadvantaged them in some manner not heretofore investigated.

Neo-Kohlbergian theory predicts that a profession-specific educational intervention will improve moral reasoning competencies as measured by the DIT2, regardless of starting developmental score or age. All except one age group demonstrated a positive impact on summary scores i.e. an increase of at least 2.6 points pre-post engagement with the educational intervention – thereby affirming that the educational intervention impacted on moral reasoning competency/ -ies development regardless of age group. The exception was found with the 36 to 45 year age-group, for whom a small decrease (of 0.73 points) was reported for N2-Scores.

Findings identified a crossed interaction¹²⁴ between 26-35 year old and 36-45 year old N2-Scores (Section 6.6.2, Table 6.15). Crossed interactions usually '*indicate a significant interaction effect*' (Field & Hole, 2003:439). The implication is therefore that the impact of the educational intervention varied with participants' age group. It is possible that differences between undergraduate/ other educational experiences of 26 to 35 year old pharmacists and 36 to 45 year old pharmacists might vary participant response to an educational intervention e.g. 36 to 45 year old pharmacists might have been less familiar with or disadvantaged by the design, content and/ or delivery method of the educational intervention itself, than their younger counterparts. It must also be considered that some other factor(s) pertinent to 36 to 45 year old pharmacists in Ireland, apart from educational background and/ or age, may have caused this age-group to derive less benefit from engagement with the educational intervention than those under 36 or over 45 years of age. Regardless of their genesis, these factors must be borne in mind when considering

¹²⁴ N2-Score decreased in the 36 to 45 year old group from pre (m=44.24, SD=12.60, n=10) to post (m=43.51, SD=14.67, n=10) engagement with the educational intervention, while the score increased in the 26 to 35 year age group from pre (m=40.47, SD=22.60, n=9) to post (m=47.10, SD=20.23, n=9) engagement with the educational intervention (Section 6.6.2, Table 6.15), thereby creating the crossed interaction. Interactions between N2-Scores or P-Scores and the age-groups assigned to categories i.e. 26 to 35 years, 36 to 45 years or 46 to 65 years (Section 6.6.2, Table 6.14), were not found to be significant.

the optimum design, development and delivery of educational interventions that seek to impact positively on moral reasoning competency/ -ies development.

As previously identified (Section 4.3) social constructivist methodologies were employed in the design of the intervention in this study. Given that participants under 35 years of age would be more likely to have encountered at least some online activities during their undergraduate training, and have had the concept of team working introduced directly to their undergraduate curriculum, they may have been at an advantage over the 36 to 45 year old age group in these regards. As discussed in Section 2.2.3, community pharmacists generally work 'alone' without interacting with peers so that where reservations regarding discussion of dilemma scenarios with peers exist, whether that be face-to-face or in the VLE, it may take participants time to overcome these reservations. While these factors could equally have applied to participants in the 46 year old and older group, it was only the 36 to 45 year old group that failed to show development – thereby reinforcing that a range of approaches are likely to be preferred. Regardless of age-group, it is likely that participants unfamiliar with this approach would benefit from more face-to-face time in order to build confidence with both the methodology itself and/or with the skillset required to engage effectively in the VLE.

Research targeted at the relationship between age-groups and the development of moral reasoning competencies in community pharmacists, as impacted by a variety of educational intervention designs and/ or delivery methods would be required in order to further explore these findings.

7.2.5. Crossed interactions were observed between some of the professional, commercial and personal influencers self-reported by participants and changes in N2-Scores and P-Scores (Section 6.6.3). Trends associated with sub-groups of participants, as categorised within each 'influencer' and as related to changes in N2-Scores and P-Scores, were also observed.

Pharmacists working in different practice environments may take time to absorb the culture of the practice environment such that e.g. the key themes of isolation, routinisation and sub-ordination, as observed by Cooper and colleagues (2009), are likely to be integrated to the pharmacist's moral reasoning approach and three years in the practice environment was considered to be a reasonable time period for this enculturation to occur. As all participants were self reported as having worked in community pharmacy in

Ireland for at least three years, potential interaction effects related to professional, commercial and personal influencers (Sections 2.5 and 6.2.2) were therefore investigated.

Interactions between changes in N2-Scores and P-Scores, and the professional, commercial and personal decision-making influencers determined from participant answers to questions posed pre-engagement with the educational intervention (Sections 2.5 and 6.2.2), were not found to be significant for any of the three categories of influencers (Section 6.6.3, Table 6.16).

However review of scores for each category or influencer indicated that there was a crossed interaction of SIP and SVP 'professional influencers' with changes in N2-Scores and P-Scores, and a crossed interaction between type of school attended (rural, town or country, as a personal influencer) with changes in N2-Scores (Section 6.6.3, Table 6.17). As previously identified, crossed interactions usually '*indicate a significant interaction effect*' (Field & Hole, 2003:439) the implication being that the impact of the intervention may have varied depending on which of the highlighted influencers existed.

Scores improved, as would be predicted by Neo-Kohlbergian theory, from pre to post engagement with the educational intervention for all categories in each of the three influencers with one exception i.e. the N2-Score for the participants that attended primary school in a city (personal influencer) decreased¹²⁵ from pre to post engagement with the intervention (Section 6.6.3, Table 6.17).

N2-scores and P-Scores for the three 'commercial influencers' categories trended from PCRS pharmacy contract holders, who had lower scores than pharmacy managers who, in turn, had lower scores than staff/ locum pharmacists. A similar, though less dramatic, trend was seen with respect to professional influencers i.e. where SIPs had lower N2-Scores and P-Scores than SVPs who, in turn, had lower scores than staff/ locum pharmacists (Section 6.6.3, Table 6.17).

7.2.5.1. Professional influencers and the impact of the educational intervention.

The role(s) of the SIP and SVP (Section 2.3) carry additional professional responsibilities (Regulation of Retail Pharmacy Businesses Regulations (2008)) i.e. over and above requirements imposed on every registered pharmacist (Pharmacy Act, 2007). It is

¹²⁵ N2-Scores for the participants that attended primary school in a city (personal influencer) pre (m=43.47, SD=20.57) and post (m=40.94, SD=21.65) engagement with the educational intervention.

therefore proposed that pharmacists may¹²⁶ interpret additional professional risks or benefits, as might influence decision-making, associated with either position. A crossed interaction between participants holding SIP and SVP roles, (Section 6.6.3, Table 6.17), and changes in N2-Score and P-Score was observed e.g. N2-Scores increased¹²⁷ in the SIP group from pre to post engagement with the educational intervention, while the score change was almost flat¹²⁸ in the SVP group (Section 6.6.3, Table 6.17). Aligned with the trends for SIPs to have lower developmental scores than SVPs, the crossed interaction effect observed may therefore indicate that there are some influences associated with the SIP and SVP roles that vary the impact of engagement with the educational intervention on moral reasoning competency/ -ies development in the context of this study. If such influences exist, they would be consistent with Latif's (1998c) findings that situational factors may determine community pharmacists' decision-making behaviour. The characterisation of such influences might be supported by consideration in the context of the 'service or success' challenges facing pharmacists (McDowell, 1991, 1990) i.e. the challenge(s) associated with seeking to meet professional commitments, in the context of the SVP and/or SIP role, in an environment where professional 'success' includes 'good standing' with the profession's regulator, other healthcare professionals and one's peers on the one hand, and with one's employer and shareholders on the other (Roche & Kelliher, 2014; Schmidt & Pioch, 2004; Szeinbach et al, 1994; Vitell et al, 1991) (Section 2.5).

The trends observed are set against the background that interaction effects were not found to be significant and that the scores determined for SIPs and SVPs at the point of recruitment to the study were similar e.g. the N2-Score determined for SIPs (m=36.44) pre engagement with the educational intervention was only 1.62 points lower than the N2-Score for SVPs (m=38.06). Nonetheless, these trends indicate that those in the SIP role may have been somehow influenced, or primed, to respond differently to the educational intervention than those holding only the SVP role.

Research targeted at the relationship between professional roles and the development of moral reasoning competencies would be required in order to further explore these findings.

¹²⁶ This study assumes that a registered pharmacist who signs a declaration related to her role as a supervising or superintendent pharmacist believes herself to understand the responsibilities inherent in that role.

¹²⁷ N2-Scores for the participants that held the SIP role (professional influencer) pre (m=36.44, SD=20.75, n=10) and post (m=40.90, SD=19.30, n=10) engagement with the educational intervention.

¹²⁸ N2-Scores for the participants that held the SVP role (professional influencer) pre (m=38.06, SD=18.01, n=10) and post (m=38.69, SD=19.72, n=10) engagement with the educational intervention.

7.2.5.2. Commercial influencers and the impact of the educational intervention.

Categories grouped according to potential commercial influencers did not demonstrate crossed interactions related to engagement with the educational intervention and with changes in N2-Scores or P-Scores (Section 6.6.3, Table 6.17). Scores improved from pre to post engagement with the educational intervention for all categories, thereby confirming that the educational intervention had a positive impact on moral reasoning as measured by the DIT2. However PCRS pharmacy contract holders started and finished with N2-Scores and P-Scores that were at least 9 points lower than scores for either those holding the position of manager, or those holding staff pharmacist or locum positions (Section 6.6.3, Table 6.17). These variations are the largest observed with respect to any category of any of the three influencers investigated in this study.

N2-Scores ($m=29.30$, $SD=14.53$) and P-Scores ($m=32.53$, $SD=12.57$) for those holding PCRS pharmacy contracts, as determined pre engagement with the educational intervention, were both more than 10 points lower than average scores for pharmacy managers, who, in turn, posted less dramatically lower scores, of at least 1 point less, than for staff/locum pharmacists (Section 6.6.3, Table 6.17). These findings could be considered consistent with Latif's (2000a, 1998a) suggestion that pharmacists with lower moral reasoning scores (i.e. less developed moral reasoning competencies) might self-select into or out of certain roles in pharmacy practice. In this case the implication might be that those with less developed moral reasoning competencies self-select into the PCRS pharmacy contract holder role. Alternatively once in that role, influences on a pharmacist's moral reasoning competencies may lead to or cause a decrease in N2-Scores and P-Scores over time, a view that would be consistent with a long-running debate that discusses how the changing retail environment, regulation and competition can lead to potential conflict between the pharmacists' professional values and 'organisational' demands (e.g. Roche & Kelliher, 2014; Cooper et al, 2007a; Schmidt & Pioch, 2004; Latif, 2000c; Ottewill & Magirr, 1999; Szeinbach et al, 1994; Vitell et al, 1991). Explanations might include that the position of PCRS pharmacy contract holder causes pharmacists to interpret, at bedrock schema level, (Narvaez & Bock, 2002) additional influences that adversely impact the development of moral reasoning competencies.

However, the average age of those in the PCRS pharmacy contract holder category was 46.2 years ($SD=7.5$). Given the finding that the 46 years or older group were found to have N2-Scores and P-Scores considerably lower than younger pharmacists (Sections 6.6.2 and

7.4.2) it is also possible that it was not the PCRS pharmacy contract holder role that had a moderating interaction effect on scores, rather than older pharmacists were more likely than younger pharmacists to hold that role.

Research targeted at the relationship between these 'commercial' roles and the development of moral reasoning competencies would be required in order to further explore these findings.

7.2.5.3. Personal influencers and the impact of the educational intervention.

There is a personal dimension to the reasoning process (Thoma et al, 2008) and there are times when '*moral values can be compromised by other [e.g. personal] values*' (Rest, 1979:178). Research indicates that early education may influence the development of personal values in students (Maeda et al, 2009; Rest & Thoma, 1985). Early education in Ireland generally takes place in the primary school setting (Section 5.4.1.2; DOE, 1971; INTO, 1996). The 'personal influencer' question asked (Appendix 17) sought to differentiate the early educational environment engaged with by participants only on the basis of the type of primary school attended when aged four to 12 years i.e. number of teachers in the school, whether situated in a town of greater or less than 3,000 population or in a city, and whether it was a mixed gender or single sex school. It provided one basis on which to compare categories of participants based on early education 'personal influencers', while maintaining the study design requirement that participant identity be kept confidential (Section 5.4).

N2-Scores, as determined pre engagement with the educational intervention, trended from the lowest being for those who attended primary school in a town ($m=35.56$, $SD=17.38$), through those for participants that attended in a rural school setting ($m=38.36$, $SD=19.91$) to the highest scores for participants who attended city schools ($m=43.47$, $SD=20.57$). A similar trend was seen for P-Scores (Section 6.6.3, Table 6.17). Hence while the N2-Score of the group that attended primary school in a city was the exception, in that it decreased rather than increased during engagement with the educational intervention, the actual N2-Scores determined for the group were considerably higher than for either the 'rural' or 'town' group's scores i.e. the N2-Score ($m=43.47$) of the group that attended primary school in a city, as determined pre engagement with the educational intervention, was 7.91 points higher than the N2-Score of those who attended primary school in a town of under 3,000 ($m=35.56$) and 5.11 points higher than the N2-Score of those who attended

primary school in a rural setting ($m=38.36$). In the context of the claim that early education context may influence the development of personal value systems in individuals (Maeda et al, 2009; Rest & Thoma, 1985), these findings indicate that participants who had attended primary school in a city may have developed personal values systems that were more likely to influence moral reasoning competencies development than those who attended primary school in rural or town settings.

Crossed interactions between participants that attended primary school in a city and those who attended primary school in a rural setting or a town of less than 3,000 people (Section 6.6.3, Table 6.17), and changes in N2-Score, were observed. The crossed interactions were very slight¹²⁹. As previously identified, crossed interactions usually '*indicate a significant interaction effect*' (Field & Hole, 2003:439), the implication being that the impact of the intervention may have varied depending on which type of primary school participants attended. These findings indicated that those who attended primary school in a city interacted with the educational intervention differently to other participants. However observation (Section 6.6.3, Table 6.17) that the average age of this category of participants was 44.7 years, i.e. almost ten years older than the participants that attended primary school in a town, might equally introduce age, a known validity criterion for the DIT2 (Section 3.5.1, Table 12), as a consideration in this discussion.

Research targeted at the relationship between 'personal' influencers and the development of moral reasoning competencies would be required in order to further explore these findings.

7.2.5.4. Summary.

The finding that participants self-reported a diverse range of professional, commercial and personal influencers that were targeted by the questionnaire completed prior to engagement with the educational intervention (Appendix 17) highlighted the likelihood that their contexts, or environments, varied. As '*it is well known in psychology that individuals interact with and are affected by their contexts*' (Maeda et al, 2009:242), the information provided by participants offered scope to investigate for relationships

¹²⁹ N2-Scores for those who attended primary school in a city decreased from pre ($m=43.47$, $SD=20.57$, $n=9$) to post ($m=40.94$, $SD=21.65$, $n=9$), whereas N2-Scores for who attended primary school in a town increased from pre ($m=35.56$, $SD=17.38$, $n=8$) to post ($m=42.18$, $SD=17.31$, $n=8$) engagement with the educational intervention and N2-Scores for those who attended primary school in a rural setting increased to a similar extent i.e. from pre ($m=38.36$, $SD=19.91$, $n=10$) to post ($m=42.23$, $SD=17.47$, $n=10$) engagement with the educational intervention.

between changes in developmental indices during engagement with the study, and variations in these influencers, as might support consideration of either or both hypotheses.

Evidence against the first hypothesis i.e. 'Moral reasoning competencies of community pharmacists in Ireland, as measured by the DIT2, are not impacted by the profession-specific educational intervention designed, developed and delivered during this study', was addressed where it was demonstrated that engagement with the educational intervention did have an impact on N2-Scores and P-Scores in categories assigned to each influencer.

The evidence against the second hypothesis i.e. 'The context of the study group, community pharmacists working in Ireland, precludes comparison of DIT2 results with outcomes from other studies' is less comprehensive. Findings indicated that at least some of the 'professional' and 'commercial' influencers on community pharmacists working in Ireland might require specific consideration and/ or accommodation prior to comparison of DIT2 results with outcomes from other studies.

However, as previously highlighted, the small numbers in the study sample limited the extent to which secondary analysis could be reliably completed. Research targeted at the relationship between 'professional', 'commercial' and 'personal' influencers and the development of moral reasoning competencies would further explore these findings in pursuit of clarity regarding the extent to which the context of the study group, community pharmacists working in Ireland, might limit direct comparison of DIT2 results with outcomes from other studies.

7.2.6. Variations in participant level of engagement with activities in the educational intervention were not significant and no interaction effects between engagement in activities on N2-Scores or P-Scores was identified (Section 6.6.5).

This research sought to determine if a profession-specific educational intervention, as designed, developed and delivered during this study, impacted on the development of moral reasoning competencies in community pharmacists in Ireland, as measured by the DIT2. In order for an educational intervention to impact, participants need to engage with it (Maeda et al, 2009; Penn, 1990). For the purposes of this study, in which the educational intervention was described as the independent variable (Sections 5.2 and 5.3) and was not itself investigated, measurement of 'engagement' was determined by whether the participant downloaded a resource, contributed material to an online discussion forum,

interacted in a chatroom or completed one 'part' of an ICM i.e. participant review of resources downloaded from the VLE or reflection on contents therein was not assured, and the quality of contributions to discussions was not determined. Nonetheless activity in the online environment is one indicator as to whether the methodology employed was related to any impact the educational intervention may have had (Carini et al, 2006).

Investigation of interactions between N2-Score and P-Score, and varying levels of engagement with optional activities available to participants during the educational intervention, indicated that changes were not affected by whether participants engaged with more or less of all the 'optional' doses, or activities, in the educational intervention (Section 6.6.5, Table 6.21).

As the delivery format was 'blended' (i.e. a mixture of face-to-face and online), engagement with both the activities during the face-to-face days at the beginning and end of the 16 weeks (Maeda et al, 2009) and with the activities available online during the intervening 16 weeks (Hrastinski, 2009) would have had the potential to impact on moral reasoning competencies development.

Appendix 29 identifies that participants engaged with 14 activities (representing 31% of the total 45 activities available) during the face-to-face days at the beginning and end of the 16 week, blended learning, educational intervention (Section 5.4.1.2, Figure 5.2). Of the 31 'optional activities' available to participants (Appendix 29), i.e. available online during the intervening 16 weeks, participants chose to engage in a minimum of 15 and a maximum of 28 of the 31 activities available (Section 6.4). Hence all participants engaged with a minimum of 64% (29 of the total 45) and a maximum of 93% of the 45 activities available. Findings must therefore be set in context i.e. it is more accurate to state that an interaction effect between engagement in activities above a minimum 64% engagement rate and developmental scores was not observed.

The design of the educational intervention was underpinned by Neo-Kohlbergian theory in that it prioritised activities that required participants to engage with dilemma discussion (e.g. Roche et al, 2014; Bebeau & Monson, 2008; Rest & Narvaez, 1994; Schlaefli et al, 1985). Of the 31 optional activities available online between the dates of the two face-to-face days at the beginning and end of the educational intervention, 16 were determined to be directly related to dilemma discussion (Appendix 29). Of these 16 'dilemma discussion' activities, participants' engagement rates ranged from 6 to 15 activities (i.e. 38% to 94%).

Group 1 and group 2 participants' engaged with activities to a similar extent (Section 6.4.1, Figures 6.7 and 6.8).

Findings therefore identify that an interaction effect between various levels of participant engagement with activities in the educational intervention, beyond a minimum 64% engagement rate in overall activities, or beyond a 38% engagement in optional activities directly related to dilemma discussion, and N2-Score or P-Score changes during engagement with the educational intervention, was not observed.

Notwithstanding that the educational intervention was 'just' an independent variable (Kirk, 2013; Bryman, 2012; Cohen et al, 2007; Gall et al, 2007; Field & Hole, 2003) in this study, the question as to how design and delivery methods might increase participant engagement with appropriate content in an educational intervention in order to further impact on moral reasoning competencies development merits further consideration, as introduced in Section 7.3.

7.3. The educational intervention.

For the purposes of this study, the educational intervention was considered to be an independent variable and findings have been discussed in this context. Findings highlight the importance of factors, related to the educational intervention itself, that were not controlled by the study and may be of interest in further extensions of this work. In addition, reference to 'engagement' in this study was limited to measurement of 'activity' in the online environment, rather than the quality of interaction with resources or contributions to activities in the VLE. While commonly used as a measure of engagement (similar to attendance at lectures or practicals for face-to-face sessions), recording 'hits' of online activity is a crude measure of engagement, and does not provide an indication of whether the participant reviewed resources downloaded from the VLE or reflected on contents therein (Roche, 2014; Carini et al, 2006).

There are therefore limitations to any inferences that can be taken from the use of online 'hits' or activity as a measure of engagement with the educational intervention in this study, especially as the intervention itself was not under investigation, and neither summative assessments of the quality of participant contributions nor analysis of qualitative feedback from participants regarding their experiences was included in the study design. The relative novice standing of the researcher with respect to teaching in the

online environment at the time of the study also had the potential to impact adversely on participant engagement. Nonetheless, insights into how the design and/ or delivery might be improved was to be expected, and were derived both from the experience of delivering the face-to-face sessions and as a result of facilitating activities online. If, prior to use with future participants, the educational intervention was to be adapted accordingly, it might 'reach' more participants and/ or increase the likelihood that impact on the development of moral reasoning competencies may be found to be statistically significant with any given group.

Suggestions as to adaptations of the design and method of delivery that might address some of the issues raised during discussion of findings from this study are therefore included.

7.3.1. Potential adaptations of the intervention design and method of delivery

1. The presentation of the DIT2, as a pre and post measure of the impact of the educational intervention, may have led to participant perception that change was anticipated (Section 7.2.1.3 & 7.2.4), resulting in participant change in behaviour because they were being studied, sometimes referred to as an 'observer effect' or Hawthorne effect' (e.g. Cohen et al, 2007; Gall et al, 2007; Field & Hole, 2003). Indeed, as the consequences of an assessment that potentially deems a practitioner 'not competent' to reason through professional dilemmas could be significant, participants may have perceived that change was 'necessary'. Less emphasis on the DIT2 as a measure of competencies and more presentation as an aid to the development of competencies may manage this risk and should therefore be considered.
2. If, as indicated by the findings from this study, the educational intervention impacted on DIT2 scores as intended, it is also possible that increased engagement with the resources and activities available would further enhance that development. Attention to the removal of barriers to development likely to have been experienced by participants and increased support for participants new to the delivery methods should therefore be considered e.g. the use of a blended learning approach, even during the first face-to-face day, presupposes that the participant has adequate information technology (IT) skills as it required participants to immediately interact with the VLE. This may have disadvantaged participants not previously exposed to online learning and/ or IT interaction. Additional scaffolding or supports should be considered e.g.

- When enrolling participants it should be assumed that at least some participants will have difficulty familiarising themselves with the online learning process and additional opportunity to 'practice' under tutor guidance, or the option to take a pre-course tutorial using the technology, would be recommended. It was difficult to 'help' those who were challenged by the VLE when communicating in that same VLE, so early face-to-face sessions may need to focus on these critical technical skills (Zhao & Kuh, 2004; Palloff & Pratt, 1999).
- A mixture of synchronous (e.g. chatrooms) and asynchronous (e.g. discussion fora) group discussions should be incorporated to the intervention design as they facilitate different learner types (Vai & Sosulski, 2011).
- The preference for small group size derives from preferred teaching approaches that prioritise that group sizes should be small to increase online learning benefits (Sthapornnanon et al, 2009), but pressure to increase group sizes derives from the time pressures (on tutors/facilitators moderating and/or assessing groupwork) associated with large numbers of students/ groups. Group sizes of 4 to 5 per group are preferred, and sufficient numbers should be enrolled to accommodate that participants are exposed to different 'peer-feedback' (i.e. group members) during each ICM cycle.
- Appropriate technical and administrative resources and supports are required to ensure equal access to resources and activities. This should include facilitator authority to initiate password changes (when a participant 'forgot' her password during the second face-to-face day') and to add participants to the 'course' during the face-to-face days (when not done so in advance by an administrator), as both eventualities have the potential to deny participants the opportunity to engage.
- The VLE teaching functions are not always transparent and it was sometimes difficult to visualise what participants could actually 'see'/ access. Feedback mechanisms need to be targeted towards identifying difficulties as early as possible and the availability of at least one mechanism that does not depend on the VLE itself is necessary e.g. email, text or a (limited) time when access to support by telephone is available to participants.
- Broadband and hardware upgrades are not necessarily universally available to participants and they may also seek to download material for later review - material and systems must be designed and supported accordingly. Facilities likely to be available to participants/ target audiences need to be considered before automatically seeking to include webinars, or highly sophisticated podcasting, in educational intervention design.

- The technology itself has the potential to raise concerns: (1) Technology creates a different communicative space, with a permanent record of all interactions. Educators have a responsibility to seek to protect participants from naivety in this regard. (2) The VLE must be adapted to accommodate the automation of teaching and learning where viable. (3) Strict cut-off times mean that there will inevitably be late-comers, and the accommodation of these participants can be challenging for interventions with an interactive focus unless agreed mechanisms are in place prior to the start of the intervention. (4) Active management of groups includes the need for assurance that activities occur in a timely fashion and facilitators must pay particular attention to guidelines that prompt timely engagement by all group members, so that those engaging in the early stages do not become prematurely disheartened with the online team work. (5) Assessment and assurance strategies need to evolve to manage the risk of impersonation and plagiarism (Roche et al, 2014).
3. In keeping with the primary goal of professional ethics interventions i.e. to establish a broad understanding of professional ethics and then to use this understanding in order to formulate solutions to ethical dilemmas in the profession (e.g. Caldicott & d'Oronzio, 2015; Bebeau & Faber-Langendoen, 2014; Thoma et al, 2008; Bebeau & Monson, 2008; Bebeau, 2002), the educational intervention design relied heavily on the use of five profession-specific ICMs (Section 3.5.5). However, participants at earlier stages of development, whose perspective is more likely to derive from the 'personal interest schema', may benefit from first reasoning through more 'concrete' scenarios, in which any dilemma in the scenario is resolvable within the letter of the law or a literal interpretation of the Code of Conduct (CoC, 2009). They may also benefit from direct teaching of cognitive skills of logic and role-taking (Penn, 1990). The ideal approach would be to score DIT2 questionnaires completed by intending participants prior to engagement with an educational intervention so that if participants of e.g. type 2 or type 3 were to be identified, the intervention content could be adapted accordingly.
 4. Neo-Kohlbergian theory introduces the FCM of professional development as an overarching approach to professional ethics education. Delivery of this educational intervention would therefore ideally be aligned with a broader programme in which all four components would be specifically targeted, and participant demonstration of related competencies would be facilitated in a manner in which they could be reliably assessed (e.g. Caldicott & d'Oronzio, 2015; Bebeau & Faber-Langendoen, 2014; Parran et al, 2013; Bebeau 2009a, 2009b, 2008; Bebeau & Monson, 2008).

5. This study was facilitated by the HEI's Moodle pilot (section 5.4.3), and therefore attracted neither income nor any of the academic credits usually obtained following completion of educational interventions, and this factor had the potential to negatively impact on both recruitment of participants and the level of engagement with 'doses' of the intervention. Participants were volunteers, at cost to themselves. The fact that 27 of the 32 participants that attended the face-to-face day at the beginning of the programme also attended the day at the end of the programme, which represented an 84% completion rate, indicates that community pharmacists are committed to the concept of CPD as it applies to moral reasoning competency/ -ies development. At the time of the study, the framework for CPD for pharmacists in Ireland had not been defined and the study could not then, as it could in 2015, claim to align with CPD requirements for participants. In addition, the publication of the core competency framework (PSI, 2013a) spotlights ethical reasoning competencies as might be addressed by this educational intervention. These factors make it likely that it would be feasible to recruit larger numbers of pharmacists to future delivery of this, or similar, programmes.

7.3.2. Evaluation of the educational intervention: potential approaches.

The pursuit of a *'research tracking system to record what interventions work, with whom, and under what conditions'* (Rest et al, 1999b:103) would benefit from a planned structured evaluation of the educational intervention itself. Review of the literature has identified that moral sensitivity, reasoning, motivation and implementation all merit 'tracking' in moral education and Bebeau has sought to address all four components (Chapter 3 & Appendix 9). Bebeau's approach involves a complex process incorporating a series of five¹³⁰ validated assessments of moral development that have been shown to have good test-retest reliability and to be sensitive to the effects of educational

¹³⁰ (1) **The Dental Ethical Sensitivity Test (DEST)**: A scoring manual determines the extent to which an individual interprets clues to moral dilemmas when presented with a series of four tape-recorded scenarios; (2) **The Defining Issues Test (DIT)**: The Center for the Study of Ethical development in Alabama scores data further to participant completion of a pen-and-paper psychometric measure of an individual's tendency to draw on three moral schemas (i.e. the extent to which an individual draws on action and/ or justification options in the personal interest, rule-keeping/maintaining norms or in the patient's or society's 'best interests' when reasoning through dilemmas); (3) **Dental Ethical Reasoning and Judgement Tests (DERJT)**: This consists of five dental ethical problems followed by action and justification options as generated by dental faculty and residents; (4) **Professional Role Orientation Inventory (PROI)** (assessment of Moral motivation): This measure consists of four ten-item scales designed to assess commitment to professional values over personal values; (5) **Role concept essay (RCE)** (assessment of moral commitment): This essay presents a series of open-ended questions designed to elicit a participant's perception of his or her role as a professional. Essays are scored according to six concepts that describe professional obligations in order to identify whether participants can clearly distinguish between these concepts (e.g. Bebeau, 2009a, 2009b; Bebeau & Monson, 2008).

interventions (e.g. Bebeau & Monson, 2008; Bebeau, 2002; Rest et al, 1999b; Bebeau & Thoma, 1994). The incorporation of the educational intervention used in this study into Bebeau's (2002) approach would be ideal, and could ultimately (pending development and validation of pharmacy specific measures) provide a means by which outcomes from DIT2 scores analysis could e.g. be compared/ triangulated with [pharmacy] ethical reasoning and judgement tests (Appendix 9). Evaluation should account for the potential that, as the four components (FCM) are interrelated, it is possible that an individual considered to be less competent on reasoning, might compensate by being very morally sensitive, have great motivation and/ or great character (Bebeau, 2002).

However evaluation of the educational intervention itself might be undertaken by adapting evaluation models more generally used in education, e.g. the four levels of Kirkpatrick's model¹³¹ (Kirkpatrick 1998, 1987), to the design and delivery of the educational intervention used in this study. Kirkpatrick's model seeks to minimise bias in an outcomes based approach (Treleaven & Voola, 2009; Biggs, 2004), by systematically matching aims of the intervention and outcomes of engagement across evaluation at four levels i.e. survey of participant reaction (e.g. to the topic, quality of materials length of course or the instructor), learning (e.g. self-reporting and/ or testing for knowledge/ skills/ attributes), behaviour changes (i.e. transfer of learning to the workplace as evidenced by on-the-job evaluation) and improvements in efficiency or quality, referred to by Kirkpatrick as 'return on investment' (Kirkpatrick 1998, 1987). The model may, however, be considered incomplete in that it does not consider individual or contextual influences in the valuation of training, it assumes causal linkages between 'training' outcomes and it assumes that information obtained from higher levels provided more valuable information (e.g. Frye & Hemmer, 2013; Bates, 2004). In addition, as the model was developed to evaluate instructor driven, classroom oriented corporate training programs developed more than 30 years ago, 'questions have been raised as to how accurate this method is in assessing technology-based training' (Galloway, 2005:21).

The Medical Research Council Framework for the Development and Evaluation of RCTs for Complex Interventions to Improve Health (MRC, 2000) proposed that evaluation of complex interventions requires a '*phased approach to the development and evaluation of complex interventions*' (Campbell et al, 2000:694). While it would be possible to redesign the educational intervention used in this study to accommodate the process envisaged by

¹³¹ Kirkpatrick's 4 levels may be described as (1) reaction, or how satisfied learners were with the educational intervention, (2) learning, or the knowledge and skills that were learned, (3) changes in (workplace) behaviour that resulted from engagement with the educational intervention, and (4) tangible results in terms of cost reduction and quality and quantity improvements (Kirkpatrick 1998, 1987).

the MRC guidelines¹³², it would be unlikely to align well with the FCM approach to moral development (e.g. Bebeau & Faber-Langendoen, 2014; Bebeau & Monson, 2008; Bebeau, 2002) i.e. trials of MRC guidelines prioritise standardisation of the content and delivery of the intervention (Hawe et al, 2004; MRC, 2000) whereas Bebeau's methodology seeks to individualise the approach to cognitive moral development and focus on outcomes as measured by the various instruments she has developed (Bebeau & Faber-Langendoen, 2014; Bebeau and Monson, 2008).

Nonetheless these and other frameworks might be considered if a study was to be designed to comprehensively evaluate the content and delivery of the educational intervention used in this study. Evaluation design should primarily focus on the core aim of the module, namely to evaluate the development of moral reasoning competencies in Irish Community Pharmacists. As moral reasoning competencies are considered to develop at three levels (e.g. Bebeau and Monson, 2008; Bebeau & Thoma, 1999 & Section 3.5.5), the programme evaluation strategy might aim to consider evaluation of the development of moral reasoning at surface, intermediate (by evaluating the change in scores achieved when completing ICMs at the beginning and end of the educational intervention) and bedrock schema level (evaluated by the DIT2 in this study) (see Chapter 3 for details) ... all of which could be said to accommodate Kirkpatrick's level 1 'reaction' to the intervention and level 2, learning (Kirkpatrick, 1998, 1987). Evaluation of whether participant development occurs at the 'surface'¹³³ level could be achieved by consideration of participant scores for e.g. MCQs which focus on the professional code, Principlism (Beauchamp & Childress, 2009) and/ or accepted definitions of ethical concepts and the components of consent or the addition of formal exams. Participant engagement in the intervention, whether completed individually or in groups, could be reviewed for factual accuracy in all 'doses' of the intervention. Evaluation of a participant's answer to an unseen community pharmacy based scenario/essay question could address concerns that a short-question exam alone is unlikely to be a satisfactory assessment of attributes (Biggs, 2004). The educational intervention used in this study might also be usefully evaluated using e.g. intervention participation and completion rates and completion of feedback questionnaires (also Kirkpatrick 's level 1 'reaction'). However the link to behaviour (behaviour changes, level 3) may, at best, be inferred from U-Scores (Section 3.5.6).

¹³² The MRC framework seeks, in the exploratory trial stage, to compare the intervention with an appropriate alternative (phase ii) as a precursor to what MRC terms '*a definitive randomised controlled trial*' before moving to phase IV, i.e. long-term implementation of the 'validated' complex intervention (Campbell et al, 2000:695).

¹³³ Rules, codes and norms – See Section 3.5.5 for further detail.

Evaluation of the impact of educational development programmes requires alignment of both the intervention strategy and the '*level on which impact is to be assessed*' (Kreber et al, 2001:97), and the study design chosen would need to accommodate these choices.

7.4. Summary.

The research question, i.e. 'Does a profession-specific educational intervention, as designed, developed and delivered during this study, impact on the development of moral reasoning competencies in community pharmacists in Ireland, as measured by the DIT2?', would appear to have been answered in the affirmative by the findings presented.

Evidence against the first hypothesis, i.e. 'Moral reasoning competencies of community pharmacists in Ireland, as measured by the DIT2, are not impacted by the profession-specific educational intervention designed, developed and delivered during this study', included findings related to all four developmental indices and to each of the developmental profile and phase indices (Sections 6.5, 7.2.1 and 7.2.2).

Evidence against the second hypothesis i.e. The context of the study group, community pharmacists working in Ireland, precludes comparison of DIT2 results with outcomes from other studies' included that the findings related to the impact of engagement with the educational intervention on developmental indices and on developmental profile and phase indices were comparable with other studies and with the theoretical underpinnings of the Neo-Kohlbergian tradition (Sections 6.5 and 7.2.3). Further evidence against the second hypothesis lies with the finding that interaction effects observed between developmental phase indices changes (during engagement with the educational intervention) and changes in N2-Scores and P-Scores during engagement with the educational intervention (Sections 6.6 and 7.2.3) were consistent with expectations as derived from Neo-Kohlbergian theory i.e. the group that changed from being in transition to consolidated status developed most.

Moral reasoning scores determined pre engagement with the educational intervention indicated that older age-groups had lower levels of moral reasoning, as measured by the DIT2, than their younger counterparts. This is inconsistent with the 'Neo-Kohlbergian' expectation that moral reasoning competencies, as measured by the DIT2, increase with age. The finding therefore raises the possibility that there might be some aspect of the

context of the study group that must be accommodated or accounted for in order to directly compare DIT2 results with outcomes from other studies (the second hypothesis).

Interactions between age groups and developmental indices were not found to be significant. However, crossed interaction effects observed (Sections 6.6.2 and 7.2.4) between the 36 year old to 45 year old age-group and younger pharmacists merit consideration as to whether issues related to the design/ delivery of the educational intervention may have disadvantaged the older age-group.

Interactions between self-reported professional, commercial and personal influencers, and developmental indices, further to engagement with the educational intervention, were also not found to be significant. However crossed interactions between some of these variables and N2-Scores and P-Scores were observed (Section(s) 6.6.3 and 7.2.5), again raising the possibility that there may be some aspect of these influencers that should be accommodated or accounted for in order to directly compare DIT2 results with outcomes from other studies (the second hypothesis).

Trends observed for scores determined for the various categories of participants, pre engagement with the educational intervention and as related to changes in N2-Scores and P-Scores, further indicated that there may be issues related to the context of community pharmacy in Ireland that challenge direct comparison of DIT2 results with outcomes from other studies. Furthermore the design of the educational intervention may have accommodated some groups of participants better than others.

A summary of study conclusions, contributions and recommendations, limitations and suggestions for further research is provided in Chapter 8.

Chapter 8 - Conclusions and Recommendations

8.1. Introduction

This thesis sought to investigate the development of moral reasoning competencies of community pharmacists in Ireland, as measured by the DIT2. Set in the context of a finding that *'As community pharmacists collectively gain tenure in the setting, their moral reasoning scores decline'* (Latif, 2001a:137), the research question asked:

Does a profession-specific educational intervention, as designed, developed and delivered during this study, impact on the development of moral reasoning competencies in community pharmacists in Ireland, as measured by the DIT2?

The background to the perceived need to address moral reasoning competencies development in community pharmacists working in Ireland (e.g. Roche & Kelliher, 2009; Cooper et al, 2007b; Latif, 2001a, 2000c) was reviewed in the first four chapters of this thesis. The expectation that there is potential for an educational intervention of an appropriate design to make a measurable impact on moral reasoning development as assessed by the DIT2 was supported by the literature reviewed (e.g. Maeda et al, 2010; Bebeau & Monson, 2008; Rest et al, 1999a, 1999b; Rest & Narvaez, 1994) (Sections 3.6 and 4.2). As discussed in chapter 7, findings indicated that the research question was addressed in the affirmative, although some observed anomalies (*vis-à-vis* theoretical expectations) required further consideration.

The aim of this chapter is to outline study conclusions, contributions, recommendations, limitations and suggestions for further study.

8.2. Study conclusions.

1. Moral reasoning competencies of community pharmacists in Ireland can be measured by the DIT2, and scores can be positively impacted by engagement with the profession-specific educational intervention designed, developed and delivered during this study. Access to the educational intervention therefore has the potential to facilitate pharmacists seeking to align their continuing professional development with the core competency framework (PSI, 2013a) and with the code of conduct for pharmacists (CoC, 2009).
2. The development of moral reasoning competencies in community pharmacists in Ireland is likely to correlate positively with professional behaviour and/ or improved patient

care as has been identified from studies in other professions, e.g. medicine (Putnam Cole et al, 2013; Sheehan et al, 1980), Nursing (Krichbaum et al, 1994) and Physical Therapy (Sisola, 2000). While similar correlations have not been investigated in the context of community pharmacists, the likelihood of there being a relationship between higher scores on the DIT2 and improved patient care ought to further support the prioritisation of moral reasoning competencies development in community pharmacists.

3. There is also some reason to believe that moral reasoning competencies of community pharmacists may decline with 'tenure' in the community pharmacy setting and/or with age (Latif 2001a; Latif & Berger, 1997). However, as Latif's study compared student pharmacists' scores with those of community pharmacists (Latif 2001a; Latif & Berger, 1997) who were older than the students at the time of the study, further investigation would be advised. In this study (with community pharmacists in Ireland) developmental scores were lower for older age groups, although the research results were not found to be statistically significant and the small sample size of this crossover study mitigated against appropriate secondary analysis. Hence, while the study indicates that moral reasoning competencies of community pharmacists in Ireland may decline with age, this claim has not been proven.
4. Community pharmacists generally work alone and recent external factors in the environment have accentuated the likelihood that there are few opportunities to interact with peers in the working environment (Section 2.2.3). As moral reasoning competencies develop from and are influenced by experience (e.g. Rest et al, 1999b), and as peer interaction and peer learning are critical to the assurance that moral reasoning competencies will continue to develop throughout 'tenure' as a community pharmacist, direct and sustained efforts to create opportunities to actively engage in dilemma discussions with peers are required. The incorporation of profession-specific dilemma discussions into CPD initiatives, ideally with minimal requirements to attend onsite face-to-face sessions in order to accommodate the context in which community pharmacist's work, has the potential to counteract some of the short-comings that arise from working without direct access to peers.
5. DIT2 scores, where obtained prior to engagement with educational interventions, have the potential to identify developmental needs specific to groups of participants. This can provide a course designer or facilitator with relevant information to employ

educational content and pedagogy aligned with the specific needs of participants, thereby maximising the potential impact of an educational intervention.

6. In contemplating the literature as it relates to Latif's work (Appendix 14), aligned with the parallel work in moral education as summarised in the Journal of Moral Education 'Special Issue' 2002 (Appendix 13), it is apparent that Latif's work was cited only within the confines of pharmacy literature. This was despite his various publications prior to 2002 (three of which were in the Journal of Business Ethics rather than in Pharmacy related journals), his use of article titles that used descriptors aligned with terminology used in Neo-Kohlbergian theory and his choice of the DIT as a measure. The observation, that *'it is necessary to trawl a wide range of generalist and specialist practice research journals to obtain a picture of the scope of pharmacy ethics'* (Wingfield et al, 2004:2391) might help explain the omission of reference to Latif's work in the special issue in Neo-Kohlbergian theory (Appendix 13) i.e. while some research with the DIT was proceeding in the 'world' of pharmacy, it does not appear to have been visible to, and/ or considered to merit discussion by those actively contemplating Neo-Kohlbergian theory at that time. A proactive approach would be required to increase awareness amongst Neo-Kohlbergian researchers regarding the relevance of this work to the profession of pharmacy, and amongst pharmacy education researchers regarding the potential for Neo-Kohlbergian theory to support the further professionalisation of pharmacists.

8.3. Study contributions.

The purpose of this research was to investigate whether the profession-specific educational intervention designed, developed and delivered during this study, impacted on moral reasoning competency/ -ies development in community pharmacists in Ireland, as measured by the DIT2.

Potential contributions to the development of professionalism of pharmacists within the domain of moral reasoning competency/ -ies development are outlined.

8.3.1. Theoretical contributions of this research.

This study responded to repeated calls for research into how to teach and assess ethical competence in community pharmacists (e.g. Wilson et al, 2010; Wingfield et al, 2004; Cooper et al, 2007b). It provided insights into how the DIT2 (e.g. Rest et al, 1999b; Thoma & Rest, 1999), a validated measure of moral reasoning competencies, applies in the context of community pharmacists in Ireland. It further adapted the use of an educational intervention, a known validity criterion for the instrument (Schlaefli et al, 1985), to a format with which those community pharmacists voluntarily engaged. Development of the profession-specific educational intervention extended the use of ICMs (e.g. Bebeau & Thoma, 1999) to community pharmacist concepts. As a result of this study, researchers have evidence that:

1. the DIT2 has been used as a pre-post measure of the impact of an educational intervention engaged with by community pharmacists in Ireland (Section 6.5);
2. results from studies completed with community pharmacists in Ireland have the potential to be compared with other studies that used the DIT2 (Chapter 4 and Section 6.3.1.1.1);
3. the prediction that phase changes interact with, or moderate, developmental indices has been observed with the community pharmacists (Section 6.6.4);
4. a 16 week profession-specific educational intervention, that took a 'blended learning' approach with minimal face-to-face contact time and incorporated five pharmacy-specific ICMs, impacted positively on moral reasoning competency/ -ies development in community pharmacists in Ireland (Section 6.5) and
5. moral reasoning competencies, as measured by the DIT2 as administered in this study, appear to be reduced in older community pharmacists as compared with their younger peers (Section 6.6.2).

While further studies are to be recommended to support all of these findings, the findings nonetheless contribute to the body of existing knowledge concerning moral reasoning competencies **assessment**, and the impact that a **profession-specific** educational intervention might have on those competencies. The results indicate that the development of competencies in community pharmacists in Ireland **benefited from an educational intervention** of the format used. Findings build on existing research

while they also acknowledge, and aim to accommodate, a range of criteria that were unique to the context of the study i.e. community pharmacy in Ireland in 2011.

8.3.2. Contributions to the practice of community pharmacy.

As a result of this study pharmacy and pharmacists have access to:

1. a tool (the DIT2), validated for the measurement of moral reasoning, that has been demonstrated as being applicable to the context of community pharmacists in Ireland;
2. the potential that interpretation of baseline participant DIT2 scores could support educational intervention design and curriculum development in pharmacy education (e.g. Section 7.2.2.1/2/3); and
3. a profession specific educational intervention, designed and developed in a format that can be delivered by blended learning and could be adapted to facilitate pharmacists in hospitals or other settings (Section 5.4.1.2 and Roche et al, 2014).

8.4. Recommendations.

Inform pharmacists, educators and policymakers of:

1. the findings of this study to include that the DIT2 may be used as a measure of moral reasoning competencies development, that moral reasoning competencies development of community pharmacists in Ireland as measured by the DIT2 were positively impacted during engagement with the 16 week blended learning educational intervention used in the study and that five profession-specific ICMs have been developed;
2. literature review of the Neo-Kohlbergian theory as it applies to:
 - a. the potential link between DIT2 scores and professional behaviour (Sisola, 2000; Krichbaum et al, 1994; Self & Baldwin, 1994; Sheehan et al, 1980) and reporting of errors (Putnam Cole et al, 2013);
 - b. the potential for baseline DIT2 scores to facilitate adaptation of curriculum to maximise the potential for moral reasoning competencies development in e.g. CPD initiatives, undergraduate education and remediation of pharmacists sanctioned under fitness to practice legislation;

- c. the likelihood that the design of this educational intervention could be similarly effective in other contexts, professions, and countries;
 - d. the (not yet proven) claim that *'as community pharmacists collectively gain tenure in the setting, their moral reasoning scores decline'* (Latif, 2001a:137).
3. the determination that community pharmacists in Ireland generally work alone, without interaction with their peers (Section 2.2.3) and this provides challenges of access to the 'peer interaction' considered core to the continued development of moral reasoning competencies (e.g. Schlaefli et al, 1985);
 4. literature review of the Minnesota approach to professional development, with particular emphasis on the FCM of professional development as a framework for pharmacy education, thereby highlighting that research and development initiatives in all four components of this approach might proceed (e.g. Bebeau & Faber-Langendoen, 2014; Bebeau & Monson, 2008; Bebeau, 2002).

Recommend that continued investigation into formats of educational interventions that target moral reasoning competencies development, as might be incorporated into pharmacists' CPD and undergraduate education in a quality assured manner, should be prioritised.

8.5. Limitations of this study.

1. General limitations of the Neo-Kohlbergian approach have been acknowledged earlier in this thesis (Chapters 3 and 4). This study prioritised cognition over the affective (e.g. feelings, motives) domain, and anticipated that development would be measurable i.e. a quantitative, positivist approach was employed. Quantitative research, by its nature, tends to identify 'what' happened, without giving insight into 'why' it happened (e.g. Kirk, 2013; Bryman, 2012; Cohen et al, 2007; Gall et al, 2007; Field & Hole, 2003) e.g. the study design did not include that qualitative data would be used to further explore influencers on participant reasoning processes nor that results from alternative measurement instruments would be compared with the outcomes of DIT2 measurements.
2. The sample size of 27 limited a more fine-grained analysis of the secondary variables (Section 5.4.5.1). For example, the sample size limited the extent to which joint effects (e.g. age and professional role(s), or professional and commercial roles held),

could be considered and required that some categories be collapsed in order to assure adequate sizes of sub-groups during analysis. The study would have benefited from a large sample size with e.g. a wide range of ages, a mix of gender, examples from all education levels and increased numbers of participants holding each of the professional and commercial roles identified as potentially relevant.

3. Limitations that arose as a result of the choice of study sample (community pharmacists in Ireland in 2011) and the context in which the study was completed potentially included characteristics of the pharmacists recruited, their interaction with the researcher and the nature of their practice environment(s) before and during the study. The following are included.
 - i. Recruitment of pharmacists required them to volunteer. It is not known whether there were influencers on those community pharmacists that volunteered for this study that were significantly different to the general population of community pharmacists in Ireland (Section 6.2.2). This may limit the potential to claim generalizability of findings.
 - ii. Pharmacists of different age-groups may have had very different undergraduate educational experiences and/ or experience of completing psychometric measures. The choice of study design, i.e. pre-post measure of the impact of educational intervention, rather than a longitudinal study, limits the extent to which comparison of developmental scores for different age-groups may claim to indicate developmental trends based on age (Section 7.2.4).
 - iii. The sample was confined to community pharmacists working in Ireland thereby limiting the generalizability beyond this study group. Study findings might not apply to pharmacists in Ireland working in different contexts, such as hospital pharmacy, to pharmacists in other jurisdictions and/ or to undergraduate education, and ICMs may have to be adapted to other contexts.
 - iv. As a result of her series of publications in the IPJ (e.g. Roche, 2010a), views held by the researcher were likely to have been known by community pharmacists in Ireland. This knowledge may have encouraged a particular type of person to volunteer for the study and/ or led to response expectations that favoured a particular outcome, either of which eventualities may have the potential to limit generalisability of the study findings.

- v. The timing of the intervention study, 2011, may also limit its generalizability in that both professional and commercial influencers may have been uniquely distorted during the years preceding and during the time of the study i.e. timeframe of the enactment of the Pharmacy Act (2007), and the economic crisis (Roche et al, 2013) both align with the period of this study.
- vi. The DIT has not been independently validated in the Irish community pharmacy setting, and while empirical evidence supports the validity and reliability of the DIT2 as a measure of change in moral reasoning scores (e.g. Thoma, 2006; Rest et al, 1999b, 1997b; Thoma & Rest, 1999; and Sections 3.4, 3.5 and 6.3.1.1), independent validation of this study group might be considered a limitation.
- vii. Participants completed the DIT2 offsite on one occasion, whereas on the other two occasions they completed the DIT2 during the face-to-face sessions at the beginning and end of their engagement with the educational intervention. It is not known whether these variations may have impacted on participant completion of the DIT2.

Specification of study limitations also supports the identification of areas that merit recommendation for further research.

8.6. Suggestions for further research.

1. Extension of this repeated measures crossover study to a study with a large sample size, would have the potential to e.g. :
 - i. specifically target secondary analysis of data;
 - ii. more comprehensively explain the relationships between phase changes and N2-Score and P-Score increases during engagement with educational interventions;
 - iii. facilitate research of experimental indices¹³⁴ (NUMCD, HUMLIB and CANCER10), the M-Score (meaningless items score) and the A-Score (anti-social score) with Irish pharmacists (Section 3.5.9 and Appendix 38) thereby extending the evidence base with respect to the use of the DIT2 in Ireland,

¹³⁴ Experimental indices on the DIT2 (scored data) are: NUMCD (Number of 'cannot decide' choices), HUMLIB (Humanitarian Liberalism perspective on moral issues) and Cancer10 (Religious orthodoxy) (Appendix 36).

- and enable further comparison with research in other contexts, jurisdictions and professions ;
- iv. explore relationships between e.g. professional and/ or commercial roles and the development of moral reasoning competencies and/ or
 - v. support the establishment of longitudinal¹³⁵ studies.
2. Employ the DIT2, as a pre-post measure of the impact of the educational intervention, to evaluate the wide scale delivery of the blended learning programme as a form of CPD for pharmacists, in various practice contexts and jurisdictions. This could:
 - i. support pharmacists seeking to satisfy themselves that they have demonstrated competencies related to professional practice (PSI, 2013a), especially as they related to behaviours describing ethical practice,
 - ii. further investigate the blended learning programme and the ICMs therein,
 - iii. provide a larger baseline of DIT2 scores for Irish community pharmacy on which secondary analysis might be reliably completed and/or
 - iv. be a starting point for a longitudinal study.
 3. Determine a baseline DIT2 at the point of registration¹³⁶ with the PSI to:
 - i. guide newly qualified registrants in their CPD planning,
 - ii. characterise the DIT2 profile of new registrants,
 - iii. provide a marker against which the effectiveness of programmes for pharmacists, who as a result of fitness to practice proceedings are deemed to require remediation in the professional practice domain, might be benchmarked (Bebeau 2009a, 2009b), and/ or
 - iv. be a starting point for a longitudinal study.
 4. Research the generalizability of the study, and how these methodologies might be adapted to accommodate pharmacists and pharmacy students in other jurisdictions e.g the UK and Ontario (Canada), and/ or inter-professional and interdisciplinary learning through the incorporation of multidisciplinary online groups.
 5. Research the design, development and delivery of the educational intervention used in this study, with particular emphasis on how/why participants engage with resources and activities incorporated into its design.

¹³⁵ as might ultimately determine whether community pharmacists' moral reasoning scores decline with tenure in the setting or with advancing age (Latif, 2001a)

¹³⁶ A baseline might also be determined at the point of entry to TCD, UCC or RCSI school(s) of pharmacy.

6. Extend research to other areas aligned with Neo-Kohlbergian theory that warrant attention e.g.
 - i. the assessment of participant response to ICMs, in the context of this study design, as may provide an additional means of measuring moral reasoning competencies development;
 - ii. the design of the blended learning programme and whether alternate designs might impact on moral reasoning competencies development to a greater or lesser extent than the design proposed;
 - iii. the potential for the FCM to be used as an overarching approach to professional ethics education in pharmacy, i.e. how moral sensitivity, moral motivation and moral implementation or action might apply to pharmacy education at undergraduate, MPharm and CPD levels and/or
 - iv. Research qualitative approaches to the study of moral reasoning competencies development in order to compare and align with findings from Neo-Kohlbergian theory.

7. Investigate why pharmacy does not more generally feature in Neo-Kohlbergian literature and research how Wingfield and colleagues' (2004) call for '*the knowledge base in pharmacy ethics to be systematised and integrated into the wider scheme of general healthcare ethics*' (Wingfield et al, 2004:2383) might materialise.

'Ancora Imparo'

I am still learning.

Michelangelo, age 87.

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1. The first part of the text discusses the importance of maintaining accurate records in a business setting. It emphasizes that proper record-keeping is essential for legal compliance, financial transparency, and operational efficiency. The text suggests that businesses should invest in robust record management systems to ensure that all data is securely stored and easily accessible.

2. The second part of the text focuses on the challenges of data security in the digital age. It highlights the growing threat of cyberattacks and data breaches, which can result in significant financial losses and reputational damage. The text recommends implementing strong security protocols, such as regular software updates, employee training, and the use of encryption, to protect sensitive information.

3. The third part of the text addresses the issue of data privacy. It discusses the increasing regulatory requirements, such as the General Data Protection Regulation (GDPR), which mandate that businesses must handle personal data responsibly. The text advises businesses to conduct regular privacy audits and to ensure that they have clear policies in place to protect the rights of their customers.

4. The fourth part of the text explores the role of data in decision-making. It argues that businesses that effectively analyze and utilize their data can gain a competitive edge by identifying trends, optimizing operations, and developing targeted marketing strategies. The text encourages businesses to invest in data analytics tools and to foster a data-driven culture within their organizations.

5. The fifth part of the text discusses the importance of data backup and disaster recovery. It notes that even the most secure systems are vulnerable to hardware failures, natural disasters, and human error. The text recommends implementing a comprehensive backup strategy that includes regular backups, off-site storage, and a clear disaster recovery plan to ensure business continuity in the event of an emergency.

Appendices

Appendix 1: Competence/competency/competencies.

For the purpose of this thesis, the various references to competence and competencies in Irish legislation and PSI guidelines are collectively interpreted to infer that 'competency' (plural competencies) refers to any of the component parts (knowledge, skills and attitudes) underpinning distinct behaviours that a registered pharmacist is expected to be able to demonstrate, while professional 'competence' refers to the on-going application of appropriate behaviours, professionalism and ethical decision-making when practising as a pharmacist i.e. 'Professional competence' is represented by what a pharmacist repeatedly 'does' in the practice setting(s).

Defining characteristics of educational competencies, as proposed by Rouse (2004) and by the Council on Credentialing in Pharmacy (CCP) (2014, 2009), provide further clarity to the use of this terminology and aligns reference to competencies with an outcomes-based approach i.e. five criteria that may be used to define a competency are that it (1) focuses on the performance of the end-product; (2) reflects expectations that are external to the immediate instructional intervention; (3) expressible in terms of measurable behaviour; (4) uses an assessment standard that is not dependent on the performance of other learners and (5) informs learners, as well as other stakeholders, about what expected of them (CCP, 2009).

'Competence' is not defined in the Pharmacy Act (2007). The Education and Training Rules (PSI, 2008b) set out in detail the procedures and requirements to be operated by the PSI in carrying out its various functions relating to education but do not specifically refer to 'competence' of pharmacists. However these rules do direct that the Council shall adopt a framework to '*set out the designated learning and competencies including the knowledge, the skills, the practical experience, the training and the values*' (PSI, 2008b: Part 1, Interpretation (2)(1)) expected of a registered pharmacist. The PSI has adopted and published a Core Competency Framework for pharmacists (CCF) (PSI, 2013a). The CCF does not include reference to or definition of 'competence', as is the term used in the Pharmacy Act (2007). The CCF refers to competency as 'knowledge, skills, attitudes and behaviours'¹³⁷, associated with and expected of pharmacists (PSI, 2013a). The CCF identifies six domains of practice (Table 2.7) considered relevant for pharmacists in Ireland, each domain includes a number of specified competencies and several behavioural statements¹³⁸ are aligned with each competency. This suggests that behaviours, in the context of the CCF, are comprised of 'knowledge, skills and attitudes'.

¹³⁷ Reference to competencies in 2014 legislation replaces 'behaviours' with 'values' (Pharmaceutical Society of Ireland (Education and Training) (Integrated Course) Rules 2014: S.I.No.377 of 2014:4(2)).

¹³⁸ The CCF refers to a total of 25 competencies and 178 behaviours (PSI, 2013a).

Appendix 2: Systematic literature research.

Appendix 2a: Databases and search engines (searched in following order), and records identified through 'other sources', to December 2014.

Appendix 2b: Database search inclusion criteria.

Appendix 2c: Numbers of records identified during database searches (to December 2014).

Appendix 2d: Exclusion criteria applied to review of collated list of full articles.

Appendix 2e: Records identified through 'other sources' (as per Appendix 2a).

Figure 5.1: PRISMA 2009 Flow Diagram [adapted]

Appendix 2a: Databases and search engines (searched in following order), and records identified through 'other sources', to December 2014.

Database searches	Search amongst	years	Language
1. SCOPUS	Article Title, Abstract and Keywords	To/including 2014	English
2. Web of science	Article Title, Abstract and Keywords	To/including 2014	English
3. PsycINFO	Article Title, Abstract and Keywords	To/including 2014	English
4. ERIC	Article Title, Abstract and Keywords	To/including 2014	English
5. CINAHL	Article Title, Abstract and Keywords	To/including 2014	English
6. PubMed	Article Title, Abstract and Keywords	To/including 2014	English
7. Cochrane	Article Title, Abstract and Keywords	To/including 2014	English
8. ProQuest Dissertation and Theses A& I	Article Title, Abstract and Keywords	To/including 2014	English
Records identified through 'other sources'			
9. Eight key authors ¹³⁹	Authors names all versions	To/including 2014	English
10. Conference abstracts ¹⁴⁰ for the American Education Research association (AERA) and International Pharmaceutical Federation (FIP).	Article/presentation Title.	2010-2014	English
11. Websites ¹⁴¹ of pharmacy organisations.	Web addresses at June 2015	To June 2015	English
12. Hand search of references in key pharmacy publications.	Reference lists in specific publications.	June 2015 update	

¹³⁹ James Rest OR Jim Rest OR J Rest OR Darcia Narvaez OR D Narvaez OR Muriel Bebeau OR M Bebeau OR M J Bebeau OR Muriel J Bebeau OR Steve Thoma OR Stephen Thoma OR S Thoma OR Stephen J Thoma OR S J Thoma OR David Latif OR D Latif OR D A Latif OR Joy Wingfield OR J Wingfield OR Richard Cooper OR R Cooper OR R J Cooper OR R J Cooper OR AILSA Benson OR A Benson
¹⁴⁰ Years 2010-2004.

¹⁴¹ Additional websites searched: www.thepsi.ie (The Pharmaceutical Society of Ireland); www.ipu.ie (Irish Pharmacy Union); www.iccpe.ie (Irish Centre for Continuing Pharmaceutical Education – to December 2012 only); www.iioip.ie (Irish Institute of Pharmacy); from 2013 onwards); <http://www.irishstatutebook.ie/home.html> (Acts of the Oireachtas, statutory instruments and the Legislation Directory); <http://health.gov.ie/> (Department of Health); <http://www.hse.ie/eng/> (Health Services Executive – including the Primary Care Reimbursement service); <https://www.hpra.ie/> Health Products Regulatory Services (www.imb.ie, Irish Medicines Board, to July 2014); <http://www.fip.org/> (International Pharmaceutical Federation); <http://www.pharmacyregulation.org/> (General Pharmaceutical Council); <http://www.rpharms.com/home/home.asp> (Royal Pharmaceutical Society); <http://www.ocpinfo.com/> (Ontario College of Pharmacists); <https://www.acpe-accredit.org/> (Accreditation Council for Pharmacy Education).

Appendix 2b: Database search inclusion criteria.

Inclusion criteria	Research Q	Search strings (spreadsheet to accommodate numbers below for all databases searched)	searches
	Moral reason'g (competencies) development	1 (Moral OR morals OR morality OR ethic OR ethics OR ethical) AND (Reasoning OR judgment OR judgement OR judgments OR judgements) AND (Development OR developments)	
Issue	competencies and/or assessment	2 Competency OR competencies OR competence OR competences OR skill OR skills Assessment OR measurement OR evaluation OR Assessments OR measurements OR evaluations	A. 1 AND 2
Outcome measure	DIT2	3 "Defining issues test" 4 "Neo-Kohlbergian" OR "Neo Kohlbergian" OR Neokohlbergian 5 "N-Score" OR NScore OR "N Score" OR "post conventional schema" OR "P-Score" OR PScore OR "P Score" OR "Maintaining Norms schema" OR "MN-Score" OR MNScore OR "MN Score" OR "personal interest schema" OR "personal interests schema" OR "PI-Score" OR PIScore OR "PI Score" 6 "Consolidated phase" OR "transitional phase" OR "transition phase" OR consolidated OR transitional OR transition	B. 1 AND 3 OR 4 C. 1 AND 5 AND (3 OR 4) D. 1 AND 6 AND (3 OR 4) E. 1 AND 4 AND (5 OR 6)
Population	Community pharmacists in Ireland (additional to... 'issue' or 'outcome' /not independent of these)	7 Pharmacist OR pharmacists 8 community OR retail 9 Irish OR Ireland 10 Dentist OR dentists OR Physiotherapist OR Physiotherapists OR "physical therapist" OR "physical therapists" OR "general practitioner" OR "general practitioners" 11 nurse OR nurses OR "medical practitioner" OR "medical practitioners" OR doctor OR doctors OR physician OR physicians 12 accountant OR accountants OR accountancy OR teacher OR teachers OR taxation OR tax	F. 1 AND 7 G. 1 AND 7 AND 8 H. 1 AND 7 AND 9 I. 1 AND 10 J. 1 AND 11 K. 1 AND 9 AND 12
Intervention (independent variable)	Profession specific Educational Intervention (added to MRCD AND DIT)	13 "educational intervention" OR "educational interventions" OR "education intervention" OR "education interventions" 14 "dilemma discussion" OR "peer interaction" OR "logic and role-play" OR "logic and role play" 15 "intermediate concept measure" OR "intermediate concept measures" OR "intermediate concepts measure" OR "intermediate concepts measures" 16 "intermediate concepts" OR "four component model"	L. 1 AND 2 AND 3 AND 13 M. 1 AND 2 AND 3 AND 14 N. 1 AND 2 AND 3 AND 15 O. 1 AND 2 AND 3 AND 16

Appendix 2c: Numbers of records identified during database searches (to December 2014).

Records identified through database searches: criteria as per Appendix 1a and 1b)																	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Total database	Running total
SCOPUS	764	174	19	4	2	11	3	0	23	275	3	1	2	1	2	1284	1284
Web of Sci	999	212	12	4	1	13	5	0	34	427	13	0	2	1	3	1726	3010
PsycINFO	1175	499	73	9	9	2	0	0	11	109	5	4	1	0	4	1901	4911
ERIC	714	160	11	4	3	1	0	0	4	12	4	0	0	0	1	914	5825
CINAHL	227	49	6	1	0	11	6	1	17	209	4	0	0	0	1	532	6357
PubMed ¹⁴²	400	57	6	1	0	4	2	0	18	208	1	0	1	0	(0)	698	7055
Cochrane	36	2	0	0	0	5	3	1	6	25	1	0	1	0	0	80	7135
ProQuest Dissertation and Theses A& I	514	428	52	11	7	0	0	0	3	85	19	8	3	0	2	1132	8267

¹⁴² PubMed - removed Neokohlbergian or PIScore from options (Neo-Kohlbergian and PI-Score were appropriate for the database search).

Appendix 2d: Exclusion criteria applied to review of collated list of full articles.

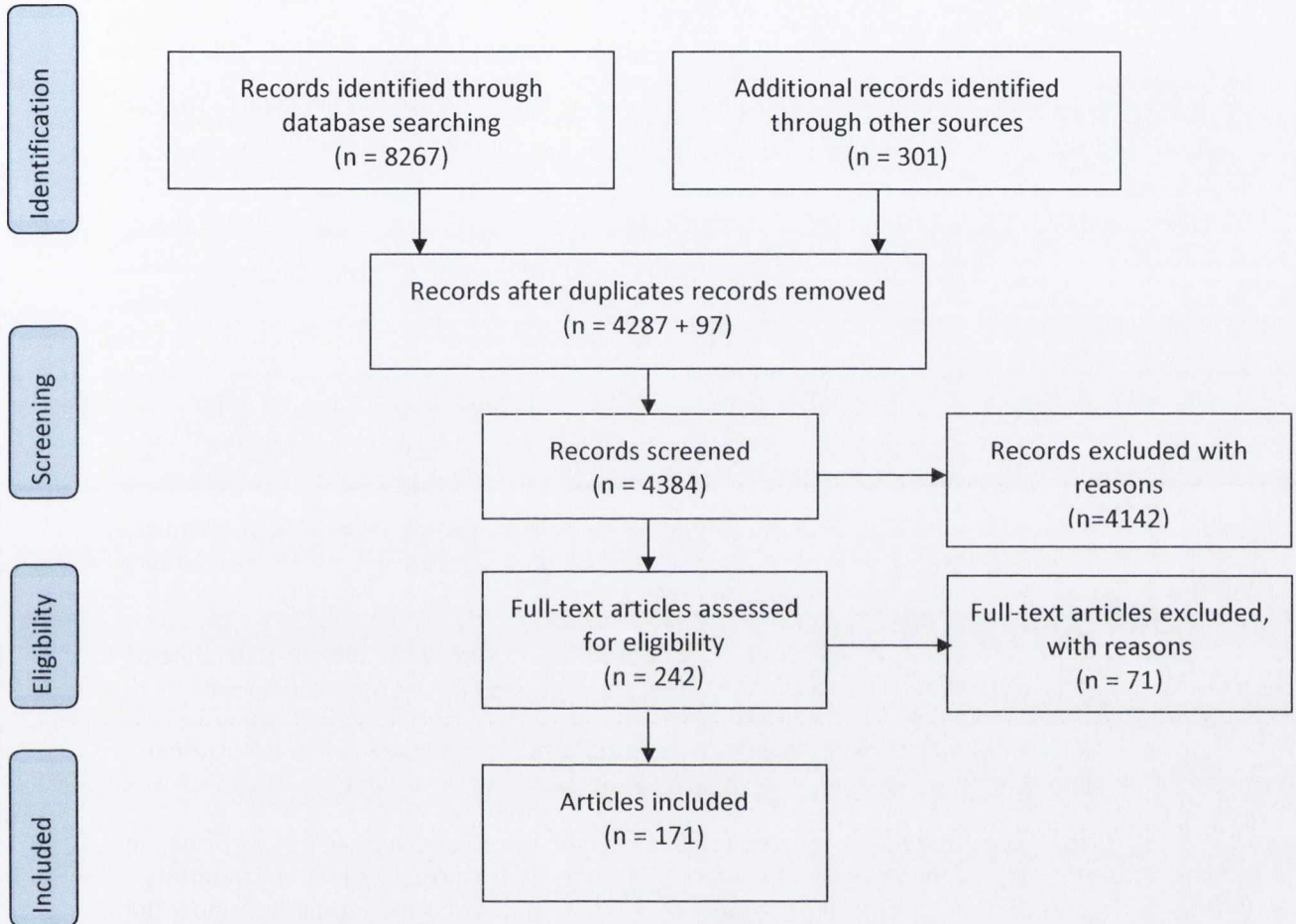
Exclusion criteria	Research Question	Exclusions may include (when filing to relevant/not relevant) – except in circumstances where an equivalent study design is used and/or where pharmacists are incorporated into the study group.
Issue	Moral reasoning competencies development	<ol style="list-style-type: none"> 1. Studies focussed on moral reasoning from an 'affective' or behavioural perspective, i.e. approaches other than cognitive and developmental (as is inherent in the Neo-Kohlbergian approach and the use of the DIT). 2. Studies focussed on moral sensitivity, moral motivation, moral character or moral behaviour rather than on moral reasoning. 3. Studies focused on children, adolescents or young adults. 4. Studies focused on sexual deviancy e.g. paedophilia; god, religion, divinity; prison, crime; 5. Studies focussed on politics or political activity i.e. liberalism or conservatism. 6. Studies specifically focussed on entrepreneurs or entrepreneurship. 7. Studies focussed on students undertaking undergraduate programmes. 8. Studies focussed on graduate students undertaking on-campus programmes.
Outcome measurement	DIT2	<ol style="list-style-type: none"> 9. Studies focussed on alternate measures for moral reasoning to the exclusion of the DIT 10. Where there is ambiguity as to what version of the DIT was used in a study, the number of scenarios used, what instructions were given to respondents (face-to-face or postal or online) and/or when that data was collected
Population	Community pharmacists in Ireland	<ol style="list-style-type: none"> 11. Records related to professionals other than community pharmacists except when considered comparable in the context of the practice environment and anticipated (professional and commercial) influencers on moral reasoning.
Intervention (independent variable)	Profession specific Educational Intervention (added to MRCD & DIT)	<ol style="list-style-type: none"> 12. Educational programmes (rather than interventions – which are shorter). 13. Programmes with non-relevant aims – i.e. where considered not related to moral reasoning development and/or contrary to moral reasoning development. 14. Educational interventions delivery mode/locations unsuited to community pharmacists.
Study design (incorporates 'comparator')	Repeated measures crossover study	<ol style="list-style-type: none"> 15. Crossover studies that involve neither 'repeated measures' nor healthcare practitioners working largely 'alone' in primary healthcare settings.

Appendix 2e: Records identified through 'other sources' (as per Appendix 2a).

	Total	Less duplicates	new
<p>Key authors</p> <ul style="list-style-type: none"> James Rest OR Jim Rest OR J Rest Darcia Narvaez OR D Narvaez Muriel Bebeau OR M Bebeau OR M J Bebeau OR Muriel J Bebeau Steve Thoma OR Stephen Thoma OR S Thoma OR Stephen J Thoma OR S J Thoma David Latif OR D Latif OR D A Latif Joy Wingfield OR J Wingfield Richard Cooper OR R Cooper Richard J Cooper OR R J Cooper ALLSA Benson OR A Benson 	278	138	76
<p>Search: Titles of conference papers searched under 'ethic' or 'moral' 2010 to 2014</p> <ul style="list-style-type: none"> AERA: (Available at: http://www.aera.net/Publications/OnlinePaperRepository/tabid/10250/Default.aspx Accessed on: 13th June 2015). FIP: (Available at: http://www.fip.org/abstracts Accessed on: 13th June 2015). 	2	2	0
<p>Additional websites searched:</p> <ul style="list-style-type: none"> www.thepsi.ie (The Pharmaceutical Society of Ireland); www.ipu.ie (Irish Pharmacy Union); www.iccpe.ie (Irish Centre for Continuing Pharmaceutical Education – to December 2012 only); www.iiop.ie (Irish Institute of Pharmacy); from 2013 onwards); http://www.irishstatutebook.ie/home.html (Acts of the Oireachtas, statutory instruments and the Legislation Directory); http://health.gov.ie/ (Department of Health); http://www.hse.ie/eng/ (Health Services Executive – including the Primary Care Reimbursement service); https://www.hpra.ie/ Health Products Regulatory Services (www.imb.ie, Irish Medicines Board, to July 2014); http://www.fip.org/ (International Pharmaceutical Federation); http://www.pharmacyregulation.org/ (General Pharmaceutical Council); http://www.rpharms.com/home/home.asp (Royal Pharmaceutical Society); http://www.ocpinfo.com/ (Ontario College of Pharmacists); https://www.acpe-accredit.org/ (Accreditation Council for Pharmacy Education). 	3	3	3
<p>Hand search of references in key pharmacy publications.</p>	18	0	18

Figure 5.1: PRISMA 2009 Flow Diagram [adapted].

Available at: <http://www.prisma-statement.org/statement.htm> Accessed on 10th May 2015



DECLARATION

YOU MUST SIGN THIS PART OF THE FORM

If you are unable to complete any part of the declaration below, please contact the Registration Unit of the PSI. For certain matters, you may be required to complete statutory declaration.

I understand that by applying for continued registration as a pharmacist,

I am giving the following undertakings:

1. I am fit and competent to practice as a pharmacist in Ireland and I have not been restricted or prohibited from practising as a pharmacist or from the carrying on of the retail pharmacy business in Ireland or in any other country;
2. I have not been prohibited from carrying on any other practice, profession or occupation that consists, or mainly consists of, the provision of healthcare or services or social care or services.
3. I have not been convicted in Ireland or in any other country of an offence the nature of which would appear to have a bearing on my fitness to practice as a pharmacist.
4. I am not the subject of any legal or disciplinary proceedings in Ireland, or in any other country.
5. I would practice pharmacy in accordance with the laws of the State and in particular, in accordance with the Pharmacy Act 2007 (as amended), the Regulations and Statutory rules made thereunder and the Code of Conduct for pharmacists established under the Act;
6. I have read, understood and agree to abide by the Code of Conduct for pharmacists.
7. I maintain appropriate experience in the practice of pharmacy, keep abreast of continuing education and professional development in the profession of pharmacy and undertake appropriate continuing professional development relevant to the practice of pharmacy; **Please outline below the manner in which you ensure that the undertaking at seven is carried out:**

8. I have already provided 2 recent photographs to the PSI. OR I enclose with this application 2 recent passport style photographs for the purposes of the certificate of continued registration.
9. The details provided to the PSI in this application and in regard to my registration of the pharmacists, to the best of my knowledge, true and accurate.

Signed:

Date:

Interpretation of *Part 6*.

33.— In this Part—

“committee of inquiry” means a health committee or a professional conduct committee;

“complaint” means a complaint made under [section 35](#) or [36](#) ;

“disciplinary committee” means a committee established under [section 34 \(1\)](#);

“disciplinary sanction” means a sanction specified in any paragraph of [section 48 \(1\)](#);

“health committee” means a committee established under [section 34 \(1\)\(c\)](#);

“poor professional performance” , in relation to a registered pharmacist, means any failure of the registered pharmacist to meet the standards of competence that may be reasonably expected of a registered pharmacist;

“preliminary proceedings committee” means a committee established under [section 34 \(1\)\(a\)](#);

“professional conduct committee” means a committee established under [section 34 \(1\)\(b\)](#);

“professional misconduct” , in relation to a registered pharmacist, means any act, omission or pattern of conduct that—

(a) is a breach of the code of conduct for registered pharmacists,

(b) is infamous or disgraceful in a professional respect (notwithstanding that, if the same or like act, omission or pattern of conduct were committed by a member of another profession, it would not be professional misconduct in respect of that profession),

(c) involves moral turpitude, fraud or dishonesty of a nature or degree which bears on the carrying on of the profession of a pharmacist, or

(d) if the registered pharmacist has been granted a licence, certificate or registration by a body outside the State relating to the practice of pharmacy is a breach of a standard of conduct, performance or ethics that—

(i) applies to a person holding that licence, certificate or registration, and

(ii) corresponds to a standard contained in the code referred to in *paragraph (a)* or a standard breach of which amounts to conduct of the kind mentioned in *paragraphs (b) or (c)*,

but does not include an act, omission or pattern of conduct that consists of a wrongly but honestly formed professional judgment;

“registered” in relation to a complaint against a pharmacist or retail pharmacy business includes a pharmacist or retail pharmacy business which was registered at the time when the circumstances constituting the grounds of the complaint occurred although not registered when the complaint is made or later.

Regulation of retail pharmacy businesses.

18. – (1) The Minister may, for the purposes of the health, safety and convenience of the public, make regulations about all or any of the following matters in respect of retail pharmacy businesses

- (a) the manner in which medicinal products are prepared there;
 - (b) the supervision of those processes there;
 - (c) the physical characteristics of that part of the premises which is to be provided for the conduct of those processes, including the separation of that part from the rest of the premises;
 - (d) the facilities to be provided for the conduct of those processes;
 - (e) the physical characteristics of the part of the premises which is to be used for the storage of medicinal products;
 - (f) the conditions, (including those relating to temperature, humidity, cleanliness and sanitation) in which medicinal products are prepared, stored, sold, supplied and dispensed there;
 - (g) the precautions to be taken before medicinal products are sold or supplied there;
 - (h) the disposal of medicinal products;
 - (i) the manner in which medicinal products are to be sold or supplied there;
 - (j) the physical characteristics of that part of the premises which is to be provided for members of the public being sold or supplied with medicinal products or to whom medical prescriptions are being dispensed, and the facilities within that part;
 - (k) the facilities to be provided and arrangements made there to enable the review, if necessary in private, of the medicinal treatment of a person to whom medicinal products are being or might be sold or supplied and the counseling, if necessary in private, of that person in connection with that treatment;
 - (l) the keeping of records of and in connection with the sale and supply of medicinal products and the dispensing of medical prescriptions;
 - (m) the retention, custody, transfer and disposal of those records following the cessation or transfer of the retail pharmacy business;
 - (n) the use and condition of any apparatus, equipment, utensil or furnishing used for or in connection with the carrying on of the retail pharmacy business;
- the safe keeping of medicinal products there.

Review of medicine therapy and counselling of patients in the supply of medicinal products on foot of a prescription

9. (1) A person carrying on a retail pharmacy business, the superintendent pharmacist and the supervising pharmacist shall ensure that, prior to the dispensing of each prescription and prior to the supply of the medicinal product concerned, a registered pharmacist reviews the prescription having regard to the pharmaceutical and therapeutic appropriateness of the medicine therapy for the patient.

(2) The review provided for in paragraph (1) shall include screening for any potential therapy problems which may arise out of the use of any medicinal product that may have been prescribed and which the registered pharmacist is, or, in the course of his professional practice, ought reasonably to be, aware of. The potential problems to be screened for shall include those which may be due to therapeutic duplication, interactions with other medicinal products (including serious interactions with non-prescription medicinal products, herbal products or foods), incorrect dosage or duration of treatment, allergic reactions, and clinical abuse and/or misuse.

(3) Following completion of the review provided for in paragraph (1) the registered pharmacist shall ensure that each patient has sufficient information and advice for the proper use and storage of the prescribed medicinal product and shall offer to discuss with the patient, or with the carer of such a patient, all such matters as the pharmacist, in the exercise of his or her professional judgement, deems significant, and which may include one or more of the following as may be appropriate—

(a) the identity of the medicinal product, its dosage form, the method and route of administration and the duration of therapy;

(b) the therapeutic benefit which may be expected from the use of the medicinal product;

(c) any special directions and precautions for the correct preparation, administration and use of the medicinal product;

(d) the importance of the need for compliance with the directions for use including techniques for self-monitoring during therapy;

(e) any common severe side-effects and adverse reactions or interactions and therapeutic contraindications which may be encountered, including their avoidance and the action to be taken should they occur;

(f) the action to be taken in the event of a missed dose;

(g) the methods for the safe disposal of the medicinal product in the event of the course of treatment not being completed, and

(h) any other matters which may be included or referred to in the summary of product characteristics for the medicinal product concerned.

Counselling in the supply of medicinal products other than on foot of a prescription

10. A person carrying on a retail pharmacy business, the superintendent pharmacist and the supervising pharmacist shall ensure that, in the course of the sale or supply of a medicinal product other than on foot of a prescription and prior to such sale or supply, a registered pharmacist is satisfied that the purchaser or other such person is aware of what the appropriate use of the medicinal product is and that it is being sought for that purpose and, in so far as the registered pharmacist is aware, the product is not intended for abuse and/or misuse.

INSTRUCTION BOOKLET

DIT

DEFINING ISSUES TEST

University of Minnesota

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Opinions about Social Problems

The purpose of this questionnaire is to help us understand how people think about social problems. Different people have different opinions about questions of right and wrong. There are no "right" answers to such problems in the way that math problems have right answers. We would like you to tell us what you think about several problem stories.

You will be asked to read a story from this booklet. Then you will be asked to mark your answers on a separate answer sheet. More details about how to do this will follow. But it is important that you fill in your answers on the answer sheet with a #2 pencil. Please make sure that your mark completely fills the little circle, that the mark is dark, and that any erasures that you make are completely clean.

The Identification Number at the top of the answer sheet may already be filled in when you receive your materials. If not, you will receive special instructions about how to fill in that number.

In this questionnaire you will be asked to read a story and then to place marks on the answer sheet. In order to illustrate how we would like you to do this, consider the following story:

FRANK AND THE CAR

Frank Jones has been thinking about buying a car. He is married, has two small children and earns an average income. The car he buys will be his family's only car. It will be used mostly to get to work and drive around town, but sometimes for vacation trips also. In trying to decide what car to buy, Frank Jones realized that there were a lot of questions to consider. For instance, should he buy a larger used car or a smaller new car for about the same amount of money? Other questions occur to him.

We note that this is not really a social problem, but it will illustrate our instructions. After you read a story you will then turn to the answer sheet to find the section that corresponds to the story. But in this sample story, we present the questions below (along with some sample answers). Note that all your answers will be marked on the separate answer sheet.

First, on the answer sheet for each story you will be asked to indicate your recommendation for what a person should do. If you tend to favor one action or another (even if you are not completely sure), indicate which one. If you do not favor either action, mark the circle by "can't decide."

Second, read each of the items numbered 1 to 12. Think of the issue that the item is raising. If that issue is important in making a decision, one way or the other, then mark the circle by "great." If that issue is not important or doesn't make sense to you, mark "no." If the issue is relevant but not critical, mark "much," "some," or "little" — depending on how much importance that issue has in your opinion. You may mark several items as "great" or any other level of importance — there is no fixed number of items that must be marked at any one level.

Third, after you have made your marks along the left hand side of each of the 12 items, then at the bottom you will be asked to choose the item that is the most important consideration out of all the items printed there. Pick from among the items provided even if you think that none of the items are of "great" importance. Of the items that are presented there, pick one as the most important (relative to the others), then the second most important, third, and fourth most important.

SAMPLE ITEMS and SAMPLE ANSWERS:

GREAT	MUCH	SOME	LITTLE	NO	FRANK AND THE CAR
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	1. Whether the car dealer was in the same block as where Frank lives.
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	2. Would a used car be more economical in the long run than a new car.
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	3. Whether the color was green, Frank's favorite color.
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	4. Whether the cubic inch displacement was at least 200.
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	5. Would a large, roomy car be better than a compact car.
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	6. Whether the front connibilies were differential.

Most important item	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input checked="" type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9 <input type="radio"/> 10 <input type="radio"/> 11 <input type="radio"/> 12
Second most important	<input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9 <input type="radio"/> 10 <input type="radio"/> 11 <input type="radio"/> 12
Third most important	<input type="radio"/> 1 <input type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9 <input type="radio"/> 10 <input type="radio"/> 11 <input type="radio"/> 12
Fourth most important	<input checked="" type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9 <input type="radio"/> 10 <input type="radio"/> 11 <input type="radio"/> 12

Note that in our sample responses, the first item was considered irrelevant; the second item was considered as a critical issue in making a decision; the third item was considered of only moderate importance; the fourth item was not clear to the person responding whether 200 was good or not, so it was marked "no"; the fifth item was also of critical importance; and the sixth item didn't make any sense, so it was marked "no."

Note that the most important item comes from one of the items marked on the far left hand side. In deciding between item #2 and #5, a person should reread these items, then put one of them as the most important, and the other item as second, etc.

Here is the first story for your consideration. Read the story and then turn to the separate answer sheet to mark your responses. After filling in the four most important items for the story, return to this booklet to read the next story. Please remember to fill in the circle completely, make dark marks, and completely erase all corrections.

HEINZ AND THE DRUG

In Europe a woman was near death from a special kind of cancer. There was one drug that doctors thought might save her. It was a form of radium that a druggist in the same town had recently discovered. The drug was expensive to make, but the druggist was charging ten times what the drug cost to make. He paid \$200 for the radium and charged \$2,000 for a small dose of the drug. The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he could only get together about \$1,000, which is half of what it cost. He told the druggist that his wife was dying, and asked him to sell it cheaper or let him pay later. But the druggist said, "No, I discovered the drug and I'm going to make money from it." So Heinz got desperate and began to think about breaking into the man's store to steal the drug for his wife. Should Heinz steal the drug?

ESCAPED PRISONER

A man had been sentenced to prison for 10 years. After one year, however, he escaped from prison, moved to a new area of the country, and took on the name of Thompson. For eight years he worked hard, and gradually he saved enough money to buy his own business. He was fair to his customers, gave his employees top wages, and gave most of his own profits to charity. Then one day, Mrs. Jones, an old neighbor, recognized him as the man who had escaped from prison eight years before, and whom the police had been looking for. Should Mrs. Jones report Mr. Thompson to the police and have him sent back to prison?

NEWSPAPER

Fred, a senior in high school, wanted to publish a mimeographed newspaper for students so that he could express many of his opinions. He wanted to speak out against the use of the military in international disputes and to speak out against some of the school's rules, like the rule forbidding boys to wear long hair.

When Fred started his newspaper, he asked his principal for permission. The principal said it would be all right if before every publication Fred would turn in all his articles for the principal's approval. Fred agreed and turned in several articles for approval. The principal approved all of them and Fred published two issues of the paper in the next two weeks.

But the principal had not expected that Fred's newspaper would receive so much attention. Students were so excited by the paper that they began to organize protests against the hair regulation and other school rules. Angry parents objected to Fred's opinions. They phoned the principal telling him that the newspaper was unpatriotic and should not be published. As a result of the rising excitement, the principal ordered Fred to stop publishing. He gave as a reason that Fred's activities were disruptive to the operation of the school. Should the principal stop the newspaper?

DOCTOR'S DILEMMA

A lady was dying of cancer which could not be cured and she had only about six months to live. She was in terrible pain, but she was so weak that a good dose of pain-killer like morphine would make her die sooner. She was delirious and almost crazy with pain, and in her calm periods, she would ask the doctor to give her enough morphine to kill her. She said she couldn't stand the pain and that she was going to die in a few months anyway. Should the doctor give her an overdose of morphine that would make her die?

WEBSTER

Mr. Webster was the owner and manager of a gas station. He wanted to hire another mechanic to help him, but good mechanics were hard to find. The only person he found who seemed to be a good mechanic was Mr. Lee, but he was Chinese. While Mr. Webster himself didn't have anything against Orientals, he was afraid to hire Mr. Lee because many of his customers didn't like Orientals. His customers might take their business elsewhere if Mr. Lee was working in the gas station.

When Mr. Lee asked Mr. Webster if he could have the job, Mr. Webster said that he had already hired somebody else. But Mr. Webster really had not hired anybody, because he could not find anybody who was a good mechanic besides Mr. Lee. Should Mr. Webster have hired Mr. Lee?

STUDENT TAKE-OVER

Back in the 1960s at Harvard University there was a student group called Students for a Democratic Society (SDS). SDS students were against the war in Viet Nam, and were against the army training program (ROTC) that helped to send men to fight in Viet Nam. While the war was still going on, the SDS students demanded that Harvard end the army ROTC program as a university course. This would mean that Harvard students could not get army training as part of their regular course work and not get credit for it towards their degrees.

Harvard professors agreed with the SDS students. The professors voted to end the ROTC program as a university course. But the President of the university took a different view. He stated that the army program should stay on campus as a course.

The SDS students felt that the President of the university was not going to pay attention to the vote of the professors, and was going to keep the ROTC program as a course on campus. The SDS students then marched to the university's administration building and told everyone else to get out. They said they were taking over the building to force Harvard's President to get rid of the army ROTC program on campus for credit as a course.

Were the students right to take over the administration building?

Please make sure that all your marks are dark, fill the circles, and that all erasures are clean.
THANK YOU.

Appendix 8: Calculation of a P-Score and an N2-Score.

1. Calculation of a P-Score

A P score is calculated on the basis of ranking data. If a participant ranks a principled item as "most important", then this increases the P score by 4 points (in second place, by 3 points; in third place, by 2 points; in fourth place, by 1 point). The P score is the total number of points across the six dilemmas. The P score is converted from a base of 60 points to a percentage (with a base of 100). P scores can range from 0 to 95 (not 100 because every dilemma does not have four possible P items). Missing data (i.e. leaving some ranks blank) is dealt with by adjusting the P score on the basis of responses given (for instance, if a participant leaves out the third rank on one story, the P score is recalculated on the basis of 58 points instead of the full 60 points).

Rest et al, 1997a:500

2. Calculation of an N2-score

An N2-score has two parts: the degree to which P items are prioritised (almost identical to the P score) plus the degree to which the lower stages are rated lower than the ratings of the higher stages. First, the prioritisation of P items follows the procedure above for the P score except in the handling of missing data. If a participant leaves out a rank, then in N2 no adjustment is made for that omission - omitting a rank, in effect, is the same as not prioritising a P item. Leaving out all ranks for one whole dilemma is adjusted by basing a total score on the other five dilemmas. If more than one dilemma is omitted, the whole protocol is invalidated for we assume there is a problem in test motivation in general, not an occasional ambiguity.

The second part of N2 is based on rating data, not ranking data. The main idea is that "discrimination" is measured in terms of the average rating given to items at Stages 2 and 3 (the lower stages) subtracted from the average rating given to items at stages 5 and 6. Hence the distance of Stages 2+3 from Stages 5+6 is the measure of discrimination. Average ratings are standardised by dividing this difference (Stages 5+6 - Stages 2+3) by the participant's standard deviation of Stages 2+3+5+6. Occasional missing rates are supplied by filling in the average rating for the story. If rates for one whole dilemma are left out, then the score is adjusted, on the basis of the other five dilemmas. However if more than eight rates for two dilemmas are missing, then the whole protocol is invalidated.

The two parts of N2 are combined into one score per participant by adding the P score to the rating data weighted by three. (We weight the discrimination component by three because this component has about 1/3 the standard deviation of the P scores; therefore weighting equalises the two parts of the N2 index.) N2 scores are adjusted to have the same mean and standard deviation of the P score on the 1995 standardisation sample (n = 1,115) so that comparisons between P and N2 can be made easily.

Note that the N2 index uses the same ranking data from the same participants as the P score but also uses the rating data from the protocols. Because the N2 score uses both rating and ranking data, and because it has more stringent rules for handling missing data than the P index, more protocols are invalidated for missing data in the N2 index than for the P index.

Rest et al, 1997a:500-501

Appendix 9: The Four Component Model (FCM) of professional education: Educational remediation in dentistry.

Designed in consultation with the Board of Dentistry in Minnesota, this intervention aims to address the learning needs of dentists whose behaviour, as determined by the Board, has *'violated the rules of professional conduct'* (Bebeau, 2009a) in a manner that reflects unethical or unprofessional conduct. Participants are required, as a condition of licensure reinstatement by the Board, to engage with Muriel Bebeau's individualised professional development intervention (e.g. Bebeau, 2009a, 2009b; Bebeau & Monson, 2008). Between 1990 and 2005, 41 participants were referred to Muriel Bebeau, by the Board, for ethics assessment. Of these 41, two were exempt from instruction based on pre-test performance.

1. **Theoretical background and educational benefits anticipated:** Rest's Four Component Model (FCM) *'operationally defines competencies or capacities that need to be developed if one is to engage conscientiously, purposefully, and consistently in a pattern of behaviour that one's peers would judge to be moral or ethical'* (Bebeau & Faber-Langendoen, 2014:39). The four components of morality, namely moral sensitivity, reasoning, motivation and implementation, operate as interactive elements in the development of a professional (Chapter 3) and *'moral failure can be a consequence of a deficiency in any component'* (Rest & Narvaez, 1994:23). Researchers (e.g. Bebeau, 2002; Rest et al, 1999b) repeatedly suggest that *'ethical interventions should include direct instruction in each of the four components and that different measures should be developed to assess them'* (Bailey et al, 2010:6). The DIT is one of a series of five¹⁴³ validated assessments of moral development have been shown to have good test-retest reliability and to be sensitive to the effects of educational interventions (e.g. Bebeau & Monson, 2008; Bebeau, 2002; Rest et al, 1999b; Bebeau & Thoma, 1994).

¹⁴³ (1) **The Dental Ethical Sensitivity Test (DEST):** A scoring manual determines the extent to which an individual interprets clues to moral dilemmas when presented with a series of four tape-recorded scenarios; (2) **The Defining Issues Test (DIT):** The Center for the Study of Ethical development in Alabama scores data further to participant completion of a pen-and-paper psychometric measure of an individual's tendency to draw on three moral schemas (i.e. the extent to which an individual draws on action and/ or justification options in the personal interest, rule-keeping/maintaining norms or in the patient's or society's 'best interests' when reasoning through dilemmas; (3) **Dental Ethical Reasoning and Judgement Tests (DERJT):** This consists of five dental ethical problems followed by action and justification options as generated by dental faculty and residents; (4) **Professional Role Orientation Inventory (PROI)** (assessment of Moral motivation): This measure consists of four ten-item scales designed to assess commitment to professional values over personal values; (5) **Role concept essay (RCE)** (assessment of moral commitment): This essay presents a series of open-ended questions designed to elicit a participant's perception of his or her role as a professional. Essays are scored according to six concepts that describe professional obligations in order to identify whether participants can clearly distinguish between these concepts (e.g. Bebeau, 2009a, 2009b; Bebeau & Monson, 2008).

2. **Process:** Individuals referred by the Board are introduced to the FCM theory underpinning moral behaviour and the five validated assessments of moral development are completed. These pre-tests estimate the participant's level of competencies development in each of the four components. Results, by comparison with the average scores with final year dental students, provide a means by which to estimate whether the participant would benefit by undertaking the intervention. If so anticipated, an individual plan is developed – to include role concept, moral reasoning, ethical sensitivity and ethical implementation. Courses generally involve 25-30 contact hours, primarily incorporating 2 hour face-to-face sessions spread over several months. Participants also complete reading, writing, case analysis, self-assessment and reflective assignments to include a final reflective essay on the process and a final 'ethics case' presenting the set of circumstances for which he or she was disciplined and a well-reasoned argument in support of an ethically justified position. Courses may involve 1 to 5 participants. The Board reviews the pre-test report and approves, with or without modifications, the proposed course of study. In addition to any other information the Board gathers from coursework, the Board receives a post-test report from Professor Bebeau.
3. **Evaluation of the impact of intervention(s):** Evaluation is primarily by pre-post assessment using the five validated assessments of moral development (DEST, DIT, DERJT, PROI and RCE) plus review of the self-assessment of learning, the reflective essay and the final 'ethics case' (Bebeau, 2009a, 2009b; Bebeau & Monson, 2008).
4. **Summary of the evidence base for the intervention(s):** Bebeau reports that pre-post evaluation of 38 individuals that completed an individualised intervention demonstrated statistically significant change (with effect sizes ranging from 0.55 to 5.0) for ethical sensitivity, moral reasoning and role concept scores (Bebeau, 2009b). Only two of the remediated professionals have been subject again to discipline (Cunningham, 2009). Bebeau reports that referred practitioners highly valued the emphasis (during the intervention) on ethical implementation, i.e. address what to do in ethically challenging situations, as it enhanced not only how to reason about 'professional dilemmas', but how to implement action choices (Bebeau, 2009b). Cunningham considers that Bebeau's programme mediates the most serious discipline cases and that she demonstrates that her educational intervention design '*can, in fact, produce measurable improvement*' (Cunningham, 2009:52).
5. **Potential for application in pharmacy specific context(s) in Ireland:** Guided by theory and grounded in evidence, the intervention process supports a developmental approach to

professionalism and ethical practice in a manner that engages cognitive, affective and behavioural domains. The downside is that it is a resource-intensive approach – both in terms of the face-to-face component and range of assessments involved in the intervention itself, and with respect to development costs for the various assessment tools. However, while pharmacy-specific adaptations would need to be developed, and appropriate expertise in their use acquired by potential assessors, Bebeau makes all of her tools available to interested parties.

6. **Summary:** The FCM supports a developmental approach to professionalism and ethical practice in a manner that engages cognitive, affective and behavioural domains. The DIT is one of the measures used by Bebeau. While her work is of a much broader scope than this study, it nonetheless sets this study in the broader context of current developments in the field.

DIT-2

Defining Issues Test

Version 3.1

University of Minnesota

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University of Alabama

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Center for the Study of Ethical Development

Instructions

This questionnaire is concerned with how you define the issues in a social problem. Several stories about social problems will be described. After each story, there will be a list of questions. The questions that follow each story represent different issues that might be raised by the problem. In other words, the questions / issues raise different ways of judging what is important in making a decision about the social problem. You will be asked to rate and rank the questions in terms of how important each one seems to you.

This questionnaire is in two parts: one part contains the **INSTRUCTIONS** (this part) and the stories presenting the social problems; the other part contains the questions (issues) and the **ANSWER SHEET** on which to write your responses.

Here is an example of the task:

Presidential Election

Imagine that you are about to vote for a candidate for the Presidency of the United States. Imagine that before you vote, you are given several questions, and asked which issue is the most important to you in making up your mind about which candidate to vote for. In this example, 5 items are given. On a rating scale of 1 to 5 (1=Great, 2=Much, 3=Some, 4=Little, 5=No) please rate the importance of the item (issue) by filling in with a pencil one of the bubbles on the answer sheet by each item.

Assume that you thought that item #1 (below) was of great importance, item #2 had some importance, item #3 had no importance, item #4 had much importance, and item #5 had much importance. Then you would fill in the bubbles on the answer sheet as shown below.

GREAT MUCH SOME LITTLE NO	② ③ ④ ⑤	Rate the following 12 issues in terms of importance (1-5)	
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	1. Financially are you personally better off now than you were four years ago?
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	2. Does one candidate have a superior moral character?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	3. Which candidate stands the tallest?
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	4. Which candidate would make the best world leader?
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	5. Which candidate has the best ideas for our country's internal problems, like crime and health care?

Further, the questionnaire will ask you to rank the questions in terms of importance. In the space below, the numbers 1 through 12, represent the item number. From top to bottom, you are asked to fill in the bubble that represents the item in first importance (of those given you to choose from), then second most important, third most important, and fourth most important. Please indicate your top four choices. You might fill out this part, as follows:

Rank which issue is the most important (item number).

Most important item ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ Third most important ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

Second most important ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ Fourth most important ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

Note that some of the items may seem irrelevant to you (as in item #3) or not make sense to you—in that case, **rate** the item as “No” importance and do not **rank** the item. Note that in the stories that follow, there will be 12 items for each story, not five. Please make sure to consider all 12 items (questions) that are printed after each story.

In addition you will be asked to state your preference for what action to take in the story. After the story, you will be asked to indicate the action you favor on a three-point scale (1 = strongly favor some action, 2 = can't decide, 3 = strongly oppose that action).

In short, read the story from this booklet, and then fill out your answers on the answer sheet. Please use a #2 pencil. If you change your mind about a response, erase the pencil mark cleanly and enter your new response.

[Notice the second part of this questionnaire, the Answer Sheet. The Identification Number at the top of the answer sheet may already be filled in when you receive your materials. If not, you will receive instructions about how to fill in the number. If you have questions about the procedure, please ask now.]

Please turn now to the Answer Sheet.]

Famine—(Story #1)

The small village in northern India has experienced shortages of food before, but this year's famine is worse than ever. Some families are even trying to feed themselves by making soup from tree bark. Mustaq Singh's family is near starvation. He has heard that a rich man in his village has supplies of food stored away and is hoarding food while its price goes higher so that he can sell the food later at a huge profit. Mustaq is desperate and thinks about stealing some food from the rich man's warehouse. The small amount of food that he needs for his family probably wouldn't even be missed.

[If at any time you would like to reread a story or the instructions, feel free to do so. Now turn to the Answer Sheet, go to the 12 issues and rate and rank them in terms of how important each issue seems to you.]

Reporter—(Story #2)

Molly Dayton has been a news reporter for the *Gazette* newspaper for over a decade. Almost by accident, she learned that one of the candidates for Lieutenant Governor for her state, Grover Thompson, had been arrested for shop-lifting 20 years earlier. Reporter Dayton found out that early in his life. Candidate Thompson had undergone a confused period and done things he later regretted, actions which would be very out-of-character now. His shop-lifting had been a minor offense and charges had been dropped by the department store. Thompson has not only straightened himself out since then, but built a distinguished record in helping many people and in leading constructive community projects. Now, Reporter Dayton regards Thompson as the best candidate in the field and likely to go on to important leadership positions in the state. Reporter Dayton wonders whether or not she should write the story about Thompson's earlier troubles because in the upcoming close and heated election, she fears that such a news story could wreck Thompson's chance to win.

[Now turn to the Answer Sheet, go to the 12 issues for this story, rate and rank them in terms of how important each issue seems to you.]

School Board— (Story #3)

Mr. Grant has been elected to the School Board District 190 and was chosen to be Chairman. The district is bitterly divided over the closing of one of the high schools. One of the high schools has to be closed for financial reasons, but there is no agreement over which school to close. During his election to the school board, Mr. Grant had proposed a series of "Open Meetings" in which members of the community could voice their opinions. He hoped that dialogue would make the community realize the necessity of closing one high school. Also he hoped that through open discussion, the difficulty of the decision would be appreciated, and that the community would ultimately support the school board decision. The first Open Meeting was a disaster. Passionate speeches dominated the microphones and threatened violence. The meeting barely closed without fist-fights. Later in the week, school board members received threatening phone calls. Mr. Grant wonders if he ought to call off the next Open Meeting.

[Now turn to the Answer Sheet, go to the 12 issues for this story, rate and rank them in terms of how important each issue seems to you.]

Cancer— (Story #4)

Mrs. Bennett is 62 years old, and in the last phases of colon cancer. She is in terrible pain and asks the doctor to give her more pain-killer medicine. The doctor has given her the maximum safe dose already and is reluctant to increase the dosage because it would probably hasten her death. In a clear and rational mental state, Mrs. Bennett says that she realizes this; but she wants to end her suffering even if it means ending her life. Should the doctor give her an increased dosage?

[Now turn to the Answer Sheet, go to the 12 issues for this story, rate and rank them in terms of how important each issue seems to you.]

Demonstration — (Story #5)

Political and economic instability in a South American country prompted the President of the United States to send troops to "police" the area. Students at many campuses in the U.S.A. have protested that the United States is using its military might for economic advantage. There is widespread suspicion that big oil multinational companies are pressuring the President to safeguard a cheap oil supply even if it means loss of life. Students at one campus took to the streets, in demonstrations, tying up traffic and stopping regular business in the town. The president of the university demanded that the students stop their illegal demonstrations. Students then took over the college's administration building, completely paralyzing the college. Are the students right to demonstrate in these ways?

[Now turn to the Answer Sheet, go to the 12 issues for this story, rate and rank them in terms of how important each issue seems to you.]

Appendix 11: Calculation of New Checks Score.

'The new checks procedure recognises the same four problems in participant reliability, but deals with them in ways different from the standard checks procedure. To investigate the consequences of different methods and cut-off points, we concocted a set of protocols that deliberately epitomised one or more of the violations we source to detect... In general, the objective was to have protocols that we knew were bogus data and to see whether our reliability checks would pick up all these bad protocols, but would pass through a high percentage of actual data...

1. *The problem of random responding...* To detect participants who are randomly checking, this is our new procedure: we look at a participant's ranks, weight the top rank as 4, the second most important as 3, the third as 2, and the fourth as 1 (same weights deriving the P-Score). Then we look at the item's rating. If there is an item different from the one in the first rank that is rated more highly than the item in the top rank, then that is one occurrence of inconsistency and is multiplied by 4. All other inconsistencies with the top rank are also multiplied by 4. Then we look at the item ranked as second most important. This should not be any item rated more highly than the second ranked item except the item ranked in the top rank. The occurrences of exceptions to this expectation are counted and weighted by 3, and so on for the third- and fourth-ranked items (the violations are counted and weighted by 2, for third rank, or by 1, for fourth rank. The weighted inconsistencies for each story and across stories are summed. The summed weighted rank-rate inconsistencies across five stories can range from 0 to 600... If the sum of rate-rank inconsistencies is more than 200, then... the protocol is invalidated (purged from the sample). If the sum is under the 200 mark, it is regarded as an innocent confusion, and we tolerate that much inconsistency by not purging the entire protocol...
2. *The problem of missing data:* Occasional missing data are tolerated by DIT2. Using the trial-and-error procedure described [by Rest et al (1999)] we arrived at cutoff values. If the participant leaves out more than three ratings on any of two stories, the protocol is invalidated. If the participant leaves out more than six ranks, the protocol is also invalidated.
3. *The problem of alien test-taking sets.* Participants who pick items for style rather than for meaning are not following our instructions. In the new checks procedure we also use the M-items to detect this problem. The protocols of participants whose weighted ranks on the M-items total more than 10 are invalidated (more lax than the cutoff of 8 on standard checks)
4. *The problem of non-discrimination:* In new checks participants who rate 11 items the same on a story are considered as not discriminating; if the participant fails to discriminate on two stories or more, the protocol is invalidated. Non-discrimination by rates or ranks is grounds for purging the protocol.

.... The new checks purged eight participants from the sample of 200 (or 4%), whereas the standard checks purged 46 participants (or 23%) from the sample... The new checks are less stringent than the standard checks. Paradoxically, the data in this study suggest that the less

stringent method (new checks) produces stronger trends than does the more stringent method standard checks..... The key to this paradox lies in the fact that standard checks purges proportionately more of the youngest group of ninth graders (58% of the ninth graders were purged by the standard checks) than for the oldest group (only 8% were purged in the graduate and professional schools subsample)... To facilitate experimentation with different cut-off values for the checks, the scoring service of the Center for the Study of Ethical Development provides a set of variables that can be manipulated for each sample'.

Rest et al., 1999a:654-655

Appendix 12: Communication to expert group at draft stage of ICMs (sample – ICM 3).

Cicely Roche M.Sc., MPSI.

Confidential, not for circulation please.

Professional ethics education.

Instructions to the 'expert group'.

ICM 3: Please reply by Friday October 8th.

Thank you for agreeing to be part of the 'expert' group reviewing scenarios proposed for use in pharmacist education and development. I sincerely appreciate your assistance.

'Knowledge of profession specific concepts' is a key element of developing professional judgement competencies. A tool called the 'Intermediate Concepts Measure' (ICM) (Bebeau and Thoma, 2008) assists with this process. The components of an ICM are a short 'case' study, a series of action options and a series of justification options. The case study, action options and justification options are presented in sequence.

While ICM's exist for dentistry and other professions, they have not yet been developed for pharmacy. It is advised that an 'expert' group be used to assess proposed action and justification options. I am therefore forwarding the draft to 6 pharmacists considered to comprise a preliminary 'expert group' for the purposes of this work.

I would sincerely appreciate it you would avoid circulating this particular case, or using it for teaching undergraduates, interns or practitioners as it is my intention to use it for educational purposes in a 'validated' study in the near future. Of course I'd be pleased to 'feedback' on the events and to involve myself with any cases you might wish to develop to the same formula.

What I need you to do, please, is to...

1. Read the case study.
2. Rate the importance of each action, in coming to your decision, by circling your rating of 'action' options.
3. Choose what you consider to be the 3 best and 3 worst action options.
4. Add any further action option you think should have been included.
5. Rate the importance of each justification, in coming to your decision, by circling your rating of 'justification' options.
6. Choose what you consider to be the 3 best and 3 worst action options.
7. Add any further justification option you think should have been included.

Feel free to contact me for any further information.

Many thanks for your help

Cicely Roche

Read the case study:

Celine Condon is a staff pharmacist at a pharmacy in a large rural town. She recognises Charlie, the orthopaedic surgeon from the nearby hospital, as he arrives on a Sunday morning. He requests Nitrolingual¹⁴⁴ spray. On review of his medication record she sees that he had two sprays dispensed three weeks previously ... As Charlie observes the pharmacist reviewing his prescription history file, he cheerfully comments that he'll write another prescription to cover the paperwork requirements and quickly does so at the counter.

Celine approaches him at the counter, thankful that there are no other customers in the pharmacy, and raises the issue of such frequent use of nitrolingual spray. Charlie replies that *'its been a busy few weeks so they are both just about empty, but don't be worrying – I'd know if I needed to get anything checked out'*. He continues by saying that he is restocking the medicines cabinets at both his home and the holiday cottage – and will also need 2 packets of 24 soluble Solpadeine¹⁴⁵. He hands Celine the prescription and she notes that it is written for both the 2 packets of Solpadeine and the 2 Nitrolingual sprays. The format of prescription is as per regulatory requirements and both items are in stock in the pharmacy.

1. Rate the importance of each action, in coming to your decision, by circling your rating of 'action' options.

HD = Highly Defensible; D = Defensible; Q = Questionable; ND = Not Defensible

- a. **HD D Q ND** : A correctly written prescription has been presented. Dispense without further discussion.
- b. **HD D Q ND** : Refuse to supply or to discuss the matter with Charlie as to do so would put a pharmacist at risk of being charged with professional misconduct.
- c. **HD D Q ND** : Attempt to further educate Charlie regarding the evidence base related to the use of Nitrolingual spray for angina, and the use of Codeine containing products, and give him contact details for the Irish Heart Foundation.
- d. **HD D Q ND** : Supply one each of Nitrolingual spray and Solpadeine Soluble tablets.
- e. **HD D Q ND** : Actively encourage Charlie to return to his GP or specialist, and offer to phone him/her, the next morning, on behalf of Charlie.
- f. **HD D Q ND** : Tell Charlie his right to do whatever he chooses is respected but that continued use of the Nitrolingual spray, and providing Solpadeine rather than paracetamol, will be more likely to do harm than good so it would be against the professional Code of Conduct to supply them to him.
- g. **HD D Q ND** : Report Charlie to the Statutory body governing the profession.

¹⁴⁴ Nitrolingual spray contains Glyceryl trinitrate 0.4mg per metered dose, generally prescribed in cases of angina. It is sprayed under the tongue.

¹⁴⁵ Solpadeine soluble contains Paracetamol 500mg, Codeine phosphate 8mg and Caffeine 30mg per tablet. If supplied, it must be sold by the pharmacist, having satisfied him/herself that it is in the patient's best interests to do so.

- h. **HD D Q ND** : Having confirmed that there is a very small amount of spray in one canister, tell Charlie that his self-prescribing of treatment for angina is of concern and that he needs to visit his medical advisor before any further supplies would be dispensed. Offer to supply paracetamol.
- i. **HD D Q ND** : Having confirmed that there is a very small amount of spray in one canister, tell Charlie that neither product is in stock.
- j. **HD D Q ND** : Phone Charlie's GP or medical adviser to advise him/her of their colleague's behaviour.
- k. **HD D Q ND** : Contact the pharmacist that dispensed the Nitrolingual spray on the previous occasion for further information, noting that she is the member of staff with most interest and expertise in matters related to heart disease.
- l. **HD D Q ND** : Highlight to Charlie that his excess use of Nitrolingual spray may indicate worsening of his underlying condition, that self-prescribing by doctors is not generally in their best interests and therefore not advised, and that to not insist on getting a prescription from his GP or cardiologist before supplying could put him at significant risk. You also offer to supply paracetamol.

2. Choose what you consider to be the 3 best and 3 worst action options.

Pick the two best action options:

- Best Option _____
- Second Best _____
- Third best _____

Pick the three worst action options:

- Worst Option _____
- Next Worst _____
- Third worst _____

3. Add any further action option you think should have been included:

4. Rate the importance of each Justification, in coming to your decision, by circling your rating of 'justification' options.

G = Great M = Much S = Some L = Little N = No

- a. **G M S L N** The pharmacist's colleagues will not approve of her refusal to dispense a prescription written by a consultant.
- b. **G M S L N** The practice of pharmacists subordinating their decision-making to demands of other healthcare professionals in matters related to the supply of medicines should be resisted.

- c. **G M S L N** The pharmacist is responsible for judging the scientific merit of a medicine so must refuse to supply where questions arise. (
- d. **G M S L N** The supply of medicines as per written on the prescription in these circumstances could lead to a pharmacist being charged with professional misconduct, called before the Statutory Body's 'Fitness-to-practice' committee, and potentially struck off the professional register.
- e. **G M S L N** The pharmacist shouldn't let the patient control decisions to supply medicines under the pharmacist's control.
- f. **G M S L N** It is the pharmacist's professional duty to alert the Statutory Body to the doctor's behavior.
- g. **G M S L N** The patient's right to decide what will happen to his/her body needs to be respected when pharmacists assert professional judgment.
- h. **G M S L N** The pharmacist needs to be open-minded about Codeine containing products as they form a large section of non-prescription sales in the pharmacy.
- i. **G M S L N** The patient doesn't appear to understand the gravity of the healthcare situation he faces or the implications of failing to access specialist advice.
- j. **G M S L N** If the patient is adamant about a decision, and has been properly educated and warned of the consequences, then the pharmacist shouldn't interfere.
- k. **G M S L N** In the long run, it's better to give up a little professional rigor than to have the doctor complain about what he considers to be unreasonable behavior.
- l. **G M S L N** The pharmacist's duty of care to his/her patient allows him/her to breach confidentiality.

5. *From the list above, pick the three best options: Next, pick the three worst options:*

- Most Important Option _____ Worst Option _____
- Second Most Important _____ Next Worst _____
- Third Most Important _____ Third worst _____

6. Add any further justification option you think should have been included: _____

For Information:

Components of an ICM measure (Thoma)

7. A short description of a case
 - a. Must be realistic
 - b. Must clearly represent an intermediate concept
 - i. Informed consent, etc.
8. A series of Action options
 - a. Each Item must be plausible
 - b. Must represent a range of actions both acceptable and unacceptable
9. A series of Justification options
 - a. Plausible
 - b. Comprehensive

Appendix 13: Critical appraisal of the DIT and its overall impact on moral theory: The Journal of Moral Education 'Special Issue' 2002.

The Journal of Moral Education 'Special Issue' 2002.		
Part 1: authors 'within' the Neo-Kohlbergian tradition		
Author	Title	Topic/content.
Thoma, Steve (2002)	An Overview of the Minnesota Approach to Research in Moral Development.	A historical overview of the Minnesota approach and Neo-Kohlbergian theory as articulated at the time
King & Mayhew (2002)	Moral Judgement Development in Higher Education: Insights from the Defining Issues Test.	Reviewed 172 studies that used the DIT to investigate the moral development of undergraduate students across a range of contexts and disciplines (e.g. business, teaching, sports, nursing).
Bebeau, (2002)	The Defining Issues Test and the Four Component Model: Contributions to professional education	Reviewed studies completed with students undertaking medicine, veterinary medicine, law, dentistry and nursing.
Narvaez & Bock, (2002)	Moral Schemas and Tacit Judgement or How the Defining Issues Test is Supported by Cognitive Science.	Explored how the DIT is supported by cognitive science.
Part 2: Authors from 'outside' the Neo-Kohlbergian tradition		
Nucci, (2002)	Goethe's Faust Revisited: lessons from DIT research.	Nucci was an early proponent of the theory of social cognitive development, who, despite his call for ' <i>a constant reciprocal interaction between the generation of standardised measures and basic developmental research</i> ' (2002:315), acknowledged that psychometric forms of assessment are essential to the adoption of developmental approaches to moral education and that the DIT had been ' <i>an invaluable tool for research and practice</i> '.
Puka, (2002)	The DIT and the 'Dark Side' of Development.	Puka was interested in both cognitive science and the teaching of ethics within a professional school setting. He proposed that the DIT has potential as a tool to reveal the ' <i>dark side of morality</i> ' (2002:339) e.g. close-mindedness, prejudice and stereotyping, the benefit of which is that it may help expose a range of tacit moral ideologies that hamper student moral thinking.
Rogers, (2002)	Rethinking Moral Growth in College and Beyond.	Rogers was a chief participant in the long-term longitudinal study of college student development, who supported the claim that the DIT is a measure of moral reasoning but questioned whether it was a measure of the ' <i>broader construct of moral development</i> ' (2002:325). He called for ' <i>more post college longitudinal research</i> ' (2002:324).
Walker, (2002)	The Model and the Measure: as appraisal of the Minnesota approach to moral development.	Walker was considered to be a leading contributor to the psychological literature on moral development. He concluded that ' <i>residual concerns about the Minnesota approach included its self-professed cognitive bias, its limited applicability to micro-morality and its lack of attention to moral judgement development in childhood</i> ' (2002:365).

Appendix 14: Pharmacy specific moral reasoning research that references the DIT.

Publications authored/co-authored by David A Latif where the title includes: 'moral reasoning', 'ethical reasoning', 'moral development' and/or the word(s) 'ethical' or 'morality'.			Referenced in:	
Year	Article of which D.A. Latif was an author.	Journal	Cooper et al (2007b ^c).	Wingfield et al (2004 ^d)
2009	The influence of pharmacy education on students' moral development at a school of pharmacy in the USA (Latif, 2009).	International Journal of Pharmacy Practice.	No ^e	No ^e
2004	An assessment of the ethical reasoning of United States pharmacy students': A National study (Latif, 2004).	American Journal of Pharmaceutical Education.	Yes	No ^e
2003	American pharmacy students' moral reasoning skills: Implications for the profession (Latif, 2003a).	Journal of Social and Administrative Pharmacy.	No	No ^e
2003	Moral reasoning and its implications for pharmacy education (Latif, 2003b).	Pharmacy Education.	No	No ^e
2002	An assessment of the level of moral development of American and Canadian pharmacy students' (Latif, 2002a).	International journal of pharmacy practice.	Yes	No
2002	Assessing the moral reasoning of American Pharmacy Students (Latif, 2002b).	Pharmacy Education.	No	No
2002	The Four Component Model of morality : Implications for pharmacy education (Latif, 2002c).	Journal of Pharmacy Teaching	No	No
2001	The Relationship Between Pharmacists' Tenure in the Community Setting and Moral Reasoning (Latif, 2001a).	Journal of Business Ethics.	Yes	2001
2001	Moral Reasoning : Should it serve as a criterion for student and resident selection in pharmacy? (Latif, 2001b).	American Journal of Pharmaceutical Education.	No	No
2001	The relationship between ethical reasoning and perception of difficulty with ethical dilemmas in pharmacy students: Implications for teaching professional ethics (Latif, 2001c).	Teaching Business ethics.	No	No
2000	" Ethical cognition and selection-socialization in retail pharmacy" (Latif, 2000a).	Journal of Business Ethics.	Yes	Yes
2000	Cognitive Moral Development and Pharmacy Education (Latif, 2000b).	American Journal of Pharmaceutical Education.	No	No
2000	The Link Between Moral Reasoning Scores, Social Desirability, and Patient Care Performance Scores: Empirical Evidence from the Retail Pharmacy Setting (Latif, 2000c).	Journal of Business Ethics.	Yes	Yes
2000	A comparison of chain and independent pharmacists' moral reasoning (Latif, 2000d).	Journal of Social and Administrative Pharmacy.	Yes	Yes
2000	The relationship between ethical dilemma discussion and moral development (Latif, 2000e).	American Journal of Pharmaceutical Education.	No	No
2000	The relationship between pharmacy students' locus of control, Machiavellianism, and moral reasoning (Latif, 2000f).	American Journal of Pharmaceutical Education.	No	No

1999 ^a	Cognitive Moral Development and Clinical Performance: Implications for Pharmacy Education (Latif & Berger, 1999).	American Journal of Pharmaceutical Education.	No	No
1999	Using ethical dilemma case studies to develop pharmacy students' moral reasoning (Latif, 1999).	Journal of Pharmacy Teaching.	No	No
1998	Ethical Cognition, Organisational Reward Systems and Patient Focussed Care (Latif, 1998a).	Journal of Social and Administrative Pharmacy.	Yes	Yes
1998 ^b	The Relationship between Community Pharmacists' Moral Reasoning and Components of Clinical Performance (Latif et al, 1998).	Journal of Social and Administrative Pharmacy.	Yes	Yes
1998	Moral Reasoning as a determinant of community pharmacists' actual non-prescription warning advice and self-report social desirability scores (Latif 1998b).	Journal of Pharmaceutical Care. [Online serial]	No	No
1997 ^a	Moral Reasoning in Pharmacy Students and Community Practitioners (Latif & Berger, 1997).	Journal of Social and Administrative Pharmacy.	Yes	Yes

^aCo author: Berger, B.A.

^bCo authors: Berger, B.A., Harris, S.H., Barker, K.N., Felkey, B.G. & Pearson, R.E.

^cCooper et al, 2007b, is a review of publications to July 2005.

^dTwo additional articles authored by Latif were referenced in this publication but did not meet the selection criteria (Latif, 2000g; 1998c).

^ePublished after data collection for this article had been completed.

Appendix 15: Educational Intervention: Welcome and programme objectives outlined to participants.

Dear Colleagues

Welcome to this module of CPD entitled 'Professional decision-making: Reasoning through ethical dilemmas'. Many thanks for agreeing to take part in this initiative.

This module will be delivered largely in the 'on-line' environment, known as MOODLE. All the instructions should be apparent from notices and correspondence on MOODLE but you are also provided with a manual outlining the basics of how to access course material on MOODLE. The tutor, Cicely Roche MPSI, will be available on MOODLE or, should a more urgent need arise, by phone.

Please remember that groupwork related to the review of 5 dilemma scenarios, presented as you work through the 16 week course, has been arranged such that all pharmacists participate in an anonymous fashion. As this is a pilot project, ethical approval has been obtained... and it has been granted in a manner that both permits and insists on the identity of group participants being kept confidential from both other members of the group and from the online moderator, Cicely Roche MPSI.

For this reason you have been assigned a 'pseudonym' hotmail email address, which in all cases is a plant name, and this will appear as your 'online' identification. Please sign your pseudonym plant name to all correspondence in the MOODLE online environment. Please do not ever disclose your 'real' identity in the online environment as this would necessitate your removal from the pilot.... as clarified and discussed at the orientation day at the School of Pharmacy in Trinity.

Aim of the programme:

This programme aims to facilitate and support the development of Moral Reasoning Competencies in Irish Community Pharmacists.

Learning objectives:

On successful completion of the 16 week module participants should be competent to:

1. Explain what is meant by the term(s) ethical dilemma and moral reasoning competencies.
2. Relate the application of professional judgement to both legislative demands and the professional Duty of Care
3. Appraise at least two frameworks available for use when reasoning through dilemmas
4. Assess ethical dilemma scenarios and identify professional concepts therein.
5. Distinguish professional, commercial and personal influencers on the formation of professional judgement.
6. Justify preferred action options when faced with dilemma scenarios.
7. Negotiate group consensus about preferred action options when faced with dilemma scenarios.










If you have a question you wish to discuss with Cicely please feel free to contact her by phone.

I hope you enjoy the programme.









Cicely Roche B.Sc.(Pharm)., M.Sc., MPSI

Appendix 16: Moodle homepage for the educational intervention.

1 Getting Started: Pharmacist CPD Programme □

-  Pharmacist CPD in Professional Decision-Making: Aims and objectives of the programme
-  Schedule, Moodle instructions & information leaflet
-  Pharmacist CPD programme - participant information 22/4/2011
-  Pharmacist CPD Programme - Participant information 27/4/2011 (programme start)
-  Pharmacist CPD Pilot 1 : Participant information August 10th/17th (Programme end)
-  Pharmacist CPD pilot 2. Participant information August 24th 2011 (programme start)
-  Pharmacist CPD - participant information 13/12/2011 - programme end
-  ? SS - 4 zones of decision-making and related intentions (ICM 4 CPD 2)
-  ? ICMs 1 to 4 - final day CPD Pilot 2

2 General references and support material for participants □

-  General References and support material
-  Forum for general queries of Cicely, chat room summaries, discussions of a general nature etc
-  IPJ Ethics Articles Cicely Roche MPSI
-  Hotmail accounts link
-  Plant Photos (RHS website link)
-  Plant images (cartoon or sketch)
-  Medscape : Physician's top 20 ethical dilemmas
-  Univadis - medical information search engine

Sample of quiz (formative assessment, assessment for learning):

TCD Moodle > Ph CPD_2_August > Quizzes > Principlism : short quiz to check if have you remembered what's involved? Update t

Info
Results
Preview
Edit

Principlism : short quiz to check if have you remembered what's involved?

Hi there

This 10 question quiz will highlight key issues related to the use of principlism as a 'reasoning' framework on which to base decision-making through dilemmas.

Try it out - if any of the answers do not make sense be sure to raise a question on the forum or during one of the chatrooms.

Note that I've put a time delay of 1 hours between the first and second attempt, and 8 hours between the second and third attempts - just to give you time to access the podcast between attempts ... if you so choose.

Regards and thanks

Cicely

Attempts allowed: 3

Grading method: Highest grade

Quiz opens: Wednesday, 5 October 2011, 01:05 PM

Attempts: 18

Appendix 17: Participant (online) questionnaire completed when face-to-face with the researcher on day 1 of the educational intervention.

These questions were designed to indicate one professional, commercial and personal influencer of potential influence on moral reasoning, bearing in mind that questions could not ask for information that would obviously identify the individual participant to the researcher.

View | All responses (16) | Advanced settings | Questions | Preview

Pharmacist CPD programme : participant information

Please answer the following questions and submit your answers when completed. (The submit button is at the bottom of the screen.)

*1 Which of the following applies to your professional responsibilities when working in the pharmacy (tick the first box that applies)

Choose

*2 Which of the following applies to your responsibilities in the pharmacy? (tick the first box that applies)...

Choose

*3 Was your primary school education (prior to 12 years of age) mainly in the following environment...

Choose

*4 On a scale of 1 to 5, where 1 is not at all important and 5 is very important please consider the following

	1	2	3	4	5
What level of importance do you attach to the provision of pseudonyms (so that you are anonymous to other participants and to the course facilitator)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What level of importance do you attach to the provision of training on/in the 'virtual learning environment' or on-line environment before taking part in this 16 week programme?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What level of importance do you attach to the opportunity to interact with other pharmacists, face-to-face, at the beginning and end of this 16 programme?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What level of importance do you attach to the development of your own 'moral reasoning' competencies?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Categories in the 'drop down' screen options for question 1 =

- A superintendent pharmacist (SIP)?
- A supervising pharmacist (SVP)?
- A staff pharmacist?
- A locum?

Categories in the 'drop down' screen options for question 2 =

- A PCRS/GMS contract holder for the retail pharmacy business?
- An owner or majority shareholder in the retail pharmacy business?
- A pharmacy manager?
- A staff member?
- A locum?

Categories in the 'drop down' screen options for question 3 =


- Small rural school (4 or less teacher school, county or town less than 3,000)?
- Large rural school (more than 4 teacher school, country or town less than 3,000)?
- Town (population greater than 3,000) mixed male and female?
- Town (population greater than 3,000) single sex school?
- City (designated as such) mixed male and female?
- City (designated as such) single sex school?

Two additional questions, intended to clarify that additional ethics instruction had not inadvertently confounded results, were posed online to group 2 on day one of the educational intervention.

- 5 Other than completing the DIT2 questionnaire for the pilot project run by Cicely Roche, have you taken part in any formal/structured ethics educational initiatives during the last 4 months? Y/N (If yes please indicate number of hours dedicated to the programme.)
- 6 Have you been in contact with/communicated with participants in pilot group 1 about the content/nature of the course during the last 4 months? if so, please specify details?

Trinity College Dublin, College Green, Dublin 2 | Powered by Enovation Solutions

You are logged in as Cicely Roche (Logout)

 Moodle Docs for this page

Equivalent questions were sent in paper format to group 1 when posting them the final DIT2 for completion in December 2011.

Appendix 18: Potential confounds in this study.

It is recognised that human nature introduces many variables (e.g. Kirk, 2013; Bryman, 2012; Cohen et al, 2007; Gall et al, 2007; Field & Hope, 2003) to this study and any attempt to study moral reasoning competency evolution in such a short time-span is inevitably fraught with limitations.

- Potential confounds include, but are not limited to, the age range of participants, participants' educational level and issues related to interpretation of the questions by those for whom English is not a first language. In addition the challenges relating to the use of the online environment, regardless of supports available, may have had variable impact.
- Completion of the DIT2 also took place in varied environments (Field & Hope, 2003). Where the DIT2 completed when onsite in TCD would have been supported by a structured approach to the process e.g. defined time, quiet room relatively free of distractions and preceded by the introductory presentation from the researcher, completion of the DIT2 in the context of being a member of a 'control' group would have been at their own home or place of work and whether or not a structured approach was taken would have been entirely the participant's choice.
- While the two groups (that undertook the educational intervention from April to August and August to December 2011 respectively) completed the DIT2 a third time in order to act as controls for each other, the context in which the two groups completed the DIT2 offsite were different. The completion of the DIT2 in April 2011, by the group that undertook the educational intervention from August to December 2011, preceded any face-to-face opportunity for the researcher to explain the process. The group that undertook the educational intervention April to August 2011 completed the DIT2 offsite after they had completed it twice during the face-to-face onsite days at the beginning and end of the educational intervention.
- It is also considered possible that over-riding personal, professional and commercial influencers (Table 2.9) may all have an effect over and above what can be determined by the use of control groups, though this will be particularly difficult to interpret from the small sample size or such a short intervention study.
- As the pharmacists volunteered to take part in the intervention, none of the usual academic penalties for non-completion of elements of the programme could be applied, and therefore when their motivation waned the facilitator had to rely only on the pillars of encouragement and support, such approaches being complicated by the process engaged to facilitate the use of pseudonyms.

Finally it is acknowledged that the dual role of the author in being both researcher and intervention facilitator may have had the potential to influence outcomes.

Appendix 19: Schedule for the 16 week educational intervention as outlined to group 2.

	Direct FtF	ICMs	Podcast	Reflective journal or forum	Discussion fora/hot hours etc
24/08/2011	DIT2 ICM 1		outline content(s)	introduce idea	
24/8 to 30/8		ICM 1 discussion fora			
24/8 onwards			Principlism podcast		
02/09/2011		ICM1 FB posted			post comments general ICM1 disc forum
7th Sept Hothour					hot hour 9pm to 10pmpm (also for general Qs)
8/9 onwards			resources ICM 2 visible		
8/9 to 13/9		ICM 2: stage 1			
13/9 to 16/9		ICM 2: stage 2			
17/9 to 24/9		ICM 2: stage 3		reminder email	
21st Sept					hot hour 9pm to 10pm
23rd Sept					hot hour 9pm to 10pm
26th Sept		ICM 2 feedback posted			
26/9 to 29/9		ICM 2 FB discussion			
29 Sept					hot hour 9pm to 10pm (also for general Qs)
29/9 onwards			Code of Conduct resources ICM 3 visible		
29/5 onwards					
6/10 to 11/10		ICM 3: stage 1			
11/10 to 14/10		ICM 3: stage 2			
15/10 to 22/10		ICM 3: stage 3		reminder email	
19th Oct					hot hour 9pm to 10pm
21st Oct					hot hour 9pm to 10pm
26/10 to 2/11					invite to review other groups' disc fora
26/10 to 2/11					post comments to general ICM3 forum
02/11/2011		ICM 3 feedback posted			
3/11 to 8/11		ICM 3 FB discussion			
6th November			resources ICM 4 visible		hot hour 9pm to 10pm (also for general Qs)
6th November onwards			value based ethics etc		
6th November onwards			exempt, ES etc		
6/11 to 14/11		ICM 4: stage 1			
14/11 to 17/11		ICM 4: stage 2			
17/11 to 25/7		ICM 4: stage 3		reminder email	
20-Nov					hot hour 9pm to 10pm
23-Nov					hot hour 9pm to 10pm
24th Nov onwards			Resources ICM5 visible		
anytime			'Millionaire dollar baby'!		
13th December	DIT2 ICM 5	ICM 5: stage 1, 2 & 3 realtime			feedback

Appendix 20: The five ICM scenarios used in the study.

The five ICM scenarios used in the study.

1. Scenario ICM 1: Conventional or complementary therapies?
2. Scenario ICM 2: Caring through Carers?
3. Scenario ICM 3: Duty of Care amidst interprofessional relationships?
4. Scenario ICM 4: Duty of Care in times of economic uncertainty?
5. Scenario ICM 5: Criminal offence or pain relief in palliative care?

Scenario ICM 1: Conventional or complementary therapies?

Alison Aylward works in a community pharmacy that is providing a health promotion day on healthy living. Her contribution involves advising patients on the lifestyle issues that can reduce the risk of developing cardiovascular disease – including reference to healthy diet, regular exercise and the avoidance of smoking. As she finishes the consultation with a middle-aged lady, the patient asks her about a particular complementary product, recently launched to the market, about which Alison has heard mixed reports regarding efficacy. Alison recognises the patient as Ann, a local school teacher, and remembers that Ann has recently completed therapy for breast cancer. Ann tells the Alison that, while on holidays in the country recently, a staff member in the local pharmacy advised her to use this product.

On further questioning Alison realises that Ann is considering discontinuation of Tamoxifen¹⁴⁶, her current prescribed therapy, despite advice from her doctor that all treatment options had been utilised to establish her remission. She does not want to suffer the side effects anymore and is convinced, following her own extensive research, that this 'natural' product is the way forward for her. Ann makes it clear that she does not intend revisiting her doctor or informing the doctor about her decision to discontinue Tamoxifen. It is her intention to begin taking the complementary product.

¹⁴⁶ Tamoxifen is the active ingredient of a regularly prescribed medicine recommended for women who have been treated for breast cancer. They are typically required to continue taking this medication for several years.

Scenario ICM 2: Caring through Carers?

Barry Baker is the owner of the pharmacy in which he works as the fulltime pharmacist. A local middle-aged man, whom he knows as Bill, is collecting his mother's 'sleeping tablets'. Barry also knows his mother, Brenda, for many years. She was a regular visitor to the pharmacy and an active participant in the local bridge club and her bridge partner very recently mentioned to Barry that Brenda hoped to be back to bridge as soon as she was sufficiently mobile. Bill's three children are her only, and beloved, grandchildren.

Following a recent fall, in which she broke her hip, Brenda became house-bound and subsequently moved to live with Bill and his family. Post-operative infections had resulted in significant pain and she was having some difficulty sleeping. As a result it was not surprising that she was being prescribed strong 'sleeping tablets' to take before bedtime.

Bill asks Barry for directions as to how to crush tablets and in what foods they can be mixed. Aware that there may be situations where a patient with swallowing difficulties might, on the advice of a speech and language therapist, require medicines to be prepared in liquids of a specific consistency, Barry reviews the patient's medication profile to confirm that the range of other medications currently being taken by his mother indicates that there are no swallowing difficulties.

Barry inquires of Bill as to how Brenda is recovering from her surgery and whether the infection has cleared completely. Bill becomes somewhat agitated as he replies that she is fine but that it's not easy having his family and mother all living in the one four bed-roomed house, especially when his mother is up at night disturbing the younger ones. He abruptly takes the bag containing the sleeping tablets from Barry's hand, comments that the last thing he wants '*is to have any more busy-bodies nosing around*' and makes to leave the pharmacy without giving Barry opportunity to comment further.

Scenario ICM 3: Duty of Care amidst interprofessional relationships?

Celine Condon is a staff pharmacist at a pharmacy in a large rural town. She recognises Charlie, the orthopaedic surgeon from the nearby hospital, as he arrives on a Sunday morning. He requests Nitrolingual¹⁴⁷ spray. On review of his medication record she sees that he had two sprays dispensed three weeks previously ... As Charlie observes the pharmacist reviewing his prescription history file, he cheerfully comments that he'll write another prescription to cover the paperwork requirements and quickly does so at the counter.

Celine approaches him at the counter, thankful that there are no other customers in the pharmacy, and raises the issue of such frequent use of nitrolingual spray. Charlie replies that *'its been a busy few weeks so they are both just about empty, but don't be worrying – I'd know if I needed to get anything checked out'*. He continues by saying that he is restocking the medicines cabinets at both his home and the holiday cottage – and will also need 2 packets of 24 soluble Solpadeine¹⁴⁸. He hands Celine the prescription and she notes that it is written for both the 2 packets of Solpadeine and the 2 Nitrolingual sprays. The format of prescription is as per regulatory requirements and both items are in stock in the pharmacy.

¹⁴⁷ Nitrolingual spray contains Glyceryl trinitrate 0.4mg per metered dose, generally prescribed in cases of angina. It is sprayed under the tongue.

¹⁴⁸ Solpadeine soluble contains Paracetamol 500mg, Codeine phosphate 8mg and Caffeine 30mg per tablet. If supplied, it must be sold by the pharmacist, having satisfied him/herself that it is in the patient's best interests to do so.

Scenario ICM 4: Duty of Care in times of economic uncertainty?

David Dunbar is the locum at the pharmacy early on a Monday afternoon. It's been a busy morning, but he doesn't object to that, and he makes sure to focus on providing a professional service to all patients. As of late it is proving to be increasingly difficult to get locum work in the area – but one small chain of pharmacies, owned by a local non-pharmacist business-man, has provided a steady stream of work within comfortable driving distance from David's home. His economic circumstances make it difficult to pay the mortgage and he really regrets not having secured a 'permanent' position before the economic downturn. However he enjoys his work as a community pharmacist, and is currently undertaking post-graduate studies in pharmacy.

A young woman arrives at the counter and introduces herself as Dianne Doe, a neighbour of the pharmacy owner. She requests a Salbutamol¹⁴⁹ inhaler saying she's wheezy. David reviews her file and observes that she does not have a current prescription for Salbutamol. The GP listed on her file operates a surgery on Monday afternoons and David offers to phone the surgery and arrange an appointment for her. She declines and appears to be irate as she leaves the pharmacy.

Sometime later the owner phones to say Dianne has been to see him, and instructs David to provide her with the inhaler. David starts to explain that there are a number of reasons why he cannot do that, but the owner ends the call before David has time to explain. 20 minutes later Denise, the full-time managing and superintendent¹⁵⁰ pharmacist, arrives to the pharmacy. She makes it clear that she is angry her day off has been interrupted. She dispenses the inhaler for Dianne and phones her to say she will deliver it on her way home.

¹⁴⁹ Salbutamol is under prescription control. It is used as a 'reliever' by those with asthma, and would generally be used no more than three times weekly unless additional 'preventer' medication was also used. Increased usage of salbutamol can be an indicator that the patient's asthma is out of control.

¹⁵⁰ A licence to operate a Retail Pharmacy Business is provided by the Statutory Body governing pharmacy on condition that responsibilities related to professional practice in the pharmacy are invested in a registered pharmacist, who undertakes to act as 'Superintendent Pharmacist'.

Scenario ICM 5: Criminal offence or pain relief in palliative care?

Elaine Eakin is the pharmacist on duty in a rural town at closing time on a Saturday evening when she answers the pharmacy phone to the local hospice nurse Ester. Ester refers to Edward Evans, a long standing customer at the pharmacy, who is suffering from cancer. Edward was brought home by ambulance, from a large hospital an hour's journey away, the day before. Elaine remembers him telling her that he would prefer to be at home when the '*cancer finally took him*' but was concerned that the local hospice team would not be able to control the pain. She had tried to reassure him that the team was well experienced in dealing with home-care.

Ester tells pharmacist Elaine that she believes that Edward is suffering from 'break-through' pain, and she has spoken by phone to his GP. The GP, currently on an overnight stay out of town, is well known to the pharmacy staff. Ester says that he has agreed to her suggestion that they add Sevredol¹⁵¹ 10mg tablets to Edward's regime immediately, to be given at 4 hourly intervals, to manage the breakthrough pain. This addition of Sevredol 10mg to the patient's therapy is consistent with local protocols for palliative care. She asks Elaine to supply 10 tablets to cover the doses until Monday morning, at which stage the GP will provide a prescription for these 10 tablets and for any further supplies as required. Sevredol 10mg tablets are in stock in the pharmacy.

Elaine knows that Ester does not have prescribing rights, but that she has worked as part of the hospice team, with this particular GP, for the last 5 years. Ester finishes by saying that Edward's son is on his way to the pharmacy and should be there within minutes. Elaine is acutely aware that it is considered a serious offence for a pharmacist to dispense such 'controlled drugs' unless in possession of an original handwritten prescription. After Ester hangs up, Elaine tries the GPs mobile number to hear the message '*the user must be out of coverage or have their unit powered off ... please try again later.*'

¹⁵¹ Sevredol 10 tablets contain morphine sulphate 10mg. They are controlled under the Misuse of Drugs Act, meaning that a pharmacist must have a handwritten prescription, signed by a medical doctor, before supplying such medication. It is a serious offence for a pharmacist to supply Sevredol without a prescription.

Appendix 21: ICM3 : example of expert group 'most' and 'least' preferred action options (collated).

ICM 3	Preference 1st = 3; 2nd = 2, 3rd = 1 & worst = -3, 2nd worst = -2 & 3rd worst = -1;											
most	a	b	c	d	e	f	g	h	i	j	k	l
Expert 1					1			2				3
Expert 2								2			1	3
Expert 3			1		3							2
Expert 4					1			3				2
Expert 5			2		1							3
Expert 6					1			3				2
Expert 7								2			1	3
Totals	0	0	3	0	7	0	0	12	0	0	2	18
least	a	b	c	d	e	f	g	h	i	j	k	l
Expert1	-3			-2						-1		
Expert 2		-3					-2		-1			
Expert 3		-2					-1		-3			
Expert 4	-3	-2					-1					
Expert 5							-3	-1		-2		
Expert 6	-3	-2							-1			
Expert 7	-3	-2					-1					
Totals	-12	-11	0	-2	0	0	-8	-1	-5	-3	0	0
Intended schema	PI	PI	MN	PI	PC	MN	MN	PC	PI	PC	MN	PC

Questions arising from review of scoring of expert choices:

1. Option f 'Tell Charlie his right to do whatever he chooses is respected but that continued use of the Nitrolingual spray, and providing Solpadeine rather than paracetamol, will be more likely to do harm than good so it would be against the professional Code of Conduct to supply them to him' was not chosen as one of the most or least three preferred by any of the 7 experts, and therefore could, according to Bebeau & Thoma (2003) be considered to be a 'distractor'. However it was intended to be representative of an option in the MN schema, so would not have been expected to attract 'most' or 'least' preferred choices and for this reason was retained as an option.
2. Option g, 'Report Charlie to the Statutory body governing the profession' was amongst the least preferred by 4 of the 7 'experts', but was intended to be representative of an option in the MN schema. It was retained, but with the intention to keep its inclusion under consideration.
3. Option j 'Phone Charlie's GP or medical adviser to advise him/her of their colleague's behaviour' was intended to be representative of an option in the PC schema yet was amongst the least preferred choices by 2 of the 7 experts. The word advise, which on reflection could have been interpreted as paternalistic or displaying some elements of judgment, was changed to 'discuss'.

Appendix 22: Profession-specific ICM development – review of contemporary sources of dilemmas examples.

Example: Roche, C. (2010a) Ethical and legal issues in healthcare: Residential Care: Pharmacist dilemmas and issues of ‘covert’ medication. *Irish Pharmacy Journal*. V.88, No’s 4-8: 203-204

Key theme(s)	Intermediate Concepts	Potential ‘action’ options	Justifications might include...
Covert medication	Respect for autonomy/dignity Trust and deceit. Integrity	Only in ethically justifiable situations	Duty of Care, CoC and legal requirement. ‘Wrong’ thing to do
Caring through carers	Duty of care to patient. Subordination & routinisation.	Contact with patient.	Duty of Care, CoC and legal requirement.
Competency – Unlicensed medicines usage and competency in formulation sciences.	Non-maleficence (Evidence based practice)	Professional focus over financial processes	Interprofessional harmony should be subordinate to Duty of Care and non-maleficence principles
Assessment of decision-making capacity	CPD e.g. competency with respect to Mental Health Act (MHA), and determination of capacity to consent.	Independent professional responsibility internalised	Incompetent patients benefit from MHA impositions but respect for autonomy required.
Non-recording of administration	Value of systematic approach	Insist all medicines recorded or ‘turn a blind eye’	Manage risk of covert medication.
Covert medication for convenience (implied?)	Commercial influences over professionalism	Medication only for patient prescribed	DoC, CoC and legal requirement
Responsibility to ‘do something’.	Whistleblowing	‘Do’ whistleblow (with facts confirmed) or ‘turn a blind eye’	Community service at risk if the pharmacist whistleblows; Fear for residents moved <i>en masse</i> . Loss of account to pharmacy (commercial). Duty of Care, CoC and legal requirement. Pharmacist in ‘leadership’ role for carer/other HCP

Appendix 23: ICM 3 – example of Expert Group ‘action option’ feedback October 2010.

	ICM3 development: recommendations from a member of the expert group following review of draft ICM3 October 2010	Action taken by researcher (if any)
1	<i>Option to supply with appropriate advice (dangerous to leave without GTN) and insist next supply only on foot of a prescription from his GP.</i>	No action taken – ‘Appropriate advice’ is similar to other options already available, and referring to ‘next visit’ may increase the likelihood that participant will not make a decision.
2	<i>It is interesting that only a couple of the options mention offering to supply paracetamol – does this need to be added into more options for completeness?</i>	Recommendation implemented. ‘Offer to supply paracetamol’ added to option ‘h’. ‘H’ intended to be PC yet one participant chose it as third least preferred. The addition is considered likely to increase the perceived relationship of the option to PC reasoning.
3	<i>Add option of suggesting he accesses colleague in the ‘nearby hospital’ (how near) today ... assuming large enough that reasonable complement of medical staff on Sun.</i>	No action taken – do not want to provide opportunity for participants to easily not make a decision
4	<i>Option (d) – perhaps extend to say supply as per usual dispensing practice?</i>	Recommendation implemented.
5	<i>Say that you are concerned that Charlie isn’t looking after himself and that doctors are often poor at self care and suggest that he gets himself checked out.</i>	Recommendation was not specific to an option. However wording of ‘j’ changed to refer to ‘discuss’ instead of ‘advise’. (‘Phone Charlie’s GP or medical advisor to advise him/her of the colleague’s behaviour’).
6	<i>In addition to (l) could tease out with him why and how often he takes Solpadeine to elucidate if there may be a codeine addiction problem.</i>	Recommendation not implemented. ‘l’ is already multi-component and intended to infer that pharmacist is addressing the issue she believes most important first. Does not preclude addressing potential addiction problem at a later date.

Appendix 24: ICM 3 as used in the study (VLE screenshot).

Note: VLE (Moodle) screenshots are as participants would have seen them.

The screenshot shows a Moodle course page for 'Pharmacy & Pharmaceutical Sciences'. The left sidebar contains navigation menus for 'People', 'Activities', 'Search Forums', and 'Administration'. The main content area is titled 'Topic outline' and lists various course components under the heading 'Series Three: Duty of care amidst interprofessional relationships?'. The components include ICM 3 references and support material, several parts of a scenario (Part 1, Part 2(a), Part 2(b), Part 3), chatrooms, and a quiz on 'Principlism'.

Scenario ICM3 : Duty of Care amidst interprofessional relationships?

ICM 3 References and support material

The screenshot shows a Moodle course page for 'ICM 3 References and support material'. The page header includes the CAPSL Centre for Learning Technology logo and navigation breadcrumbs. Below the header is a table listing files available for use with ICM 3.

Name	Size	Modified
Duty_of_care_in_matters_of_confidentiality_and_privacy.pdf	2MB	7 February 2012 02:07 PM
Final_Codeine_Guidelines_sfl0.pdf	637.9KB	7 February 2012 02:07 PM
Is_pharmacy_a_profession_.pdf	51.9KB	7 February 2012 02:07 PM
Professional_judgement_1_.pdf	69.3KB	7 February 2012 02:07 PM

At the bottom of the page, it indicates the user is logged in as Cicealy Roche and provides a link to Moodle Docs for this page.

Part 1: Consider the scenario 'Duty of care amidst interprofessional relationships? (ICM3) and answer the 5 questions that follow.

ICM 3:

Duty of Care amidst interprofessional relationships?

Celine Condon is a staff pharmacist at a pharmacy in a large rural town. She recognises Charlie, the orthopaedic surgeon from the nearby hospital, as he arrives on a Sunday morning. He requests Nitrolingual^[1] spray. On review of his medication record she sees that he had two sprays dispensed three weeks previously. As Charlie observes the pharmacist reviewing his prescription history file, he cheerfully comments that he'll write another prescription to cover the paperwork requirements and quickly does so at the counter.

Celine approaches him at the counter, thankful that there are no other customers in the pharmacy, and raises the issue of such frequent use of nitrolingual spray. Charlie replies that *'its been a busy few weeks so they are both just about empty, but dont be worrying – I'd know if I needed to get anything checked out'*. He continues by saying that he is restocking the medicines cabinets at both his home and the holiday cottage – and will also need 2 packets of 24 soluble Solpadeine^[2]. He hands Celine the prescription and she notes that it is written for both the 2 packets of Solpadeine and the 2 Nitrolingual sprays. The format of prescription is as per regulatory requirements and both items are in stock in the pharmacy.

[1] Nitrolingual spray contains Glyceryl trinitrate 0.4mg per metered dose, generally prescribed in cases of angina. It is sprayed under the tongue.

[2] Solpadeine soluble contains Paracetamol 500mg, Codeine phosphate 8mg and Caffeine 30mg per tablet. If supplied, it must be sold by the pharmacist, having satisfied him/herself that it is in the patient's best interests to do so.

Consider what pharmacist Celine should do next.

Answer the five questions that follows (maximum 100 words anticipated for each.)

- a. What do you think is/are the main ethical concepts in this scenario?
- b. What should pharmacist Celine do in this situation?
- c. Justify your decision (as to what pharmacist Celine should do.)
- d. What other action options might be taken in the community pharmacy environment?
- e. How might other pharmacists justify these other action options?

• 1 Answer the five questions that follows (maximum 100 words anticipated for each.)

1. What do you think is/are the main ethical concepts in this scenario?

• 2 Answer the question(s) that follow (maximum 100 words anticipated for each.)

2. What should pharmacist Celine do in this situation?

• 3 Answer the question(s) that follow (maximum 100 words anticipated for each.)

c) Justify your decision (as to what pharmacist Celine should do.)

The final two questions were posed, in the same format, to participants as follows:

Q4. What other action options might be taken in the community pharmacy environment? (Maximum 100 words anticipated for each).

Q5. How might other pharmacists justify these otehr action options? (Maximum 100 words anticipated for each).

Once answers to these 5 questions had been entered in the textboxes, the VLE would prompt the participant to 'submit questionnaire'.

Part 2(a) ICM3: released online only after the date by which part 1 of ICM3 had to be completed:



Part 2(a) 'Duty of care amidst Interpersonal relationships?' (ICM3) Individual action choices

Please complete part 1 of ICM3: 'Duty of Care amidst interpersonal relationships?' (i.e. answer the five questions) before viewing these proposed action options. Thank you.

Rate the importance of each action option (12 in total), in coming to your decision, by choosing your rating of each 'action' options from the following:

HD = Highly Defensible;

D = Defensible;

Q = Questionable;

ND = Not Defensible.

When you have rated all 12 action options, choose (rank) your 2 most preferred action options and your 2 least preferred action options as requested.

Thank You.

Cicely Roche MPSI

Part 2(a) ICM3: sample of view on Moodle demonstrating where the participant was required to choose one preference for each option, showing also how the ranking options was achieved. (The full list of action options follows, the presentation format being that of a paper-based approach.)

11.) Highly Defensible, Defensible, Questionable, Not Defensible.

(k) Contact the pharmacist that dispensed the Nitrolingual spray on the previous occasion for further information, noting that she is the member of staff with most interest and expertise in matters related to heart disease.*

12.) Highly Defensible, Defensible, Questionable, Not Defensible.

(l) Highlight to Charlie that his excess use of Nitrolingual spray may indicate worsening of his underlying condition, that self-prescribing by doctors is not generally in their best interests and therefore not advised, and that to not insist on getting a prescription from his GP or cardiologist before supplying could put him at significant risk. Also offer to supply paracetamol.*

13.) a, b, c, d, e, f, g, h, i, j, k, l.

Choose what you consider to be the MOST preferred action option from the list (a) to (l) above.*

14.) a, b, c, d, e, f, g, h, i, j, k, l.

Choose what you consider to be the SECOND MOST preferred action option from the list of (a) to (l) above.*

15.) a, b, c, d, e, f, g, h, i, j, k, l.

Choose what you consider to be the SECOND LEAST preferred action option from the list of (a) to (l) above.*

16.) a, b, c, d, e, f, g, h, i, j, k, l.

Choose what you consider to be the LEAST preferred action option from the list of (a) to (l) above.*

Part 2(a) ICM3: The full list of action options follows, the presentation format being that of a paper-based approach.

Rate the importance of each action, in coming to your decision, by circling your rating of 'action' options.

HD = Highly Defensible; D = Defensible; Q = Questionable; ND = Not Defensible

- a. **HD D Q ND** : A correctly written prescription has been presented. Dispense without further discussion.
- b. **HD D Q ND** : Refuse to supply or to discuss the matter with Charlie as to do so would put a pharmacist at risk of being charged with professional misconduct.
- c. **HD D Q ND** : Attempt to further educate Charlie regarding the evidence base related to the use of Nitrolingual spray for angina, and the use of Codeine containing products, and give him contact details for the National 'Heart Foundation'.
- d. **HD D Q ND** : Supply , as per normal dispensing practice, one each of Nitrolingual spray and Solpadeine Soluble tablets.
- e. **HD D Q ND** : Actively encourage Charlie to return to his GP or specialist, and offer to phone him/her, the next morning, on behalf of Charlie.
- f. **HD D Q ND** : Tell Charlie his right to do whatever he chooses is respected but that continued use of the Nitrolingual spray, and providing Solpadeine rather than paracetamol, will be more likely to do harm than good so it would be against the professional Code of Conduct to supply them to him.
- g. **HD D Q ND** : Report Charlie to the Statutory body governing the profession.
- h. **HD D Q ND** : Having confirmed that there is a very small amount of spray in one canister, tell Charlie that his self-prescribing of treatment for angina is of concern and that he needs to visit his medical advisor before any further supplies would be dispensed. Offer to supply paracetamol.
- i. **HD D Q ND** : Having confirmed that there is a very small amount of spray in one canister, tell Charlie that neither product is in stock.
- j. **HD D Q ND** : Phone Charlie's GP or medical adviser to discuss his/her colleague's behaviour.
- k. **HD D Q ND** : Contact the pharmacist that dispensed the Nitrolingual spray on the previous occasion for further information, noting that she is the member of staff with most interest and expertise in matters related to heart disease.
- l. **HD D Q ND** : Highlight to Charlie that his excess use of Nitrolingual spray may indicate worsening of his underlying condition, that self-prescribing by doctors is not generally in their best interests and therefore not advised, and that to not insist on getting a prescription from his GP or cardiologist before supplying could put him at significant risk. Also offer to supply paracetamol.

From the above list pick:

The 2 most preferred action options:

- Best Option _____
- Second Best _____

The 2 least preferred action options:

- Worst Option _____
- Second Worst _____

Once the participant successfully completed and submitted questionnaire 2(a) for ICM3 the following message appeared:

Page after submit

Thank you. You have now completed your action choices for this series (ICM 3).
Please now rate and rank the Justification options for ICM 3. (Part 2(b): Duty of Care amidst interpersonal relationships?)
Cicely Roche MPSI

Trinity College Dublin, College Green, Dublin 2 | Powered by Enovation Solutions
You are logged in as Cicely Roche (Logout)
[Ph CPD 2 August](#)
Moodle Docs for this page

Part 2(b) ICM3 was made available online only after part 2(a) of ICM3 had been completed, with the following instructions:

TCD Moodle ► Ph CPD 2 August ► Feedback ► Part 2(b) 'Duty of care amidst interpersonal relationships?' (ICM 3). Individual Justification options Update this

Overview Edit questions Templates Analysis Show responses

Part 2(b) 'Duty of care amidst interpersonal relationships?' (ICM 3). Individual Justification options

Rate the importance of each justification option (12 in total), in coming to your decision, by choosing your rating of each 'justification' option from the following:

- G = Great
- M = Much
- S = Some
- L = Little
- N = None

When you have rated all 12 justification options, choose (rank) your 3 most preferred justification options and your 2 least preferred justification options as requested.

Please remember to click on the 'submit' button at the end of the screen when you have completed making your preferred justification choices.

Once all participants have completed individual choices, Cicely will allocate participants to small groups (of 4 or 5 people) in order to complete part three of this ICM.

Thank You.
Cicely Roche MPSI

Part 2(b) ICM3: Sample of view on Moodle demonstrating where the participant was required to choose one preference for each option, showing also how the ranking of options was achieved. (The full list of justification options follows, the presentation format being that of a paper-based approach.)

10.) Great, Much, Some, Little, None

(j) If the patient is adamant about a decision, and has been properly educated and warned of the consequences, then the pharmacist shouldn't interfere.*

11.) Great, Much, Some, Little, None

k. In the long run, it's better to give up a little professional rigor than to have the doctor complain about what he considers to be unreasonable behavior.*

12.) Great, Much, Some, Little, None

(l) The pharmacist's duty of care to his/her patient allows him/her to breach confidentiality.*

13.) a, b, c, d, e, f, g, h, i, j, k, l

Choose what you consider to be the MOST preferred justification option from the list of (a) to (l) above.*

14.) a, b, c, d, e, f, g, h, i, j, k, l

Choose what you consider to be the SECOND MOST preferred justification option from the list of (a) to (l) above.*

Part 2(b) ICM3: The full list of justification options follows, the presentation format being that of a paper-based approach.

Rate the importance of each Justification, in coming to your decision, by circling your rating of 'justification' options.

G = Great

M = Much

S = Some

L = Little

N = No

- m. **G M S L N** The pharmacist's colleagues will not approve of her refusal to dispense a prescription written by a consultant.
- n. **G M S L N** The practice of pharmacists subordinating their decision-making to demands of other healthcare professionals in matters related to the supply of medicines should be resisted.
- o. **G M S L N** The pharmacist is responsible for judging the scientific merit of a medicine so must refuse to supply where questions arise.
- p. **G M S L N** The supply of medicines as per written on the prescription in these circumstances could lead to a pharmacist being charged with professional misconduct, called before the Statutory Body's 'Fitness-to-practice' committee, and potentially struck off the professional register.
- q. **G M S L N** The pharmacist shouldn't let the patient control decisions to supply medicines under the pharmacist's control.
- r. **G M S L N** It is the pharmacist's professional duty to alert the Statutory Body to the doctor's behavior.
- s. **G M S L N** The patient's right to decide what will happen to his/her body needs to be respected when pharmacists assert professional judgment.

- t. **G M S L N** The pharmacist needs to be open-minded about Codeine containing products as they form a large section of non-prescription sales in the pharmacy.
- u. **G M S L N** The patient doesn't appear to understand the gravity of the healthcare situation he faces or the implications of failing to access specialist advice.
- v. **G M S L N** If the patient is adamant about a decision, and has been properly educated and warned of the consequences, then the pharmacist shouldn't interfere.
- w. **G M S L N** In the long run, it's better to give up a little professional rigor than to have the doctor complain about what he considers to be unreasonable behavior.
- x. **G M S L N** The pharmacist's duty of care to his/her patient allows him/her to breach confidentiality.

10. *From the list above, pick:*

2 most preferred justification options:

Pick the 2 least preferred justifications:

- **Best Option** _____
- **Second Best** _____
- **Third Best** _____

- Worst Option** _____
- Second Worst** _____

Once the participant successfully completed and submitted questionnaire 2(b) for ICM3 the following message appeared:

You have now completed your independent review of the scenario, made your own choices of action options and your own choices of justification options for ICM 3. Thank you.

For the next stage the moderator, Cicely Roche MPSI, will assign participants to groups and the groups will then be given a specified number of days to discuss their choices in the forum. The groups will also be given a deadline by which each group must post a Group decision regarding most and least preferred action options.

Please do engage in your group's discussions, as often as you like, within the time-frame allocated.

Thank you.

Cicely Roche MPSI

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You are logged in as Cicely Roche (Logout)

Ph CPD 2 August

Moodle Docs for this page

Part 3 ICM3 was made available online only after part 2(b) of ICM3 had been completed, with the following instructions:

TCD Moodle > Ph CPD_2_August > Forums > Part 3 'Duty of care amidst Interprofessional relationships? (ICM3) : Group 4 discussion Forum Update this forum

Separate groups: This forum allows everyone to choose whether to subscribe. [Force everyone to be subscribed](#) [Show/edit current subscriptions](#) [Unsubscribe from this forum](#)

If you are in receipt of this email you have been assigned to **Group 4** for discussion of the scenario presented in ICM 3 'Duty of Care amidst Interprofessional relationships?'

Only participants that have completed part 1 and both part 2(a) & (b) should proceed to engagement with group fora. Before contributing please check that you have reviewed the resources available at <http://www.tcdmoodle.ie/mod/resource/view.php?id=4128>

Please submit your comment(s) to the forum using the 'parent' option at the top of the screen in order that other members of your group can see them.

This forum is for use by the group in order to reach a group decision as to the group's preferred action and justification options regarding the scenario. Netiquette guidelines agreed indicate that at least one substantial contribution should be made by each participant during the first 48 hours of the time-frame scheduled for this part of the ICM series and that each participant engages at reasonable or agreed (by the group) intervals thereafter.

Please ensure that your group posts its choice/decisions regarding most and least preferred action options as soon as the group can agree this. Once this has been posted, you will then have an opportunity to choose the group's most and least preferred justification options for **the group's most preferred action option**. You may also choose to utilise the chatroom, at a time of your group's choosing, to further discussions. **(Deadline for all group choices is 9pm Saturday 22nd October).**

The group forum is designed as a means of discussing the scenario and the available action and justification options, in a confidential environment. Please remember to identify yourself only using your pseudonym when posting comments in the MOODLE virtual learning environment.

Enjoy the group discussion, contribute as often as you wish within the time-frame, and please do remember to ensure that the group posts its decision, as the last post to your forum, by the **(Deadline 9pm Saturday 22nd October) as follows:**

(List of action options (a) to (i) provided below for reference.)

Instructions for access to scheduled chatrooms for ICM3 i.e. times at which the researcher would also be online to provide support and/or engage in discussion on the ICM dilemma scenario).

TCD Moodle > Ph CPD_2_August > Chats > Chatroom with Cicely Wed 19th Oct 9pm; Fri 21st Oct 9pm; Sun 6th Nov 9pm (ICM3) Update this chat

View past chat sessions

Chatroom with Cicely Wed 19th Oct 9pm; Fri 21st Oct 9pm; Sun 6th Nov 9pm (ICM3)

[Click here to enter the chat now](#)
(Version without frames and JavaScript)

Hi all

This chatroom is for the scheduled Chatrooms 'hothours with Cicely' on your schedule. Any general queries may be raised, including issues in the ICM discussion fora.

However there is also a chatroom entitled 'group discussion fora'. This is to facilitate the request that there be a 'real-time' online facility for groups when they are trying to finally agree the group preference options. Any group can agree, amongst themselves in the group forum, to make use of that chatroom at a time they choose.


Hope this meets the need as requested.


Regards and thanks

Cicely

Appendix 25: Welcome message on Moodle.

TCD Moodle » Ph CPD_2_August » Forums » Welcome to Pharmacists taking part in the CPD programme on 'decision-making through dilemmas'.

This forum forces everyone to be subscribed  Search

 Everyone is now subscribed to this forum

Pharmacist CPD programme on 'decision-making through dilemmas'

This programme is designed to help you develop your ability (competencies) to reason through practice dilemmas. 'Practising' such reasoning through profession-specific scenarios in a prompted, structured manner with colleagues is a key element of the programme. Your online identity is protected by giving you a 'pseudonym', along with the corresponding email address and you must use that 'pseudonym' in all communications on MOODLE. It is very important that you do not disclose your 'real' identity when taking part in this programme on MOODLE.

Background information and references will be given and podcasts will be available for download if you so choose. You are encouraged to keep a journal of your learnings, reflections or recommendations throughout the programme.

Cicely Roche MPSI will moderate the discussion fora and will be available to support pharmacists on the programme. Just post your queries on this forum.

Cicely is also available at 086.8158121

I hope you enjoy the programme.

Cicely

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Trinity College,
Dublin 2

1. Title of study: Educational programme for Tutor Pharmacists in the Community Pharmacy setting in Ireland for the academic year 2010/2011

In part fulfilment of PhD entitled: 'Development of Moral Reasoning competencies in Irish Community Pharmacy Practitioners'.

2. Introduction:

Community pharmacists regularly face ethical dilemmas when providing services to patients. Research in other professions, e.g. dentistry and business, indicates that relatively short educational programmes can make significant improvements in decision-making competencies as used when resolving professional dilemmas. The question being addressed is whether a profession-specific programme could impact on pharmacists practising in the Irish Community Pharmacy setting.

3. Procedures:

The Programme will run between April and December 2011 and be delivered largely through the Virtual Learning Environment (VLE) MOODLE. You will be randomly allocated to one of two groups to a maximum of 40 participants per group. If more than 80 pharmacists volunteer then selection of 80 participants will be by random selection. The 16 week educational initiative will be delivered from April to August and then August to December. The first group will be required to attend on April 27th and August 17th, and then to complete the DIT2 on December 13th. Corresponding dates for the second group will be to attend on August 24th and December 13th, and to complete a DIT2 on April 27th. Choice of dates will depend on the group to which you are randomly assigned. All other participation will be on-line, with flexibility regarding days and times you choose to engage, during the 16 week programme on which you are enrolled. It is anticipated that you will be required to dedicate a few hours per month to the programme, but individual participation rates may vary. Podcasts can be downloaded to be listened to at your convenience.

You will be allocated a pseudonym and related email address for the duration of the project, so that neither the researcher nor other participants will be able to identify the specific pharmacist making a contribution to a discussion forum. You will complete the Defining Issues Test (DIT2), a pen and paper measure of reasoning, in April, August and December and you will identify yourself on the DIT2 by your pseudonym thereby keeping your real identity confidential.

The researcher, Cicely Roche, will tabulate what elements of the online educational programme that each participant completes, and link participation rates with the pseudonym. Pseudonyms will be used in all e-fora and coursework.

4. Benefits:

- You will be entitled to avail of:

1. A structured educational initiative largely delivered through a medium accessible from your place of practice or your home that has the potential to provide valuable professional development opportunities both for yourself and present or future students.
2. An opportunity to have your moral reasoning assessed as measured by the DIT2.
3. Several opportunities to engage in discussion surrounding ethical dilemmas that practitioners typically encounter in the community pharmacy setting.
4. An opportunity to potentially impact on your moral reasoning competencies, especially as they relate to the practice of pharmacy.
5. An opportunity to build skills in using the VLE, most specifically with respect to interaction with Trinity College Dublin's MOODLE environment.

Additional potential benefits should include:

1. The development of educational interventions related to moral reasoning will significantly contribute to under and post graduate training and continuous professional development of Irish pharmacists.
2. Results will be published, where appropriate, and learning from this initiative will further inform work undertaken to support development of professional competencies essential to the Practice of Pharmacy.

5. Risks: Potential for adverse outcome:

1. That, during online discussions, you would expose thinking on your part that could be interpreted to indicate an unprofessional approach to the practice of pharmacy and that discussion amongst those on the online forum would make it apparent to you that the thinking exposed could have been considered to represent an unprofessional approach to resolution of a dilemma, such information causing you distress.
2. That, in the unlikely event that you happened to expose thinking that could be interpreted to indicate an unprofessional approach to the practice of pharmacy and that you would also inadvertently reveal your true identity to the researcher or other members of the discussion forum, your professional reputation could potentially be somewhat undermined.
3. That you would receive DIT2 results that indicate a measure of Moral Reasoning, as assessed on that occasion, which would be less than what you would consider desirable for practising professionals, such information causing you distress.

6. Exclusion from participation:

You cannot participate in this study if any of the following are true: -

1. If you are not a community pharmacist.
2. If you have been registered as a pharmacist for less than 3 years .
3. If you are not available to attend at the School of Pharmacy and Pharmaceutical Sciences in Trinity College Dublin for the orientation day (as per outlined in details of the programme).
4. If you do not have access to a computer with an internet connection.
5. If you disclose your 'true' identity in discussion groups on the on-line fora, rather than using your pseudonym as assigned, you will be excluded from further participation in the study,

7. Confidentiality:

Your identity will remain confidential. Your name will not be published and will not be disclosed to anyone outside the study group.

8. Compensation:

This study is covered by standard institutional indemnity insurance. Nothing in this document restricts or curtails your rights. There will be no payment required to participate in this educational programme.

9. Voluntary Participation:

If you decide to volunteer to participate in this study, you may withdraw at any time. If you decide not to participate, or if you withdraw, you will not be penalised and will not give up any benefits that you had before entering the study.

10. Stopping the study:

You understand that the investigators may withdraw your participation in the study at any time without your consent.

11. Permission:

This study has Research Ethics Committee approval from Trinity College Dublin.















12. Further information:

You can get more information or answers to your questions about the study, your participation in the study, and your rights, from Cicely Roche MPSI. If the study team learns of important new information that might affect your desire to remain in the study, you will be informed at once.

Appendix 27: Special interest topics raised by participants for which further discussion was facilitated online.

8 □

Special Interest topics - pharmacist participant proposed


-  Genetic testing - The right not to know
-  Genetic testing - discussion forum
-  Morning-after-pill, conscientious objection and related issues
-  Morning after pill, beginning of life issues and community pharmacy practice - discussion forum
-  Mifepristone - FDA website
-  Codeine sales - per started in ICM3 chatrooms
-  Self Prescribing by doctors - ICM3 chatroom extracts
-  The prescriber who replies 'just dispense it' - (professional resilience)
-  The right to consent. Is it absolute?
-  The right to consent. Is it absolute?
-  Do you think providing vaccination service is good for patients/pharmacists?
-  The inclusion of PILs - paternalism versus 'appropriately informed'?
-  Unlicensed medicines as an ethical issue?
-  Regulation 'doesn't work' anyway ..


Appendix 28: Podcasts and youtube clips: Moral theories in support of decision-making.


9

Podcasts and youtube clips : Moral theories in support of decision-making.



 Podcasts: Principlism and Code of Conduct

 Moral Theories - general introduction

 The ABCDE of medical ethics for medical students:

Appendix 29: Activities (doses) presented the educational intervention: 'compulsory' and 'optional'.

Activities in the educational intervention with which participants could choose to engage.	
Optional points of engagement: recorded for inclusion in 'dosage' calculation	'compulsory' points of engagement: recorded for inclusion in 'dosage' calculation
Total = 31 activities	Total = 14 activities
Podcast 'Guide to Moodle activities' -accessed	Baseline Questionnaire (first day)
General references - accessed	Photo (optional)
Newspaper reflection – posted at least once	ICM1 P.1 (face-to-face day)
Quiz on Principlism – completed	ICM1 P.2a
Quiz on intermediate concepts – completed	ICM1 P.2b
ICM1 references - accessed	ICM1 P.3
Reflection on the day – posted at least once	ICM1 Chatroom No. 2 (not offered in Group 1)
ICM1 Chatroom No. 1 – posted at least once	ICM2 Chatroom No. 3 (not offered in Group 1)
ICM2 references - accessed	ICM3 Chatroom No. 3 (not offered in Group 1)
ICM2 P.1 – completed	ICM5 P.1 (face-to-face day)
ICM2 P.2a – completed	ICM5 P.2a
ICM2 P.2b – completed	ICM5 P.3
ICM2 P.3 – posted at least once	ICM5 Chatroom No. 1
ICM2 Chatroom No. 1 – posted at least once	ICM5 Chatroom No. 2
ICM2 Chatroom No. 2 – posted at least once	Baseline questionnaire (final day)
ICM3 references - accessed	
ICM3 P.1 – completed	
ICM3 P.2a – completed	
ICM3 P.2b – completed	
ICM3 P.3 – posted at least once	
ICM3 Chatroom No. 1 – posted at least once	
ICM3 Chatroom No. 2 – posted at least once	
ICM4 references - accessed	
ICM4 P.1 – completed	
ICM4 P.2a – completed	
ICM4 P.2b – completed	
ICM4 P.3 – posted at least once	
ICM4 Chatroom No. 1 – posted at least once	
ICM4 Chatroom No. 2 – posted at least once	
ICM5 references - accessed	
ICM5 Shipman references - accessed	

Appendix 30: Ethical Approval.



THE UNIVERSITY OF DUBLIN
TRINITY COLLEGE

SCHOOL OF MEDICINE
FACULTY OF HEALTH SCIENCES

Professor Dermot Kelleher, MD, FRCPI, FRCP, F Med Sci
Head of School of Medicine
Vice Provost for Medical Affairs

Ms Fedelma McNamara
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School of Pharmacy,
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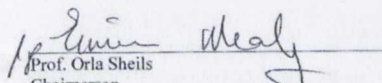
Friday, 29 April 2011

Study: Development of Moral Reasoning competencies in Irish Community Pharmacy Practitioners.

Dear Applicant (s),

Further to a meeting of the Faculty of Health Sciences Ethics Committee held in October 2010, we are pleased to inform you that the above project has been approved without further audit.

Yours sincerely


Prof. Orla Sheils
Chairperson
Faculty of Health Sciences Ethics Committee

Schools of the Faculty: Medicine, Dental Science, Nursing and Midwifery, Pharmacy and Pharmaceutical Sciences

INFORMED CONSENT FORM

PROJECT TITLE:

Educational programme for Tutor Pharmacists in the Community Pharmacy setting in Ireland for the academic year 2010/2011

In part fulfilment of PhD entitled:

'Development of Moral Reasoning competencies in Irish Community Pharmacy Practitioners'.

PRINCIPAL INVESTIGATOR:

Cicely Roche MPSI

CONTACT DETAILS OF PRINCIPAL INVESTIGATOR:

BACKGROUND

Community pharmacists regularly face ethical dilemmas when providing services to patients. Research in other professions, e.g. dentistry and business, indicates that relatively short educational programmes can make significant improvements in decision-making competencies as used when resolving professional dilemmas. The question being addressed is whether a profession-specific programme could impact on pharmacists practising in the Irish Community Pharmacy setting.

An opportunity to participate in a profession-specific educational programme is being offered to Pharmacist tutors who have pharmacist interns in the Community Pharmacy setting during the academic year 2010/2011. The Programme will run between April and December 2011 and be delivered largely through the Virtual Learning Environment (VLE) MOODLE. Participants will be randomly allocated to one of two groups to a maximum of 40 participants per group. The 16 week educational initiative will be delivered from April to August and then August to December. Participants will require to attend at the School of Pharmacy & Pharmaceutical Sciences in Trinity College Dublin for the full day orientation session (either Wednesday April 27th or Wednesday August 24th) and to attend a session to complete the 16 week programme (August 17th or December 13th). Choice of dates will depend on the group to which the participant is randomly assigned. In addition, a questionnaire will require completion on either April 27th or December 13th. All other participation will be on-line, with flexibility regarding days and times a participant chooses to engage, during the 16 week programme on which a participant is enrolled. It is anticipated that participants will be required to dedicate a few hours per month to the programme, but individual participation may vary. Podcasts can be downloaded to be listened to at the participant's convenience.

Participants will be allocated randomised pseudonyms for the duration of the project, such that 2 separate members of the academic staff, neither of which will be the researcher, will hold separate identification keys that will protect participant anonymity. All participants will complete the Defining Issues Test (DIT2), a pen and paper measure of reasoning, in April, August and December, on the dates that participants will be invited to attend at the School of Pharmacy & Pharmaceutical Sciences (SoPPs). Participants will identify themselves on the DIT2 by their pseudonym thereby protecting their anonymity. The researcher will tabulate what elements of the online educational programme that each participant completes, and link participation rates with the pseudonym. Pseudonyms will be used in all e-fora and coursework.

DECLARATION:

I have read the information leaflet for this project and I understand the contents. I have had the opportunity to ask questions, by email, phone or in person as preferred, and all my questions have been answered to my satisfaction. I freely and voluntarily agree to be part of this research study, though without prejudice to my legal and ethical rights.

I consent to the use of anonymised data for inclusion in publications following this study, for use in future studies and/or in the further development of Educational Programmes.

I understand that I may withdraw from the study at any time and I have received a copy of this agreement.

PARTICIPANT'S NAME:

PSI PHARMACIST REGISTRATION NUMBER :

CONTACT DETAILS:

EMAIL ADDRESS:

ADDRESS (place of practice or other as preferred):

.....

PARTICIPANT'S SIGNATURE:

Date:.....

Statement of investigator's responsibility: I have explained the nature and purpose of this research study, the procedures to be undertaken and any risks that may be involved. I have offered to answer any questions and fully answered such questions. I believe that the participant understands my explanation and has freely given informed consent.

INVESTIGATOR'S SIGNATURE:..... **Date:**.....

Pharmacist CPD Pilot programme 'Decision-making through dilemmas' 2011. The DIT2 test as administered at the end of the programme.

Reference: Fictitious

Background:

Healthcare professionals regularly face ethical dilemmas when there is a conflict of moral values and they are required to exercise their professional judgement to decide between options. At an individual professional level, personal values are a dimension that should be considered when assessing ethical and legal aspects of community pharmacy practice (1).

The Defining issues Test (DIT2) is a paper-and-pencil assessment of cognitive moral development. Its objective is to provide a measure of moral reasoning¹⁵²(2). The potential value of such measurement is that a deficit, if identified, can be remedied by CPD(3). The DIT2 presents 12 issues after a hypothetical dilemma for a subject to rate and rank in terms of their importance (2). Five such hypothetical dilemmas are utilised. Reliability checks inherent in the material seek to provide a means of purging response sheets which have the potential to provide bogus data e.g. random ticking of boxes (identified, amongst other things, by inconsistencies in answers) or being overly influenced by language used.

The Post conventional DIT schema P-Score and the N2-Score are generally of most interest to participants.
Your P-Score has been assessed on 17/8/2011 and measured as 48
Your N2-Score has been assessed on 17/8/2011 and measured as 46

Please do not hesitate to contact me if you require any further information. However please ensure that you use your pseudonym, and related email account, if you want to specifically refer to your own results.

Cicely

Cicely Roche M.Sc. MPSI

29/8/2012 (email)
Date

1. Latif D (2000a) Ethical Cognition and Selection-Socialization in Retail Pharmacy *Journal of Business Ethics*. 25: 343-357.
2. Rest, J R., Narvaez, D, Thoma, S J., Bebeau, M J (1999a) DIT2: Devising and testing a revised instrument of moral judgment. *Journal of Educational Psychology* 91: 644-659.
3. Bebeau, M. (2002) The Defining Issues Test and the Four Component Model: Contributions to professional education. *Journal of Moral Education* 31(3), 271-295

PTO for further details ex DIT handbook:

¹⁵² Also referred to as Moral Judgement. The term moral reasoning is used throughout.

P-Score: (Postconventional Schema Score)

The DIT2 provides a measure of the stage of cognitive moral development (moral reasoning) of a respondent. The assessment structure evolved from Kohlberg's six stages of cognitive development and is part of what is known as the Neo-Kohlbergian approach to moral development. Research indicates that DIT items cluster around three general moral schemas: arguments that appeal to personal interests (Personal Interest/approximates to Kohlberg's stages 2 & 3), to maintaining social laws and norms (Maintaining Norms/approximates to stage 4), or appeal to moral ideals and/or theoretical frameworks for resolving complex moral issues (Postconventional – P-Score). The DIT2 activates and assesses these schemas to the extent to which they have been developed in the individual concerned.

The P-Score is considered to represent the extent to which the respondent utilises the postconventional schema when responding to dilemmas.

The P% score can range from 1 to 95 and is interpreted as the extent to which the Postconventional schema is activated. In general the mean P-Score for those educated to M.Sc. level is 41%, to professional degree¹⁵³ level is 45% and to Ph.D level is 50%. (Standard deviations of circa 15% apply to all.)

N2-Score:

The N2 index emerged following re-evaluation of data from a large study that used the DIT as a pre- and post- test of the effects of an ethics curriculum for professional school students. Two effects of the educational intervention were observed: one effect was the acquisition of new thinking (statistically significant increases in P-Scores) and the second effect was the systematic rejection of simplistic thinking (significant decreases in preference for personal interest items). From a practical educational point of view, both types of progress are desirable: the acquisition of more sophisticated moral thinking, and increased clarity about ideas that should be rejected for their simplistic or biased solutions. Thus an N2-Score has two parts: the degree to which postconventional items are prioritised plus the degree to which personal interest items receive lower ratings than the ratings given to given to postconventional items.

N2 index average for those educated to M.Sc degree level 40%, to professional degree level 45% and to PhD level 49%.

Analysis and dissemination of study outcomes.

Analysis of the data will continue during the latter half of 2012. The aim is that a PhD Thesis will be submitted and defended during 2013 after which study results will be disseminated through appropriate channels.

¹⁵³ Context: professional degrees in the USA are post-graduate degrees.

Appendix 33: Letter of invitation to participate.

School of Pharmacy and Pharmaceutical Sciences,
Panoz Building,
Trinity College,
Dublin 2

[date]

To: [Tutor Pharmacist to Pharmacy Interns 2010-2011 Programme *and subsequently to pharmacists a minimum of 3 years on the register of pharmacists with the PSI*]

Dear [Participant]

I am writing to invite pharmacists tutoring in the community pharmacy setting to take part in a 16 week educational programme designed specifically for Community Pharmacists practising in Ireland. The programme includes opportunity to discuss profession-specific dilemmas in a secure environment and most of the programme will be delivered online.

A system to ensure anonymity of participants will be used – wherein participants will have a pseudonym assigned for the duration of the research. The researcher, Cicely Roche MPSI, will not have access to the master lists linking participants to their pseudonyms.

Pseudonyms will be assigned during the on-site orientation day, to be held at the School of Pharmacy, in Trinity College Dublin. This orientation day will include completion of the first dilemma discussion online, sufficient terminals being available in the School of Pharmacy to allow up to 40 participants have individual and private access, and the day will also provide an outline introduction to a variety of frameworks generally promoted as supportive of professional decision-making. Supporting podcasts and summaries will be available, online, at specific time-frames during the 16 week programme.

The measure of the impact of the programme will be by the use of a pen-and-paper measure of reasoning known as the Defining Issues Test (DIT2). Anonymity will be protected by the use of the participants' pseudonyms, rather than their names, on these answer sheets.

Participants will require to attend for the full day orientation session (either Wednesday April 27th or Wednesday August 24th) and to attend a session to complete the 16 week programme (August 17th or December 13th). Actual dates will depend on the group to which the participant is randomly assigned. In addition, a further DIT2 will require completion on either April 27th or December 13th. All other participation will be on-line, with flexibility regarding days and times a participant chooses to engage. It is anticipated that participants will be required to dedicate a few hours per month to the programme, but individual participation rates may vary. Podcasts can be downloaded to be listened to at the participant's convenience.

The research to which this pilot is related has been registered for a Ph.D. by Research at the School of Pharmacy and Pharmaceutical Sciences in Trinity College Dublin, under the supervision of Prof. Marek Radomski, Head of the School, and co-supervised by Prof Joy Wingfield (Nottingham) and Prof Steve Thoma (Alabama).

The researcher, Cicely Roche MPSI, is a half time Senior Lecturer in the Practice of Pharmacy at the School of Pharmacy and Pharmaceutical Sciences in Trinity College. She has more than 25 years experience as a community pharmacist, 5 of which were spent in Ontario, Canada, and the 12 years to 2004 as owner of her own pharmacy in Gorey, Co. Wexford. She continues to work part-time as a community pharmacist. She holds M.Sc.(s) in Healthcare Ethics and Law (RCSI, 2007) and in Community Pharmacy (QUB, 2001), and has had an article on Pharmacy Ethics and Law in each edition of the Irish Pharmacy Journal published since December 2007.

A maximum of 80 Tutor Pharmacists, working in the Community Pharmacy setting, will be enrolled in this pilot project, scheduled to run from April 27th 2011 to December 14th 2011.

Please feel free to contact me, by phone, email or post, if you require any further information or clarification.

If you are willing to have your name included on the list of pharmacists available to take part in this pilot project please sign the attached consent form and return to Cicely Roche MPSI, c/o School of Pharmacy & Pharmaceutical Sciences, Panoz Building, Trinity College, Dublin 2 (envelope provided) **no later than November 30th 2010.**

I will be in further contact with those indicating a willingness to take part after November 30th.

Yours Sincerely,

Cicely Roche B.Sc.(Pharm)., M.Sc., MPSI,

Appendix 34: Agenda for face-to-face day(s) at the beginning of the programme.

Pharmacist CPD: 'Decision-making through dilemmas'.

Pharmacist CPD pilot: 24/8/2011 (Group 2)

- 9 to 9.30am – tea/coffee registration, completion of consent forms and access to anonymised emails for Moodle registration.
- 9.30 – 10.45:
 - Welcome and introduction (5 to 10 minutes)
 - Complete the DIT2 (circa 25 minutes)
 - Register on Moodle and complete the short questionnaire on Moodle (10 to 15 minutes)
 - Complete stages 1 and 2 (a & b) of the first ICM (to 10.45).
- **10.45 to 11 – coffee/tea/biscuits**
- 11 – 12.15
 - Introduction to Principlism as a framework for decision-making through ethical dilemmas.
 - The principles of the PSI Code of conduct and the related ethical issues
 - What's in a newspaper? (60 seconds)
- **12.20pm – lunch in Cafe Di Napoli (one course and coffee)**
- 1pm (ish)
 - Stage 3 of the first ICM
 - Introduction to reflective diaries
 - Post a reflection (group forum and/or personal journal)
 - Time-tabling/hot-hours/access to help etc
 - Feedback on ICM 1 if time permits
- **2.45 – 3pm – coffee/tea/biscuits**
- 3pm – 4pm
 - Understanding ICMs (intermediate Concept measures), the 4 components of professional education and the development of Moral Reasoning competencies.
- 4pm – 4.30pm
 - Questions and close

Appendix 35: Agenda for face-to-face day(s) at the end of the programme.

- 9 to 9.30am – tea/coffee .
- 9.30 – 11.00:
 - Presentation – summary of completed programme elements, various frameworks addressed, intro to terms consequentialism and deontology, and PCPI Review(25 minutes)
 - Clarify group-work preferences (online or face-to-face)
 - Review ICMs 1 & 2 as outlined – group discussion or online as preferred. View pilot results.
- **11.00 – 11.15 – coffee/tea/biscuits**
- 11.15 -12.45
 - ICMs 3&4 (30 minute each)
 - ICM 5 stages 1 & 2 (solo)
 - **1pm to 1.45– lunch in Cafe Di Napoli (one course and coffee)**
- 1.45pm
 - Stage 3 of the ICM5 (30mins)
 - Feedback on ICM 5 (15 minutes)
 - DIT2 (30 minutes: 2.30 to 3pm) –
- **3pm - 3.15– coffee/tea/biscuits**
- **3.15 to 4.15**
 - Discussion on ‘other fora’ topics – EHC, self prescribing, codeine etc
 - Results : Availability, what they might mean, how to distribute?
 - **Feedback questionnaire on Moodle.**
 - Questions and close

Appendix 36: Variables included in the dataset following scoring by the Center for the Study of Ethical Development.

Name	Label	Measure	Values
ID		Nominal	
Demographic variables:			
edu	Educational Level (10=professional degree, 11=M.Sc, etc)	Scale	1 to 12
sex		Nominal	1 or 2
age		Scale	28 to 60
conlib	Political Liberalism (high scores = Conservative)	Nominal	1 to 5
lang	English as primary language?	Nominal	1 or 2
citizen	U.S. Irish Citizen?	Nominal	1 or 2
Developmental indices			
STAGE23	Personal Interest (Stage 2/3)	Scale	1 to 95%
STAGE4P	Maintain Norms (Stage 4)	Scale	1 to 95%
PSCORE	Post Conventional (P-Score)	Scale	1 to 95%
N2SCORE	N2 Score (N2-Score)	Scale	1 to 95%
Developmental Profile and phase indices			
CONSTAN	Consolidation Transition	Nominal	1 or 2
typenew	Type indicator	Nominal	1 to 7
U	Utilizer Score (U-Score)	Nominal	0 to 0.99
Experimental Indices			
NUMCD	Number of cannot decide choices	Nominal	0 to 5
HUMLIB	Humanitarian Liberalism	Nominal	1 to 5
CANCER10	Religious Orthodoxy (proxy measure)	Nominal	1 to 9
Reliability checks and additional DIT score			
PURGED	Subjects failing reliability checks (New checks)	Nominal	not >200
MSCORE	Meaningless items check (greater than 10 purged) (M-Score)	Nominal	0 to 5
ASCORE	Antisocial Score (A-Score)	Nominal	0 to 7
filter_\$	SPSS filter to eliminate purged subjects	Nominal	

Appendix 37: Professional, commercial and personal influencers on decision-making.

	Professional, commercial and personal influencers on decision-making (PCPIs)	Group 1 & Group 2 (n=27)		Group 1 (n=16)		Group 2 (n=11)	
		Frequency	percent	Frequency	percent	Frequency	percent
Professional influencers	A superintendent pharmacist (SIP)	10	37%	7	44%	3	27%
	A supervising pharmacist (SVP)	10	37%	6	37%	4	37%
	A staff pharmacist without the role of SIP or SVP (part time or full-time)	4	15%	2	13%	2	18%
	A locum pharmacist (i.e. not employed as a member of staff)	3	11%	1	6%	2	18%
Commercial influencers	A PCRS/GMS contract holder for the retail pharmacy business?	6	22%	5	31%	1	9%
	An owner or majority shareholder in the retail pharmacy business	0	0%	0	0%	0	0%
	A pharmacy manager	13	48%	6	38%	7	64%
	A staff pharmacist	5	19%	4	25%	1	9%
	A pharmacy locum	3	11%	1	6%	2	18%
Personal influencers (primary school education)	Small rural school (4 or less teacher school, country or town less than 3,000)	6	22%	4	25%	2	18%
	Large rural school (more than 4 teacher school, country or town less than 3,000)	4	15%	3	19%	1	9%
	Town (population greater than 3,000) mixed male and female primary school.	1	4%	1	6%	0	0%
	Town (population greater than 3,000) single sex (girls or boys) primary school	7	26%	5	31%	2	18%
	City (i.e. designated as), mixed male and female primary school.	5	18%	1	6%	4	37%
	City (i.e. designated as), single sex (girls or boys) primary school.	4	15%	2	13%	2	18%

Key: N's=27 (Group 1&2), 16 (Group 1), 11 (Group 2).

Appendix 38: Experimental indices.

NUMCD, HUMLIB and CANCER10 are experimental indices that do not require any additional information from respondents, and are included in the scored data that the Center for the Study of Ethical Development provides (Section 3.3.8).

NUMCD - Number of 'cannot decide' choices: This variable represents the decisiveness with which an individual selects action choices on the DIT2 (Appendix 8). Scores range from 0 to 5. *'Because indecision is thought to be (at least in part) a product of the ease with which moral information is processed, there is the expectation that indecision will covary with developmental phase (Thoma & Rest, 1999). Specifically, transitional phases should be associated with increased indecision given the multiple and potentially conflicting interpretations associated with transition (Bebeau & Thoma, 2003:22). However type 1, a consolidated type, does not fit this pattern. The explanation proposed is that individuals consolidated on the PI cluster may be limited in the moral information they can readily absorb and apply to the various situations.*

HUMLIB - Humanitarian Liberalism perspective on moral issues: This variable (Rest, 1979; Thoma, 2002) counts the number of times that a respondent's choice matches the high scoring and consistent (with respect to choices) group, namely professionals in political science and philosophy, that Rest (1979) used to anchor the upper end of the measure (P-Score). A respondent's score can range from 0 (no matches) to 5 (all matches). There tends to be higher congruence between low and high types, and the professionals in political science and philosophy (Rest's 'expert group'.)

CANCER10 - Religious Orthodoxy (proxy measure): This variable represents the sum of the rates and ranks for item 10 in the doctor's dilemma. The scenario, Story 4 in the DIT2 (Appendix 10), asks whether or not to provide a drug to a dying woman that will hasten her death, while item 10 questions *'Should only God decide when a person's life should end?'*. The score is computed by adding the rating given to item 10 with the ranking value giving a score between 1 (rated not important and unranked) and 9 (rated most important and ranked 1st). *'Researchers found ... that the ratings and ranking of this single item correlated very strongly with summary scores on religious orthodoxy measures like the Brown and Lowe Inventory of Religious Beliefs' (Bebeau & Thoma, 2003:24). The CANCER10 score for type 4 profiles (consolidated at MN) tends to be highest.*

Appendix 39: Raw and processed data pertaining to the work conducted in this thesis from the Centre for the Study of Ethical Development.

- Processed data pertaining to the work conducted in this thesis from the Centre for the Study of Ethical Development: Summary report page 1-13.
- Raw data pertaining to the work conducted in this thesis from the Centre for the Study of Ethical Development: DIT2 surveys (n=105, 3 pages to each survey) is available on request from the author.

Developmental Indices

a

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
ID	105	100.0%	0	.0%	105	100.0%
Personal Interest (Stage 2/3)	105	100.0%	0	.0%	105	100.0%
Maintain Norms (Stage 4)	105	100.0%	0	.0%	105	100.0%
Post Conventional (P)	105	100.0%	0	.0%	105	100.0%
N2 score (N2 score)	104	99.0%	1	1.0%	105	100.0%
SPSS filter to eliminate	105	100.0%	0	.0%	105	100.0%

a. Limited to first 100000 cases.

Individual participant output: Developmental indices

	ID	Personal Interest (Stage 2/3)	Maintain Norms (Stage 4)	Post Conventional (P score)	N2 score (N2 score)	SPSS filter to eliminate purged subjects
1	10401	48.00	40.00	10.00	11.34	Selected
2	10402	18.00	34.00	42.00	42.25	Selected
3	10403	28.00	32.00	38.00	39.24	Selected
4	10404	14.00	34.00	52.00	55.21	Selected
5	10405	22.00	38.00	40.00	49.78	Selected
6	10406	16.00	20.00	64.00	64.57	Selected
7	10407	38.00	14.00	48.00	38.67	Selected
8	10408	36.00	14.00	38.00	41.39	Selected
9	10409	16.00	24.00	50.00	49.29	Selected
10	10410	40.00	28.00	32.00	26.47	Selected
11	10411	30.61	24.49	44.90	37.82	Selected
12	10412	46.00	16.00	38.00	35.55	Selected
13	10413	46.00	34.00	12.00	5.22	Selected
14	10414	46.15	33.33	10.26	4.07	Selected
15	10415	10.00	74.00	16.00	15.57	Selected
16	10416	26.00	26.00	28.00	24.23	Selected
17	10801	46.00	18.00	36.00	31.73	Selected
18	10802	26.00	30.00	42.00	43.03	Selected
19	10803	18.00	28.00	46.00	43.08	Selected
20	10804	22.00	32.00	46.00	44.79	Selected
21	10805	18.00	32.00	50.00	53.68	Selected
22	10806	12.00	34.00	50.00	54.40	Selected
23	10807	40.00	32.00	28.00	18.23	Selected
24	10808	26.00	20.00	46.00	41.34	Selected
25	10809	22.00	22.00	54.00	47.83	Selected
26	10810	46.00	28.00	26.00	15.60	Selected
27	10811	46.00	28.00	18.00	19.67	Selected
28	10812	26.00	14.00	60.00	58.08	Selected
29	10813	55.00	37.50	7.50	5.97	Selected
30	10814	34.00	32.00	32.00	21.32	Selected
31	10815	46.00	34.00	20.00	19.27	Selected
32	10816	42.00	16.00	38.00	34.97	Selected
33	11201	52.00	20.00	26.00	16.71	Selected
34	11202	24.00	42.00	34.00	33.91	Selected
35	11203	18.00	32.00	50.00	46.38	Selected

Individual participant output: Developmental indices

	ID	Personal Interest (Stage 2/3)	Maintain Norms (Stage 4)	Post Conventional (P score)	N2 score (N2 score)	SPSS filter to eliminate purged subjects
36	11204	14.00	56.00	30.00	35.86	Selected
37	11205	20.00	34.00	44.00	47.45	Selected
38	11206	4.00	20.00	76.00	73.39	Selected
39	11207	30.00	30.00	40.00	37.27	Selected
40	11208	32.00	28.00	38.00	43.73	Selected
41	11209	16.00	46.00	38.00	40.72	Selected
42	11210	38.00	10.00	40.00	33.33	Selected
43	11211	52.00	22.00	26.00	23.13	Selected
44	11212	24.00	16.00	60.00	54.13	Selected
45	11213	46.00	38.00	14.00	9.89	Selected
46	11214	44.00	40.00	16.00	14.51	Selected
47	11215	22.00	54.00	16.00	13.17	Selected
48	11216	12.00	20.00	62.00	61.79	Selected
49	20401	2.04	30.61	59.18	58.59	Selected
50	20402	33.33	23.08	43.59	34.82	Selected
51	20403	40.00	36.67	23.33	99.90	Not Selected
52	20404	10.00	48.00	34.00	31.37	Selected
53	20405	.00	28.00	72.00	60.77	Selected
54	20406	6.00	26.00	68.00	61.97	Selected
55	20407	12.00	40.00	38.00	42.02	Selected
56	20408	44.00	28.00	28.00	15.25	Selected
57	20409	10.00	52.00	38.00	32.63	Selected
58	20410	16.00	42.00	36.00	38.35	Selected
59	20411	2.00	20.00	78.00	75.95	Selected
60	20801	2.00	40.00	46.00	47.48	Selected
61	20802	30.00	6.00	60.00	47.29	Selected
62	20803	14.00	28.00	56.00	49.57	Selected
63	20804	24.00	34.00	42.00	40.06	Selected
64	20805	4.00	24.00	72.00	66.88	Selected
65	20806	30.00	26.00	42.00	43.94	Selected
66	20807	10.00	46.00	34.00	43.08	Selected
67	20808	22.00	52.00	16.00	5.97	Selected
68	20809	14.00	26.00	58.00	53.89	Selected
69	20810	14.00	48.00	38.00	39.72	Selected
70	20811	8.00	6.00	84.00	80.77	Selected

Individual participant output: Developmental indices

	ID	Personal Interest (Stage 2/3)	Maintain Norms (Stage 4)	Post Conventional (P score)	N2 score (N2 score)	SPSS filter to eliminate purged subjects
71	21201	24.00	24.00	48.00	45.11	Selected
72	21202	22.00	8.00	70.00	64.00	Selected
73	21203	26.00	16.00	58.00	51.03	Selected
74	21204	22.00	32.00	46.00	48.12	Selected
75	21205	10.00	20.00	70.00	65.06	Selected
76	21206	18.00	18.00	64.00	57.14	Selected
77	21207	34.00	28.00	38.00	40.29	Selected
78	21208	42.00	32.00	26.00	13.88	Selected
79	21209	20.00	12.00	68.00	59.93	Selected
80	21210	22.00	22.00	56.00	53.49	Selected
81	21211	6.00	14.00	80.00	77.11	Selected
82	30401	30.00	36.00	26.00	23.59	Selected
83	30402	22.00	32.00	38.00	22.56	Not Selected
84	30403	16.33	48.98	34.69	33.28	Selected
85	30404	22.00	28.00	46.00	43.08	Selected
86	30405	20.00	44.00	24.00	13.40	Selected
87	30406	20.00	38.00	40.00	41.37	Selected
88	30801	37.50	30.00	32.50	32.09	Selected
89	30802	8.00	62.00	22.00	31.69	Selected
90	30803	18.00	26.00	56.00	48.83	Selected
91	30804	34.00	14.00	52.00	41.01	Selected
92	31201	46.00	16.00	38.00	33.02	Selected
93	31202	22.00	56.00	14.00	11.77	Selected
94	31203	26.53	20.41	53.06	55.66	Selected
95	31204	24.00	24.00	52.00	49.90	Selected
96	40401	16.00	26.00	50.00	47.69	Selected
97	40402	42.55	21.28	29.79	27.55	Selected
98	40403	18.37	46.94	28.57	34.37	Selected
99	40404	34.00	28.00	36.00	34.90	Selected
100	40801	28.00	30.00	34.00	31.22	Selected
101	40802	32.00	30.00	30.00	34.41	Selected
102	40803	14.00	32.00	50.00	54.58	Selected
103	40804	16.00	38.00	42.00	43.14	Selected
104	41201	16.00	38.00	38.00	36.33	Selected

Individual participant output: Developmental indices

	ID	Personal Interest (Stage 2/3)	Maintain Norms (Stage 4)	Post (P score)	N2 score (N2 score)
105	50401	20.00	50.00	28.00	27.45
Total N	105	105	105	105	104

a. Limited to first 100000 cases.

Developmental profile and phase indices

Summary^a

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
ID	105	100.0%	0	.0%	105	100.0%
Type indicator	105	100.0%	0	.0%	105	100.0%
Utilizer score	100	95.2%	5	4.8%	105	100.0%
Consolidation Transition	105	100.0%	0	.0%	105	100.0%
SPSS filter to eliminate purged subjects	105	100.0%	0	.0%	105	100.0%

a. Limited to first 100000 cases.

Individual participant output: Developmental profile and phase indices

	ID	Type indicator	Utilizer score	Consolidation Transition	SPSS filter to eliminate purged subjects
1	10401	2.00	.20	1.00	Selected
2	10402	7.00	.12	2.00	Selected
3	10403	6.00	.14	1.00	Selected
4	10404	7.00	.09	2.00	Selected
5	10405	7.00	.18	2.00	Selected
6	10406	7.00	.20	2.00	Selected
7	10407	6.00	.13	1.00	Selected
8	10408	7.00	.62	2.00	Selected
9	10409	7.00	.00	2.00	Selected
10	10410	2.00	.11	1.00	Selected
11	10411	6.00	.22	1.00	Selected
12	10412	2.00	.00	1.00	Selected
13	10413	2.00	.33	1.00	Selected
14	10414	2.00	.22	1.00	Selected
15	10415	4.00	.43	2.00	Selected
16	10416	6.00	.13	1.00	Selected
17	10801	2.00	.29	1.00	Selected
18	10802	6.00	.00	1.00	Selected
19	10803	6.00	.09	1.00	Selected
20	10804	6.00	.27	1.00	Selected
21	10805	7.00	.00	2.00	Selected
22	10806	7.00	.04	2.00	Selected
23	10807	2.00	.09	1.00	Selected
24	10808	6.00	.23	1.00	Selected
25	10809	6.00	.24	1.00	Selected
26	10810	2.00	.00	1.00	Selected
27	10811	2.00	.00	1.00	Selected
28	10812	7.00	9.99	2.00	Selected
29	10813	2.00	.35	1.00	Selected
30	10814	2.00	9.99	1.00	Selected
31	10815	2.00	.30	1.00	Selected
32	10816	1.00	.13	2.00	Selected
33	11201	2.00	.24	1.00	Selected
34	11202	5.00	.13	1.00	Selected
35	11203	6.00	.04	1.00	Selected

Individual participant output: Developmental profile and phase indices

	ID	Type indicator	Utilizer score	Consolidation Transition	SPSS filter to eliminate purged subjects
36	11204	4.00	.30	2.00	Selected
37	11205	7.00	.13	2.00	Selected
38	11206	7.00	.13	2.00	Selected
39	11207	6.00	.11	1.00	Selected
40	11208	7.00	.15	2.00	Selected
41	11209	5.00	.03	1.00	Selected
42	11210	6.00		1.00	Selected
43	11211	2.00	.23	1.00	Selected
44	11212	7.00	.00	2.00	Selected
45	11213	2.00	.24	1.00	Selected
46	11214	2.00	.33	1.00	Selected
47	11215	4.00	.30	2.00	Selected
48	11216	7.00	-.02	2.00	Selected
49	20401	7.00	.00	2.00	Selected
50	20402	6.00	.37	1.00	Selected
51	20403	2.00	.10	1.00	Not Selected
52	20404	5.00		1.00	Selected
53	20405	7.00	.01	2.00	Selected
54	20406	7.00	-.22	2.00	Selected
55	20407	4.00	.26	2.00	Selected
56	20408	2.00	9.99	1.00	Selected
57	20409	4.00	.20	2.00	Selected
58	20410	5.00	.14	1.00	Selected
59	20411	7.00	.18	2.00	Selected
60	20801	7.00	.21	2.00	Selected
61	20802	7.00	.25	2.00	Selected
62	20803	6.00	.07	1.00	Selected
63	20804	6.00	.27	1.00	Selected
64	20805	7.00	.22	2.00	Selected
65	20806	6.00	-.05	1.00	Selected
66	20807	4.00	.14	2.00	Selected
67	20808	4.00	.12	2.00	Selected
68	20809	7.00	.09	2.00	Selected
69	20810	5.00	.18	1.00	Selected
70	20811	7.00	-.08	2.00	Selected

Individual participant output: Developmental profile and phase indices

	ID	Type indicator	Utilizer score	Consolidation Transition	SPSS filter to eliminate purged subjects
71	21201	7.00	.00	2.00	Selected
72	21202	7.00	.34	2.00	Selected
73	21203	6.00	.15	1.00	Selected
74	21204	7.00	.15	2.00	Selected
75	21205	7.00	.39	2.00	Selected
76	21206	7.00	.00	2.00	Selected
77	21207	6.00	.28	1.00	Selected
78	21208	2.00	.11	1.00	Selected
79	21209	7.00	.16	2.00	Selected
80	21210	7.00	.25	2.00	Selected
81	21211	7.00	-.07	2.00	Selected
82	30401	3.00	.26	1.00	Selected
83	30402	7.00	.30	2.00	Not Selected
84	30403	5.00	.17	1.00	Selected
85	30404	6.00	.28	1.00	Selected
86	30405	5.00	.43	1.00	Selected
87	30406	6.00	.13	1.00	Selected
88	30801	2.00	.51	1.00	Selected
89	30802	4.00	.15	2.00	Selected
90	30803	6.00	.09	1.00	Selected
91	30804	6.00	.12	1.00	Selected
92	31201	2.00	.00	1.00	Selected
93	31202	4.00	.11	2.00	Selected
94	31203	7.00	.22	2.00	Selected
95	31204	7.00	.32	2.00	Selected
96	40401	7.00	.03	2.00	Selected
97	40402	2.00	.22	1.00	Selected
98	40403	4.00	.24	2.00	Selected
99	40404	6.00	.31	1.00	Selected
100	40801	6.00	.20	1.00	Selected
101	40802	2.00	.25	1.00	Selected
102	40803	7.00	.28	2.00	Selected
103	40804	6.00	.09	1.00	Selected
104	41201	6.00	.14	1.00	Selected

Individual participant output: Developmental profile and phase indices^a

	ID	Type indicator	Utilizer score	Consolidation Transition	SPSS filter to eliminate purged subjects
105	50401	5.00	.06	1.00	Selected
Total N	105	105	100	105	105

a. Limited to first 100000 cases.

Raw data pertaining to the work conducted in this thesis from the Centre for the Study of Ethical Development:

<i>DIT2 surveys (n=105, 3 pages to each survey). Order of presentation of surveys: Group 1, group 2, 'no Intervention', Group 2 Unfinished and Group 1 Unfinished.</i>	Participant no.	Apr-11	Aug-11	Dec-11
Group 1	1	10401	10801	11201
Group 1	2	10402	10802	11202
Group 1	3	10403	10803	11203
Group 1	4	10404	10804	11204
Group 1	5	10405	10805	11205
Group 1	6	10406	10806	11206
Group 1	7	10407	10807	11207
Group 1	8	10408	10808	11208
Group 1	9	10409	10809	11209
Group 1	10	10410	10810	11210
Group 1	11	10411	10811	11211
Group 1	12	10412	10812	11212
Group 1	13	10413	10813	11213
Group 1	14	10414	10814	11214
Group 1	15	10415	10815	11215
Group 1	16	10416	10816	11216
Group 2	1	20401	20801	11201
Group 2	2	20402	20802	21202
Group 2	3	20403	20803	21203
Group 2	4	20404	20804	21204
Group 2	5	20405	20805	21205
Group 2	6	20406	20806	21206
Group 2	7	20407	20807	21207
Group 2	8	20408	20808	21208
Group 2	9	20409	20809	21209
Group 2	10	20410	20810	21210
Group 2	11	20411	20811	21211
No intervention	1	30401	30801	31201
No intervention	2	30402	30802	31202
No intervention	3	30403	30803	31203
No intervention	4	30404	30804	31204
No intervention	5	30405	0	0
No intervention	6	30406	0	0
Group 2 Unfinished	1	40401	40801	41201
Group 2 Unfinished	2	40402	40802	0
Group 2 Unfinished	3	40403	40803	0
Group 2 Unfinished	4	40404	40804	0
Group 1 Unfinished	1	50401	0	0
		n=38	n=35	n=32