The development of moral judgment and organization of ethical knowledge in final year physical therapy students

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Background and purpose: It is well recognized that physical therapy practitioners need to go beyond adherence to professional codes of conduct and have skills of ethical reasoning in order to address the ethical issues which arise in clinical practice. There is little consensus in physical therapy regarding approaches to teaching ethical reasoning. The purpose of this research was to study changes in the moral reasoning schema and organization of ethical reasoning knowledge of final year physical therapy students following a 6 week intensive ethics course with a teaching focus on two particular ethical reasoning models: the Four Component Model and the Ethical Reasoning Bridge.
Methods: A pre-test post-test design was used to evaluate changes in moral reasoning schema (using the Defining Issues Test version two (DIT2)) and changes in the organization of students' ethical reasoning knowledge using concept maps.
Results: Thirty-seven students completed all four portions of the research, a response rate of 68.5%. There was a significant increase in post-conventional reasoning (so called N2) scores (35.2 to 39.7, P=0.006). Concept maps post-test displayed a shift from a pre-test quantitatively oriented and organised set of ethical knowledge concepts to a more integrated and qualitatively oriented new knowledge framework.
Conclusion: This study has demonstrated that a 6 week course using curricular strategies involving the interpretation of experience and perspective transformation can facilitate in a cohort of final year physical therapy students both the development of ethical reasoning ability (moral judgment) and a richer organization of the types of knowledge required for ethical decision making.

Keywords: Physical therapy, Ethics, Education, Ethical reasoning, Concept maps

Background

The philosopher and teacher Donald Schön described professional practice as consisting not primarily of 'neat' technical solutions to discrete problems but instead of ill structured problems with often complex and indeterminate elements.[1] This description could be considered to also apply to the often ambiguous nature of ethical dilemmas in clinical practice and points to the need for practitioners to be able to exercise moral judgement (or ethical reasoning) in a way that goes beyond the guidelines provided by professional codes of conduct or ethics for addressing ethical issues in professional practice.[2] It also suggests that whilst clinical and ethical problem solving should not be reduced to the same process, neither should they be thoroughly dichotomized. The relevance of teaching the nature of the relationship between ethical and clinical reasoning was identified some time ago in physical therapy[3] but has received further impetus from findings of expertise studies in physical therapy where expert therapists have been found to integrate ethical reasoning into everyday practice.[4,5] It has also been demonstrated that ability in ethical reasoning is a predictor of clinical performance[6] and facilitates clinical decision making.[7]

Ethical reasoning can be defined as a problem solving process which requires a knowledge of ethical theory; a knowledge of the perspectives and values of those involved in the ethical scenario; a knowledge of self as practitioner; and an ability to articulate these different types of knowledge and associated values in the reasoning process.[8] Ethical reasoning is used interchangeably with the term moral judgement in

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this paper. Most curricula designed to teach ethics to allied health practitioners include some focus on teaching ethical reasoning. However, there remains little consensus (or evidence) in the relevant literature as to the most effective way to go about this.[9] The purpose of this study was to evaluate the influence of a particular ethics curriculum on both the moral judgment and organization of ethical knowledge of final year physical therapy students. This curriculum has two particular foci: first, identifying and articulating the diversity of knowledge and values in the ethical reasoning process (as described above); and second, in recognizing that clinical and ethical problems in clinical practice are often intertwined, understanding the relationship between clinical and ethical reasoning.

The Course Curriculum

While including a range of contemporary ethical theory and models, the curriculum is primarily structured by two pedagogical frameworks: the Ethical Reasoning (ER) Bridge model (described below) and the Four Component model by Rest and colleagues[10] which describes the psychological topography of ethical action as a set of distinct ethical problem solving tasks: moral sensitivity, moral judgment, moral motivation, and moral courage. The theoretical basis of this model is discussed in more depth in the paper by Swisher *et al.* in this volume.[11] Table 1 provides an overview of the teaching of the ethics curriculum in this study. In addition to online module study (and associated discussion groups), weekly face to face interactive workshops are designed to provide students with skills to address a range of situational and communicative issues which would potentially impinge on their capacity to implement ethical action(s).

The ER Bridge is a model of ethical and clinical reasoning[8,13] which describes a traverse between so called normative ethics (i.e. 'what one ought to do…') and descriptive (also termed narrative) ethics (i.e. 'what one actually does…').[8,12–13] The ER bridge model requires students to recognize and move between different perspectives, assisting them to apprehend different forms of knowledge and to reason postformally (or dialectically)[12,14,15] in the face of multiple and often competing realities. These forms of reasoning are explained further in this paper. The movement dynamic expressed in the 'crossing and re-crossing' of the ER bridge reinforces the notion of therapists as being active decision makers and exercising moral agency.[12,16]

A pedagogical strategy, however, is required to catalyze students' movement between their own existing perspectives (the bases of which might have remained unconsidered) and new or unfamiliar perspectives and this is achieved in the curriculum by the deliberate perturbation of students' existing moral decision making frameworks. This perturbation is created via a number of case studies; some of which are provided to students while others are evoked from their own experiences on clinical placements and life generally. These cases involve ethical dilemmas of an ambiguous nature and have the aim of creating what

Table 1 Overview of 6 week ethics curriculum

Week number	Online module activity	Face to face teaching (3 hour sessions)	Assessment item
Week 1	Interpreting situations in clinical practice (moral sensitivity)	1. Introductory session: course overview, review of clinical reasoning theory, ethical theory overview, teaching how to do a concept map, completion of pre-course map 2.Workshop: a videotaped therapist patient case demonstrating the use of narrative reasoning	
Week 2	Normative ethics and the four ethical principles	Workshop: dealing with grief	
Week 3	Narrative and case based approaches	Workshop: power and rank	1. Written reflection: narrative analysis of an ethical dilemma experienced on a clinical placement
Week 4	Moral judgment (The ethical Reasoning Bridge: understanding the relationship between different forms of knowledge)	Workshop: conflict management	
Week 5	Moral motivation: values, commitment and professionalism	Seminar preparation (students meet in online groups)	
Week 6	Ethical action: skills required for implementation (moral courage)	Seminar presentation of the analysis and actions (both ethical and communicative) regarding a particular case	2. Seminar presentation by online groups 3. Post-course concept map (4. Online participation)

might be termed 'disorientating dilemmas'[17] or 'moral disequilibrium'.[18] Guided reflection on these cases using gradually introduced ethical theory and reasoning frameworks occurs in small online discussion groups (see Fig. 1). While beyond the scope of this paper to review theories of adult learning, one important strand, known as 'transformative learning'[17,19] holds that meaningful new learning occurs when the learner's existing knowledge and reasoning frameworks are no longer considered sufficient by the learner in order to make sense of a new experience or phenomenon; the experience of a 'disorientating dilemma'. Transformative learning, which has its theoretical roots in the critical theory of Habermas,[20] involves a process of critically challenging existing perspectives, articulating the reasons for their limitations,[21] and apprehending new or revised perspective(s)[17] which then can better account for the phenomenon or issue at hand. The *transformation* of the previous understanding entails new learning which is integrated experientially into both existing knowledge and reasoning frameworks.[17,18,22,23] Our observation of online discussions had led us over time to propose that the learning process (outlined in Fig. 1) may occur at different points in the 6 week curriculum for various

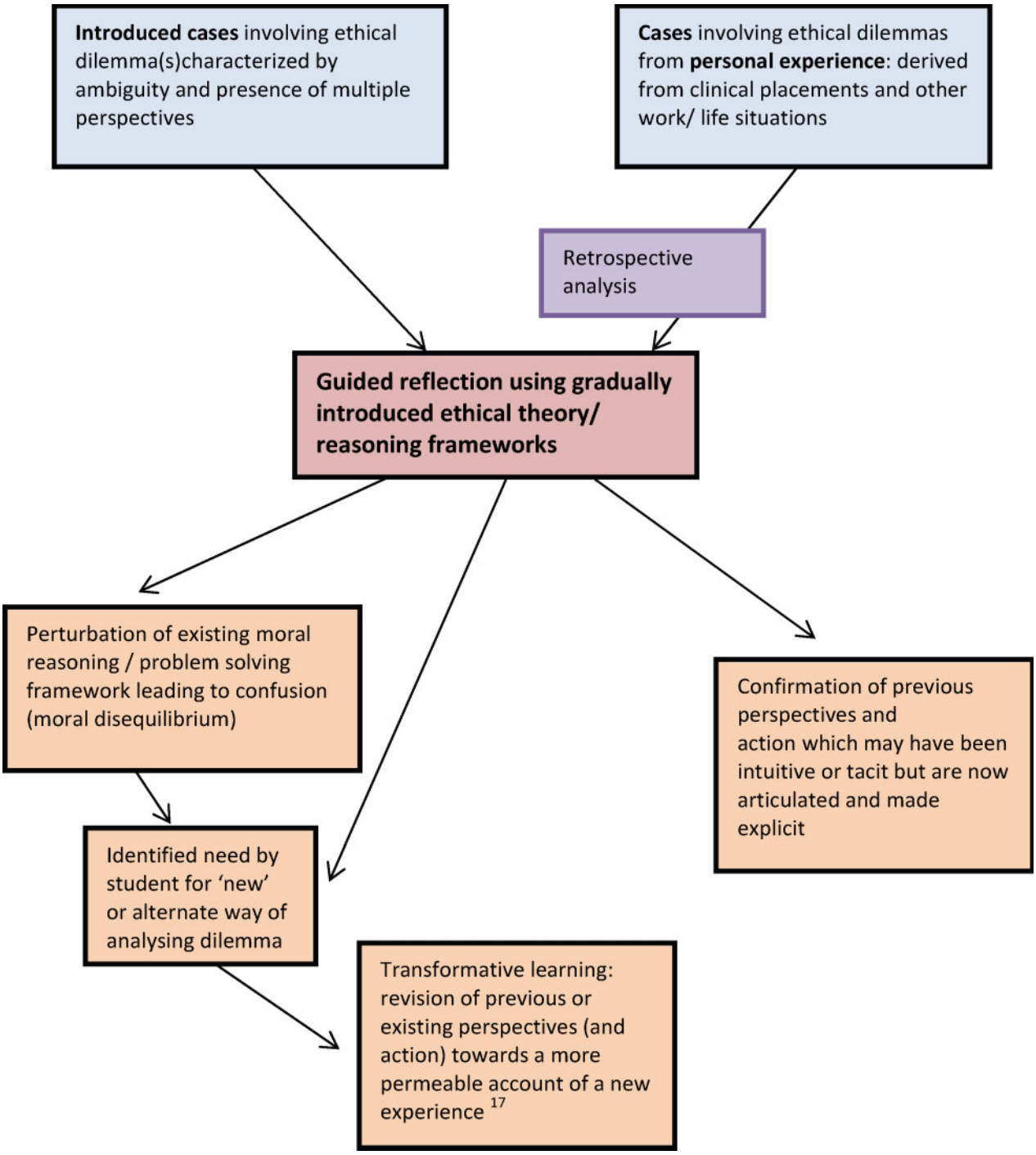

Figure 1 Use of cases, guided reflection and gradually introduced ethical theory to promote transformative learning.

students or even for some in a cyclical manner over the duration of the 6 weeks.

The appeal of transformative learning theory is that it explains how experience, learning and meaning are related.[24] Importantly, this kind of experiential learning, although given exposition by Mezirow in the context of individual learning, has strong theoretical links to social change and action of an emancipatory nature, via its critical social theory underpinnings.[20,23,25] Learning, therefore, is not restricted to the personal domain but it is inextricably related to larger social, political and environmental contexts[14,19,26] as well as moral action.[12,27]

The notion that 'transformative learning' (as meaningful learning) derives from the interpretation of experience and leads to an integration and organization of new knowledge[22,28,29] thus provides further rationale and method, not only for the pedagogical strategies underlying our ethics curriculum but also the two investigative foci of this study: the development of moral judgment (or ethical reasoning ability) *and* change in organization of ethical knowledge in these final year physical therapy students following participation in this 6 week course. Our interest lies in both evaluating this method of teaching ethical reasoning and also in considering the utility of the two quite different tools (described below) by which changes, potentially arising from this teaching, are determined.

Method

Using a pre-test, post-test descriptive methodology students were invited to participate in the study through their enrolment in the ethics course for final year physical therapy students in the School of Health Sciences, University of South Australia. Participation was voluntary and the two main teachers in the course (IE and GVK) were not aware which students were participants in the study or not. Students were also advised that their involvement in the study (or not) would have no bearing on the grade for the course. Two forms of data collection took place. The first was the completion of the Defining Issues Test (DIT2) which is a test of moral reasoning. The second was the construction of a concept map (further defined below) on the topic of 'the relationship between ethical decision making and clinical reasoning in physical therapy practice'. These two data sets were chosen not only because each has a different albeit related focus (i.e. reasoning schema and knowledge organization) but also because they provide an evaluation of student performance which combines both quantitative and qualitative elements. We contend that this reflects the notion that ethical action and its antecedent ethical reasoning are dependent on multiple constructs. Each data set was collected both before and at the completion of the 6 week course. Inclusion criteria for the study were completion of both DITs and both concept maps.

Researcher involvement was such that all researchers took part in the conceptual and operational design of the study (including developing the method of scoring concept maps). IE and GVK delivered and taught the course with the teaching emphases described above. MAJ taught the whole class how to construct a concept map (given that the construction of this map on the topic above also constitutes the final assessment item for the course). MAJ also administered the DIT2 questionnaire both pre- and post-course. MAJ and LLS scored the pre- and post-course maps of the participating students. JB provided statistical analysis of the results. There was a clear separation of teacher and researcher roles in the conduct of the 6 week course and the conduct of the study between the initial design phases and data analysis and discussion phases. Approval for the study was provided by the Human Research Ethics Committee of the University of South Australia (protocol no. P155/09).

From a total class size of 54, 40 students agreed to participate in the study following an information session and informed consent procedure conducted by MAJ. A final sample size of 37 was determined based on the assembly of complete data sets (i.e. pre- and post-course DIT2 questionnaires and concept maps).

The Defining Issues Test (DIT2) was developed and validated by Rest and colleagues[30] with many professional groups over a period of some 20 years. It requires participants to rate and rank a series of responses to several stories which include ethical dilemmas and social issues.[30] Utilizing a Neo Kohlbergian stage theory of moral reasoning development the information from the test indicates which of three reasoning schema is drawn upon by the decision maker: personal interest, maintaining norms and post-conventional reasoning (see Swisher *et al.*[11] in this volume for further discussion of the DIT2). Post-conventional reasoning is considered a more advanced form of moral reasoning and describes a view of engagement with ethical dilemmas which looks beyond personal interest and a more absolutist application of conventional rules of right and wrong (maintaining norms) in order to include the perspectives, needs and contexts of the many protagonists potentially influenced by the ethical issue at hand.[30,31] The test takes around 30 minutes to complete. Completed DIT2 data questionnaires were sent to the Center for Ethical Development at The University of Alabama for analysis.

A concept map is a method of externalising not only what a person knows on a given topic but also

how that knowledge is organised.[22,28–29,32–34] It thus provides a means for the learner of visually displaying their integration of new knowledge into existing knowledge frameworks[29,32] and, in doing so, demonstrating the complexity of their knowledge construction (e.g. a connectivity of concepts and factors), particularly useful in ill structured or ambiguous problems. Concept maps arguably provide greater opportunity to access learners' organization of knowledge on more complex topics than can be expressed in more conventional written assessment methods.[22,28,32–34]

Concept maps were developed in 1972 in the context of understanding the learning of science by children.[32] The early use of this tool largely embodied a positivist understanding of knowledge in so much as concepts in maps were arranged (and assessed) hierarchically and reflected an absolutist (or 'right' – 'wrong') conception of knowledge. More recently, constructivism has influenced the understanding and use of concept maps with a recognition that the learner actively builds their own understanding of a phenomenon which then continues to evolve.[29,32] We took such a constructivist position in relation to the teaching and construction of maps in our ethics course, particularly in light of the often ambiguous nature of ethical problem solving. This entailed teaching students that there was no one prescriptive, hierarchical or 'right' way to construct a map as such and that creative devices such as images and metaphors were welcome if they wished to employ them.[34] Instead there may be 'construct rich' maps illustrating the potential complexity of relationships between constructs, principles, theories and approaches and there may be 'construct thin' and relationally poor maps.

We developed a scoring system for concept maps comprising four areas of assessment: a/content knowledge; b/grouping of concepts; c/relationships between groups of concepts; and d/overall structure and visual message (Fig. 2).

The development of the map scoring process took place over several months with the research team using maps from past courses to develop the scoring criteria and to obtain further consensus on how to interpret the variations in students' recording of names and labels on maps. Each area above was awarded a score out of three leading to an overall map score out of 12. The specific content section covered seven broad areas of course related concepts with the map scorers looking for a possible 66 items. This score out of 66 was then scaled back to a score out of 3 which was further differentiated by the use of fraction (e.g. 2.3 out of 3). For the other three sections the score was given as a measure of poor (1), adequate (2) or excellent performance (3). In a reliability trial using five sets of maps from the sample, inter-rater agreement using Cohen's Kappa identified good agreement in each of the four areas of map scoring assessment: content knowledge (K=0.81); grouping concepts (K=0.82); relationships between groups (K=0.55) and overall structure and visual message (K=0.62). Where minimal differences between the two scorers were found these were reconciled via discussion. Following this discussion, both judges applied scoring with a high degree of agreement.

By convention concept maps employ labels (e.g. 'produces', 'affects', 'involves', 'requires', 'causes', 'results in' etc.) which are placed adjacent to arrowed lines in order to describe relationships between concepts and features on the maps.[22,32] In this study, we modified this procedural convention for two reasons. First, we considered the abstract and sometimes ambiguous relationships between many of the constructs and principles related to ethics and reasoning did not necessarily lend themselves to potentially reductionist one or two word labels. Second, the post-course concept map in our study (as mentioned above) also forms the final and main assessment item for the course. In this assessment, apart from the map itself, students are required to provide both a commentary on the map which describes the main relationships and features of their maps, and also a statement which explains the differences between their first and second maps in terms of their own learning. In the light of our first reason above we elected to continue this format for both participants and non-participants in the study. For the purposes of the study, map scores were determined by the scorers (MAJ and LLS) prior to reading the map commentary and learning statement.

In addition to the scoring of concept maps, another tool called the Structure of Observed Learning Outcomes (SOLO) was used to assess the nature of learning demonstrated in the maps. SOLO is a taxonomy which illustrates levels of student learning in terms of levels of increasing structural complexity.[35,36] The levels in the SOLO taxonomy are 1/prestructural; 2/Unistructural; 3/Multistructural; 4/Relational; and 5/Extended abstract (see Table 2).

This development of structural complexity increases firstly in a quantitative manner as the amount of detail in a student's response increases. This is followed by qualitative changes as that detail becomes integrated into a structural pattern.[36] Following the scoring of each map the scorers determined two SOLO scores, as learning outcomes, between one and five (one score determined *before* and one score determined *after* reading the commentary and learning statement).

Data from the concept maps, DIT2 and SOLO information was entered into an Excel spreadsheet and analysed with IBM SPSS 19.0.[38] Descriptive

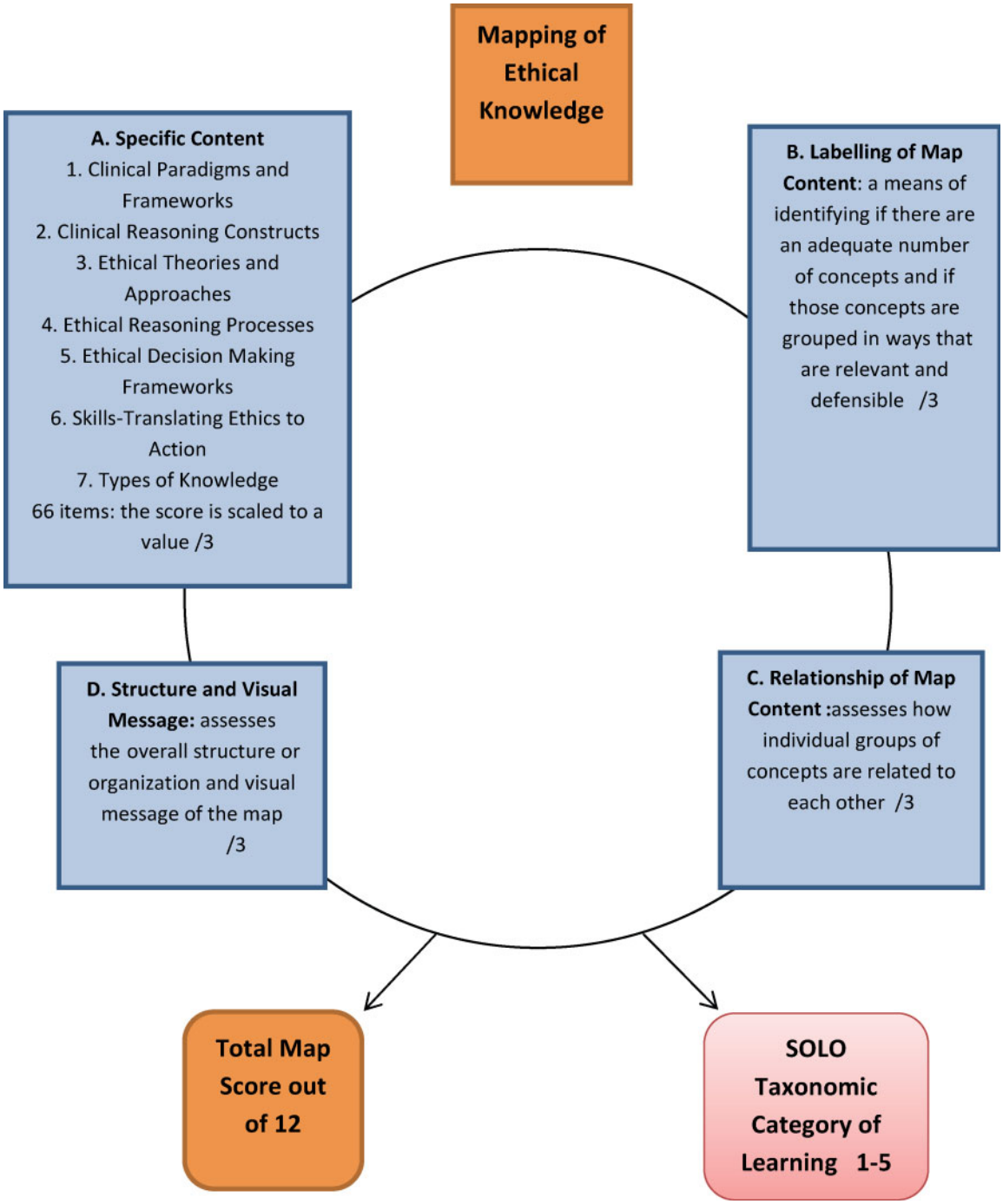

Figure 2 Overview of concept map scoring.

Table 2 Structure of observed learning outcomes (SOLO) (adapted from Christensen 2009)[37]

Structure of observed learning outcomes (SOLO)
1. Prestructural: an outcome containing nothing of relevance to the topic in question.
2. Unistructural: an outcome where one or a minority of relevant aspects of a topic is understood and focused on.
3. Multistructural: an outcome where a majority of relevant independent aspects or components of a topic are presented, but are not linked or integrated into an integrated or comprehensive overall structure.
4. Relational: an outcome where all (or the great majority) of aspects or components of a topic are related or integrated into a coherent whole structure which has meaning.
5. Extended abstract: an outcome which demonstrates that understanding of the integrated knowledge can be generalized or transferred to new situations or experiences, and is characterized by questioning of basic assumptions and existing knowledge.

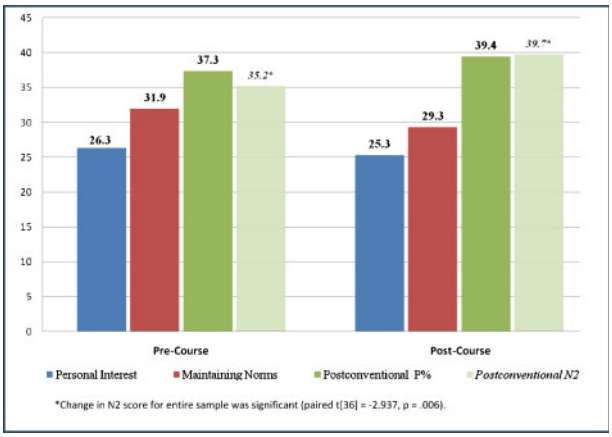

Figure 3 Mean moral reasoning schema scores.

statistics, paired *t*-tests, and correlations were calculated to analyse differences and associations in moral reasoning, concept mapping and SOLO scores.

Results

There was a significant change, as measured by the DIT2, in the moral reasoning of these students following the 6 week course. Two important indices of moral reasoning measured by the DIT2 are the P% score and the N2 score.[31,39] The P% score is the proportion of items selected utilizing moral theoretical frameworks for resolving complex moral issues which appeal to collaborative and socially oriented perspectives. The N2 score is the primary index of the DIT2 in so much as it represents the degree to which an individual uses higher order moral reasoning while at the same time rejects ideas which are simplistic or biased. In this study there was a significant increase in the mean N2 score from time 1 to time 2 (6 weeks) from 35.2 to 39.7 ($t=-2.937$, $P=0.006$) (see Fig. 3) indicating a development of student moral reasoning during the 6 weeks towards a more sophisticated and socially oriented post-conventional framework or schema. This also indicates a greater appreciation of the ambiguity and ill structured nature of many ethical issues and recognition of the multiple perspectives existing in situations with ethical issues. These results are further analysed and discussed in Swisher *et al.* in this issue.[11]

In relation to changes in the students' organization of ethical knowledge, the concept map scores (out of a possible score of 12) increased from time 1 to time 2 in a significant manner ($t=-14.23$, $P=0.001$). Using paired samples *t*-test, the mean score for the 37 pairs of maps at time 1 was 4.27 (SD=0.49) and at time 2 was 8.44 (SD=1.82). The mean SOLO score for maps at time 1 was 2.03 (SD=0.16) and the mean SOLO score for maps at time 2 (without commentary) was 3.45 (SD=0.60). With the commentary and learning statement taken into consideration the mean SOLO score for maps at time 2 was 3.65 (SD=0.63). This difference was found to be significant ($r=0.773$, $t=-3.15$, $P=0.003$).

Using Pearson correlation, there was a strong association between the change of the concept map scores and the change of the SOLO scores from time 1 to time 2 ($r=0.70$, $P<0.05$), indicating that the map scoring method that we employed was able to assess the extent of changes in student learning in a manner concurrent with the more widely recognized and reported SOLO taxonomy.[28,35,36,40,41] There was no significant correlation between SOLO and N2 scores and this is discussed below.

Discussion

This study has demonstrated that a 6 week course using curricular strategies designed to evoke transformative and experiential learning can facilitate both the development of ethical reasoning ability (moral judgment) and a richer and a more integrated knowledge of ethics and reasoning constructs in this physical therapy student group.

The data resulting from the scoring of maps and attribution of SOLO scores leads us to conclude that student learning was meaningful and contained constructivist as well as positivist elements of learning.[22,32] The mean SOLO score of 2.03 for the maps at time 1 indicates that the great majority of students at the beginning of the course, not surprisingly, exhibited a SOLO level 2, unistructural understanding regarding the topic (the relationship of clinical reasoning and ethical decision making in physical therapy practice) where very few items of knowledge relevant to the topic were demonstrated and which were not integrated in to any comprehensive structure. The mean SOLO score of 3.45 for maps at time 2 (without scorer recourse to commentary or learning statement) indicates that a majority of students fell short of demonstrating a SOLO level 4, relational level learning outcome and instead exhibited a level 3, multistructural learning where many or most concepts and constructs related to the topic were present but were not integrated in to a coherent or comprehensive structure. However, when the reading of the commentary and the learning statement were taken into account in the SOLO scoring (the strategy used in this study instead of using labels describing relationships between constructs on maps), this resulted in a mean SOLO score of 3.65. In this case the majority of students were found to have demonstrated a SOLO level 4, relational learning where all (or the great majority) of aspects or components of a topic are related or integrated into a coherent whole structure which has meaning. The significance of this finding, apart from emphasizing the importance of a method to describe

relationships between constructs on concept maps, is that students were observed to move from a quantitative 'adding' of knowledge items to their existing knowledge frameworks in favour of a more qualitative interpreting and integrating of new knowledge into existing frameworks.[28,29,34,36]

The DIT2 and Concept maps (with their associated measure SOLO) are parallel data collection and analysis 'arms' of the study. The DIT2 is concerned with judging the moral reasoning schema drawn upon in ethical problem solving whereas concept maps (together with the SOLO attribution of learning) provide an assessment of the richness in organization of forms of ethical knowledge. They represent tools for measuring different phenomena and it is therefore not surprising that there was no significant correlation between SOLO and N2 scores. Notwithstanding this observation, however, each has the potential to point to a learning 'destination' which has shared characteristics of advanced forms of reasoning. With respect to the DIT2 this is post-conventional reasoning.[30,31] In terms of the SOLO taxonomy, it is so called postformal learning.[14,36] Postformal reasoning refers to a stage of problem solving ability beyond Piaget's formal operations[14,26,36] and shares certain characteristics with post-conventional reasoning; namely, that it is inherently social and not just cognitive in nature[14,31] and that it requires an ability to perceive and consider several perspectives (including emotions in addition to cognitions) in a situation.[14,26,31] Post-conventional and postformal reasoning both relate to the chosen curricular strategies and models of our 6 week course: for example, the perturbation of the existing moral reasoning frameworks of the students;[17,18] transformative learning; [17,19] moving between perspectives via the ER Bridge[8,12] and the four component model.[10,30,31] Taken together these curricular strategies aim to further equip our students as moral agents; both able and willing to apprehend the issues of professional practice and exercise moral agency in complex ethical dilemmas where there are the perspectives of multiple stakeholders.

We conducted this study in order to further understand the relationship (or more simply, the gap) between what was being aspired to in the teaching of our ethics curriculum and what was being achieved. Obtaining the identified changes in moral reasoning and knowledge organization of these students in such a short period of time as 6 weeks, at least with respect to changes in DIT2 outcomes, is not commonly reported in the literature.[42] However, it is not our intention to necessarily claim that 'shorter is better' in the teaching of ethics. Both the length of the course and its situation in the program are worth further comment. We confess that the choice of a '6 week curriculum' had its origins in pragmatic rather than pedagogical factors. In the final year of the program students' clinical and community placements tend to take place as 6 week blocks. And so, this was the time block which we had available to us to run each ethics course. Interestingly, and perhaps also fortuitously, we find now that this 6 week intensive block (equivalent in terms of workload to the usual semester long course) seems an appropriate length to maintain the kind of intensity of student engagement which appears to be associated with the often unsettling experience(s) of transformative learning.

It was our explicit intention, however, as teachers (IE and GVK) taking over the responsibility for teaching ethics, to move the course to the final year in the program. The rationale for this was to maximize the amount of clinical experience (and thus personal case examples of ethical dilemmas) which students would be able to bring to the course; the utility of which is described earlier in the paper. The ethics instruction students receive earlier in our program occurs in a more didactic manner mainly in the context of preclinical preparation and teaching, and includes concepts such as 'informed consent' and 'confidentiality'. There is also the implicit learning of ethics through professional socialization, for good or ill, which occurs as students observe over time their clinical educators and other physical therapists in practice. We contend, provided there is earlier ethics teaching given as preparation for clinical placements, that the teaching benefits of being able to utilize 'reflection on experience' as part of adult learning, by situating the course in the final year of the program are not necessarily outweighed by other arguments: for example, that ethics teaching should either be primarily undertaken early in the program in order to be 'utilized' in clinical placements or take place as a steady continuous line of teaching throughout the program.

Returning to the central finding of the study, we cannot claim, despite a significant shift to post-conventional reasoning, that our students, by and large, have reached a level of postformal thinking. For example, only one scorer judged (following consideration of commentary and learning statement) two students as demonstrating a SOLO level 5 extended abstract (see Table 2) form of thinking in their concept maps. The reasons for this might be related to some limitations of the study. First, there is some debate as to when adults are capable of engaging in postformal thinking, from the early 20s[36] or later.[14,26] Perhaps we are unrealistic to have such a high learning expectation for many of our students, particularly at a time when they are immersed in forms of learning which prioritize a

positivist and biomedical formal logic.[43] In this form of logic there is a 'right' and 'best' answer and the holding in tension of multiple realities is not necessarily encouraged. Of course this observation is made at a particular point in time when the diversity of the forms of knowledge and learning processes used by expert practitioners in practice is still being apprehended for teaching purposes.[43,44] We do not wish to imply that ethics curricula could not be effectively taught at other times or by other means in physical therapy programs. Second, and more to do with our method, there has been some criticism of the SOLO taxonomy as an assessment of learning.[41] This has to do with a persisting ambiguity in the task of interpreting the criteria for attribution of different SOLO levels and partly explains why a number of other researchers have made attempts to further differentiate the 5 levels of SOLO.[28,41] Despite reaching good levels of reliability, our map scorers were not quarantined from these same challenges in relation to the attribution of SOLO scores.

A third and different limitation of the study has to do with the so called 'duration of effect' of the teaching intervention and whether students would carry this ethical reasoning ability in to their professional practice. In answering this we firstly acknowledge that ethical reasoning is only one step, albeit an important one, in the process of taking ethical action in clinical practice. The four component model distinguishes between the recognition of, and moral judgement regarding, an ethical dilemma and the commitment and courage that might be required, in certain circumstances, to do something about it. A recognition of the need for all of us, novice and experienced practitioners alike, to continually find and nurture our own moral motivation and courage in different contexts forms part of our teaching. And so, without being able to make particular claims regarding the actual future ethical behaviours of our students, we would with some greater degree of confidence suggest that, through an adult learning model for learning ethical reasoning which takes account of multiple realities and perspectives in a situation, students are supported to continue a lifelong learning process as practitioners; further developing ethical reasoning skills (and hopefully action) through informed reflection on experience.

Conclusion

This study has demonstrated that a 6 week course using curricular strategies which encourage transformative and experiential forms of learning can facilitate in a cohort of final year physical therapy students both the development of ethical reasoning ability (moral judgment) and a richer organization of the types of knowledge required for ethical decision making.

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