# Moral Reasoning of Education Students: The Effects of Direct Instruction in Moral Development Theory and Participation in Moral Dilemma Discussion

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***Background/Context:*** *Results of the few studies that have investigated moral reasoning in education students suggest that such reasoning may be less advanced for them than for college students with non–education majors and that education students do not appear to advance in moral reasoning from freshman to senior year.*
***Purpose:*** *The purpose of the present study was to test an educational intervention designed to advance moral reasoning scores of undergraduate elementary and secondary education students.*
***Setting:*** *The study was conducted in undergraduate classrooms at the University of Nevada, Reno, a Western Land Grant institution.*
***Participants:*** *Participants were undergraduate elementary (n = 94) and secondary education majors (n = 98) and undergraduate students majoring in English literature and philosophy (n = 42).*
***Research Design:*** *The study was a quasi-experimental design.*
***Data Collection and Analysis:*** *Undergraduate education students enrolled in four sections of an introduction to educational psychology course received interventions designed to*

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*advance moral reasoning. English and philosophy courses were chosen as control groups. Over a period of 5 weeks, students in the intervention groups were taught moral development theories and participated in online dilemma discussion. An additional 3 weeks were devoted to pretesting and posttesting activities.*

***Results:*** *A 2 × 5 mixed analysis of variance (ANOVA; time by group) with repeated measures on time was conducted to analyze pre- and posttest2 DIT P-scores for all five subgroups. Significant increases in mean DIT P-scores were found for the elementary and secondary intervention groups but not for the control groups. Gains in both the elementary and secondary groups were maintained at posttest2 at the end of the semester, but there were no significant differences from posttest1 to posttest2. To determine the effectiveness of hypothetical versus real-life dilemma discussion on moral reasoning, a 2 × 3 mixed ANOVA (time by group) was conducted. The ANOVA main effect for time and the interaction were significant, whereas the main effect for group was not significant.*

***Conclusions/Recommendations:*** *Results of the present study support findings of previous studies providing evidence that principled moral reasoning can be advanced by deliberate educational interventions. Future studies should investigate whether gains will be maintained over longer periods of time than a single semester and whether mere gains in moral reasoning scores translate to a broader range of moral behaviors.*

It has been suggested that the importance of ethics in teaching cannot be overstated (Chang, 1994), and few would disagree that teaching has a moral and an academic dimension. In fact, teaching has been described as a moral enterprise (Goodlad, Soder, & Sirotnik, 1990), and teachers are charged with moral and ethical responsibilities for their students (Chang). As Chang has noted, ethical concerns are especially important for teachers because they serve as moral models for students and are expected to behave ethically in the classroom. Other researchers also emphasize the role of teachers as moral models (see Abebe & Davis, 2006–2007; Cooper, 2004; Derryberry, Snyder, Wilson, & Barger, 2006). In addition, because teachers usually work in isolation from other adults, children in their classrooms are vulnerable to victimization by teachers who behave unethically.

There are many examples of daily decision-making by teachers that require sound moral reasoning. Teachers (a) assign grades and make decisions based on these grades; (b) allocate resources, especially their own time, to children; (c) discipline and punish students; (d) broker or negotiate educational programs and other matters with parents, students, administrators, and the community; and (e) make decisions about sensitive and vulnerable young people (Strike, 1990; Strike, Haller, & Soltis, 1998). Accordingly, the present study was designed to test an

educational intervention to advance moral reasoning in undergraduate education students.

One view of moral reasoning has been described by Lawrence Kohlberg (1981), whose theory of moral development assumes a relationship between cognitive development and moral reasoning ability. Kohlberg's theory of moral development is based on Piaget's work on the development of moral judgment in children (Piaget, 1997), which holds that cognitive development is necessary but not sufficient for moral development. However, because Piaget's research only included children up to adolescence (age 12 years), his work was extended by Kohlberg to include adolescents and adults. Both Piaget and Kohlberg assumed that although advances in moral stage depend on advances in cognitive stage, the individual may advance in cognitive stage but not in moral stage. Advances in moral reasoning depend on disequilibrium in social interactions that result in a shift in perspective-taking. Thus, an individual may have attained Piaget's cognitive stage of formal operations, but if that person does not experience the necessary social interactions to cause a shift in perspective-taking, he or she will not advance in moral reasoning.

According to Kohlberg (1981, 1987), moral development occurs within three levels—preconventional, conventional, and postconventional—and six stages. As moral reasoning progresses across levels, judgments about moral issues are at first based on an egocentric perspective of individual concerns and then advance to a broader, postconventional perspective that encompasses concerns for equality, mutual respect, and protections of basic human rights. At this highest level, moral judgments depend on abstract, formal reasoning and the cognitive ability to take a multiplicity of perspectives. Kohlberg (1981) has called the postconventional level the *principled* level of moral reasoning.

Kohlberg's theory has been criticized because of its perceived gender bias (Gilligan, 1982) and its claims of universal and invariant stages (Liebert, 1984). However, research has not validated this gender bias criticism, and it has been found that gender is a trivial variable that accounts for only a small percentage of variance in moral reasoning scores (Rest, 1979; Rest, Narvaez, Bebeau, & Thoma, 1999b; Thoma, 1986; Walker, 1991). Likewise, cross-cultural studies have found evidence of the universality of Kohlberg's theory (Snarey, 1985; Rest et al., 1999b). There are other theories of moral development (see Gibbs, 1991; Gilligan, 1982), although most are based on Kohlberg's work. In conclusion, although there are critics of Kohlberg's theory, it has been described as "the linchpin for studying morality from the inside, and it is the major work on moral judgment" (Rest, Thoma, & Edwards, 1997, p. 6).

## MORAL DEVELOPMENT AND TEACHING

Teachers who reason at the postconventional level are aware of, and take seriously, their moral and ethical responsibilities to recognize and respect the basic worth and dignity of all human beings (Chang, 1994; Cummings, Dyas, Maddux, & Kochman, 2001). According to Beyer (1991), the teacher's ability to consider the moral dimensions of teaching is essential for working in schools that operate within a culturally diverse democratic society. As Beyer stated,

> Yet when teachers do not consider the moral dimensions of education, or the moral qualities of educative experience, other people and agencies including textbook publishers, individuals and organizations representing business and industry, politicians, and special interest groups have a relatively unobstructed hand in determining the moral perspectives communicated to students. (p. 247)

## LINKS BETWEEN TEACHERS' LEVELS OF MORAL DEVELOPMENT AND BEHAVIOR

Although it is important that teachers reason at higher levels of moral reasoning, they also must translate their moral thinking into moral behavior. A number of critics have raised concerns that measures of moral reasoning do not provide information about actual moral and ethical behaviors (Rest et al., 1999b; Thoma, 1994). Consequently, a number of studies have investigated links between teachers' moral reasoning and various behaviors.

### *Moral Reasoning and Teachers' Views of Their Roles*

*Lower scoring teachers.* Johnston (1989) found a relationship between in-service teachers' moral reasoning scores and their understandings of their roles as teachers. Data from the beginning and the end of a 2-year graduate program showed that changes in understandings from pre- to postservice interviews were consistent in direction and related to pre- and postscores in moral reasoning, with lower scoring teachers viewing their roles as authoritarian and higher scoring teachers more likely to view their roles as facilitative. Johnston and Lubomudrov (1987) interviewed subjects with both high and low moral reasoning scores concerning classroom rules and roles, management of disobedience, conflicts of

interest, and teacher and student rights and responsibilities. Teachers in the low-scoring group saw their role as authoritarian, with emphasis on maintaining control, or policing. Lower scoring teachers also viewed themselves as the primary decision makers concerning how and what students should learn (Clark & Peterson, 1986; Johnston & Lubomudrov (1987); MacCallum, 1993).

*Higher scoring teachers.* These teachers tended to see their role as more facilitative than directive and considered that the purpose of rules was to ensure students' rights. They encouraged a continuing dialogue with students concerning their individual needs and interests and described ways to set up rules that would promote student understanding and responsibility. Further, they saw their role as interactive and facilitative and desired to balance their own needs with those of their students. Finally, they were less confident than lower scoring teachers that their choices were the best ones because they were aware of the difficulty of balancing the rights of all concerned (Clark & Peterson, 1986; Johnston, 1989; Johnston & Lubomudrov, 1987; MacCallum, 1993).

*Moral Reasoning and Relationships With Students*

*Lower scoring teachers.* Johnston and Lubomudrov (1987) investigated the relationship between teachers' moral reasoning and their interactions with students and found that low-scoring teachers expected their students to comply with the rules without question. Further, these teachers retained the right to interpret, change, and/or implement rules to fit particular situations. These teachers felt comfortable dictating rules and expecting students to follow them rather than working with students to determine classroom rules. Further, these teachers said that they often used students' positive regard as leverage to gain compliance. In another study, MacCallum (1993) interviewed teachers concerning four hypothetical school discipline incidents and coordinated their responses with moral reasoning scores. Lower scoring teachers considered maintaining authority to be central to their relationship with students. These same teachers saw discipline situations primarily from their own perspective.

*Higher scoring teachers.* Higher scoring teachers responded to student incidents by taking the perspectives of all involved. They valued student participation in rule-making and enforcement. Further, they tended to focus on the reasons underlying rules, to demonstrate an awareness of students' psychological needs, and to help students see situations from the perspectives of others (Cartwright & Simpson, 2001; Johnston, 1989).

*Moral Reasoning and Understanding Education Concepts*

*Lower scoring teachers.* Results of several studies indicated a relationship between moral reasoning and teachers' understanding of curriculum and management issues (Lubomudrov, 1982; O'Keefe & Johnston, 1989). For example, a relationship has been found to exist between teachers' understanding of being on-task and moral reasoning, with lower scoring teachers holding narrower views of students' on-task behavior and higher scoring teachers recognizing a wider variety of behaviors as indicative of being on-task (Johnston, 1989). Lower scoring teachers also preferred to teach to the group rather than individualize instruction for particular students.

*Higher scoring teachers.* Higher scoring teachers viewed individualizing instruction as a means of supporting the rights of students and consulted with students concerning how and what would be learned through individualized instruction (Johnston, 1989).

In conclusion, findings of the mentioned studies illustrate the importance of teachers' moral reasoning and its possible relationship to moral behavior. However, higher moral reasoning scores do not necessarily guarantee corresponding moral behavior. Thus, higher moral reasoning scores may be a necessary, if not sufficient, condition for moral behavior to occur (Kohlberg, 1981).

## MORAL REASONING AND PRESERVICE TEACHERS

Because of the need for teachers to provide moral leadership, it is important for teacher education programs to include instruction in moral and ethical aspects of teaching. Therefore, research investigating moral reasoning in, and moral interventions with, preservice teachers seems crucial.

Results of the few studies that have investigated moral reasoning in education students suggest that such reasoning may be less advanced for them than for college students with non–education majors (Cummings et al., 2001; Lampe, 1994; McNeel, 1994; Yeazell & Johnson, 1988). For example, in these few studies, students majoring in disciplines such as English literature and philosophy have been found to receive higher moral reasoning scores than students pursuing degrees in professional fields such as business, engineering, and education (Cummings et al.; McNeel). Furthermore, education students do not appear to advance in moral reasoning from freshman year to senior year (Cummings et al.; McNeel; Yeazell & Johnson), and moral reasoning of seniors in education has been found to be more like that of college freshmen pursuing other

majors (Cummings et al.; McNeel). This is not typical of the usual effect of the college experience on moral reasoning, because college students usually advance in moral reasoning as they advance in educational level (Bakken & Ellsworth, 1990; Boom & Molenaar, 1989; Rest et al., 1999b; Thoma, 1986). Rest et al. have cited more than 30 published studies showing that the effect of formal education on moral reasoning scores is particularly strong (ranging from 38% to 53% of the variance). In addition, the college experience has been found to influence gains in moral reasoning scores to a much greater degree than it influences gains in other variables related to the college experience, such as verbal abilities, math skills, and self-concept (McNeel). Given the small number of studies comparing moral reasoning of education students with that of students in other disciplines, the jury is still out with regard to this issue, and further investigations are needed.

A number of possibilities exist to explain the lower moral reasoning scores of education students and the claim that these do not advance over their college experience. Some researchers have attributed this to certain aspects of the education curriculum (Lampe, 1994; McNeel, 1994; Yeazell & Johnson, 1988; Rest et al., 1999a). According to Rest et al., the commitment to critical reflection is a crucial characteristic of a college for promoting moral judgment. It is possible that critical reflection is neglected in the curricula of teacher education programs (Beyer, 1991, 1997; Cummings, Wiest, Lamitina, & Maddux, 2003; Goodlad, 1990, 1994; Yost, 1997). Such programs typically include many courses that are skill- and methods-oriented and devoted to technical competence. Thus, there may not be room for courses that incorporate more abstract, theoretical content and make rigorous cognitive demands on students. Consequently, teachers who graduate from such programs may have difficulty reasoning about and responding to the numerous day-to-day moral and ethical issues that come up in the public school classroom (Cummings et al., 2001). Other explanations for lower moral reasoning scores of teacher education students focus on students' personal qualities, raising questions about relative weakness in academic qualifications, motivation, or general intelligence (Chang, 1994; Cummings et al., 2001; Lampe).

In summary, some existing evidence indicates that teacher education students do not score as high on measures of moral reasoning as students with other majors. Because these students eventually will be responsible for children's education, it seems important that attempts be made to determine whether effective interventions can be designed and implemented for the purpose of advancing moral reasoning in teacher education students.

## INTERVENTIONS TO ADVANCE MORAL REASONING

Numerous studies provide evidence that principled moral reasoning can be stimulated by deliberate educational interventions. Intervention studies have been conducted with participants ranging from adolescents to adults. Schlaefli, Rest, and Thoma (1985) conducted a meta-analysis of 55 intervention studies using the Defining Issues Test. The majority of the studies (30 out of 55) used peer discussion of controversial moral dilemmas designed to challenge thinking, reexamine assumptions, take others' points of view, set up logical arguments, and respond rationally to counterarguments. Other programs exposed participants to general theories of developmental psychology (such as Lawrence Kohlberg's theory of moral development) or incorporated discussion of moral and ethical issues within academic course content (criminal justice, political science, great books, social studies). Principal findings were that programs that engaged students in dilemma discussion and/or emphasized moral development (such as teaching Kohlberg's theory of moral development) were most successful in increasing participants' moral reasoning scores.

Rest and Narvaez (1994) have included descriptions of intervention studies with college students majoring in diverse professions, none of which involved education majors. In all studies, experimental or treatment groups showed significantly greater gains on DIT scores than did control or comparison groups. The most successful programs taught self-reflection; stimulated growth in cognitive processes (such as ego strength, interpersonal skills, cognitive complexity, role-taking, and empathy); integrated instruction in moral and ethical issues within a series of courses; or directly taught logical and philosophical concepts critical to the formulation of principled moral reasoning, followed by presentation and discussion of challenging cases of moral problem-solving.

The purpose of the present study was to test an educational intervention designed to advance moral reasoning scores of undergraduate elementary and secondary education students. Previous studies comparing education students with students with other majors have not differentiated between elementary and secondary education students even though differences in personal characteristics or education curricula may exist between these groups. Generally, secondary education students major in academic content areas (such as English and math) and thus take fewer credits in education. In addition, because secondary students aim to work with adolescents and elementary teachers with younger children, personality and attitudinal differences have been found to exist between

elementary and secondary education students (e.g., Haritos, 2004; Johnston, Wetherill, & Greenebaum, 2002).

## METHODOLOGY

### PARTICIPANTS

Participants were undergraduate elementary ($n$ = 94) and secondary education majors ($n$ = 98), and undergraduate students majoring in English literature and philosophy ($n$ = 42). By university classification level, there were 8 freshmen, 64 sophomores, 108 juniors, 33 seniors, and 8 graduate students (13 missing). Participants were volunteers and were not given additional compensation such as extra credit, additional points, or being excused from taking examinations. All research procedures were approved by the university's institutional review board for the protection of human subjects.

A total of 30 males and 200 females participated (gender not reported = 4). The median age was 21 years, with a range of 18–63 years.

### MATERIALS

The Defining Issues Test (DIT; Rest, 1979), a test of principled moral reasoning based on Kohlberg's theory of cognitive-moral development, was administered to participants. The DIT is a paper-and-pencil test comprising six hypothetical moral dilemmas. Each dilemma is followed by 12 statements representing different recommendations for resolution of the dilemma. Participants rate each statement according to its importance (from *great importance* to *no importance*) in making a decision. After completing each of the 12 items, participants are asked to consider all 12 items simultaneously and to rank the four most important of the 12 in making their decision. The assumption of the DIT is that because people define the most important issue of a dilemma in different ways, the selection of items indicates a person's level of principled moral reasoning. Responses at the highest levels of moral reasoning indicate a complex ability to take the perspectives of a variety of individuals within a social system. For example, an individual who reasons at the postconventional level can view any complex moral or ethical problem involving a number of people from the perspectives of all concerned. Further, not only can they view it from all perspectives, but they can also arrive at a solution that requires each party to give up something to gain something so that in the long run, all involved are satisfied.

The DIT yields several different scores, the most popular of which is

the P-score (the Principled Score), a measure of postconventional, or principled, moral reasoning. The P-score is a number that ranges from 0 to 95 and is interpreted as the percentage of reasoning that is at the postconventional level and thus the degree to which the participant values postconventional, or principled, considerations (Rest et al., 1999b). Test-retest correlations and internal reliabilities of the DIT average in the .80s (Rest, 1994).

According to Rest et al. (1999b), the validity of the DIT is based on seven criteria, and results of hundreds of studies have produced significant trends. In the manual for the DIT-2, Rest and Narvaez (1998) described the seven criteria as: (a) differentiation of various age/education groups, (b) longitudinal gains, (c) relationship to cognitive capacity measures, (d) sensitivity to moral education interventions, (e) relationship to prosocial behaviors and desired professional decision-making, (f) relationship to political attitudes and political choices, and (g) reliability.

In addition, the DIT, although clearly related to verbal ability, shows discriminant validity from verbal ability/general intelligence and from conservative/liberal political attitudes; that is, the information in a DIT score predicts, to the seven validity criteria and beyond, that accounted for by verbal ability or political attitude. Furthermore, the DIT is equally valid for males and females, and no other variable or construct predicts the pattern of results on the seven validity criteria as well as moral judgment. A thorough discussion of the reliability and validity of the DIT can be found in chapter 4 of a volume entitled *Postconventional Moral Thinking: A Neo-Kohlbergian Approach* (Rest et al., 1999a).

The DIT has been used extensively since the 1970s. Currently, the number of studies using the DIT totals well over 1,000. Hundreds of thousands of respondents in more than 40 countries have taken the DIT. About 150 new studies involving the DIT are published each year (Rest, 1994).

## DESIGN AND PROCEDURES

Undergraduate elementary and secondary education students enrolled in four sections (elementary education, two sections; secondary education, two sections) of an introduction to educational psychology course received interventions designed to advance moral reasoning. Control groups consisted of undergraduate students enrolled in four sections of the educational psychology course (elementary education, two sections; secondary education, two sections), two sections of philosophy, and two sections of English (one section of general English literature and one

section of Shakespeare). English and philosophy courses were chosen as control groups because such courses emphasize logical thinking and tend to engage students in discussions of moral and ethical issues (Rest & Narvaez, 1994; Schlaefli et al., 1985). The assumption was that participation in such classes might advance moral reasoning in students.

Over a period of 5 weeks, elementary and secondary education students in the intervention groups were taught moral development theories of Piaget and Kohlberg, with an additional 3 weeks devoted to pretesting and posttesting activities. The same instructor with in-depth knowledge of moral development theory taught the theory to students in all four intervention groups. Instruction included opportunities for student interactions and questions related to lecture content.

Over the 5-week period of instruction, elementary and secondary students in the intervention groups also participated in online moral dilemma discussions to expose them to different viewpoints on an issue. According to Schlaefli et al. (1985), this experience provides students with practice in moral problem-solving, exposure to different viewpoints, and experiences with arguments and counterarguments.

Kohlberg's assumption was that if people are presented with moral dilemmas, their interest will be aroused, they will be willing to give what they consider to be the best solution to the dilemma, and they will also be willing to say why they think theirs is the best solution. The moral dilemmas involve a character who finds himself or herself in a difficult situation and has to choose between two or more conflicting values. The subject is asked how the character ought to resolve the problem and why that would be the right way to act in the given situation.

Kohlberg designed the dilemmas to cover a number of different moral issues and so that (a) they could be used with children and adults, (b) they could be understood by all age ranges, and (c) they posed a situation that all ages would find problematic and thus interesting. If a dilemma was too easy or too hard for any given population, it would fail to produce the best thinking about moral issues.

Dilemma discussions were divided into hypothetical versus real-life dilemmas. Studies investigating interventions affecting moral reasoning have used one of these two types of dilemmas. There are advantages and disadvantages to each. Hypothetical dilemmas allow individuals to consider the moral aspects of an issue without having a direct, emotional attachment to it; they focus on justice issues, which correspond to the assumptions of Kohlberg's theory of moral development; they are designed to uncover cognitive structures that govern moral reasoning; and no other alternative dilemmas have been constructed that demonstrate superiority over the Kohlberg dilemmas (Kohlberg, 1981; Rest et

al., 1999a). Hypothetical dilemmas have been criticized as being restrictive in that they focus on justice issues only and do not represent the entire range of the moral domain (Narvaez, 2002; Rest et al., 1999a), and they are hypothetical and abstract rather than representative of real-life personal dilemmas (Grier & Firestone, 1998).

Advocates of real-life dilemmas argue that they are more representative of individuals' natural settings (Grier & Firestone, 1998), and they reveal how people view moral dilemmas in everyday life (Wark & Krebs, 2000). Critics of real-life dilemmas argue that the validity of such dilemmas has not yet been established, and their use may result in measurement of something other than moral judgment (Narvaez, 2002).

To evaluate the effect of type of dilemma on moral reasoning scores, two sections of the intervention group (one elementary and one secondary) engaged in discussions of Kohlberg's hypothetical dilemmas (the Heinz dilemma and the captain's dilemma), and two sections of the intervention group (one elementary and one secondary) engaged in discussions of real-life dilemmas related to current events (the war in Iraq and capital punishment). Kohlberg's Heinz Dilemma describes a situation in which Heinz's wife is ill with a disease that will kill her unless it is treated with a very expensive medicine. A druggist in Heinz's town is the only one who has the drug. He charges more for it than Heinz can pay and refuses to sell it for less. The question in the dilemma is whether Heinz should let his wife die or steal the drug to save her life. Full descriptions of this and other Kohlbergian dilemmas can be found in Kohlberg (1981).

The real-life dilemmas addressed the war in Iraq (should U.S. forces invade Iraq? Why or why not?) and issues related to capital punishment. With regard to capital punishment, students first were asked to read Illinois Governor Ryan's decision to temporarily abandon capital punishment and to consider information on a Web site that described arguments for and against it. They then were asked to state whether they agreed with capital punishment and to provide a rationale for their decision.

Dilemmas were posted on an online bulletin board. Students were assigned a code name and were instructed to (a) read the dilemma, (b) post their suggestion for resolution of the dilemma, (c) read all other students' postings, and (d) post a final response indicating whether their original resolution stayed the same or changed based on other students' responses.

Students in control groups (elementary education, secondary education, philosophy, and English literature) were exposed to traditional course content without inclusion of any research interventions. They

were not taught moral development theory, and they did not engage in dilemma discussion.

The Defining Issues Test was administered to all participants as pretest/posttest measures. Pretesting occurred in both intervention and control groups immediately before interventions began with students in the intervention groups. In the intervention groups only, posttesting occurred immediately after the intervention ended (posttest1) and at the end of the semester (posttest2) to determine if posttest1 gains were maintained. Control groups (elementary education, secondary education, philosophy, and English literature students) received only the pretest and posttest2.

## RESULTS

### EFFECT OF MORAL INTERVENTION ON DIT SCORES

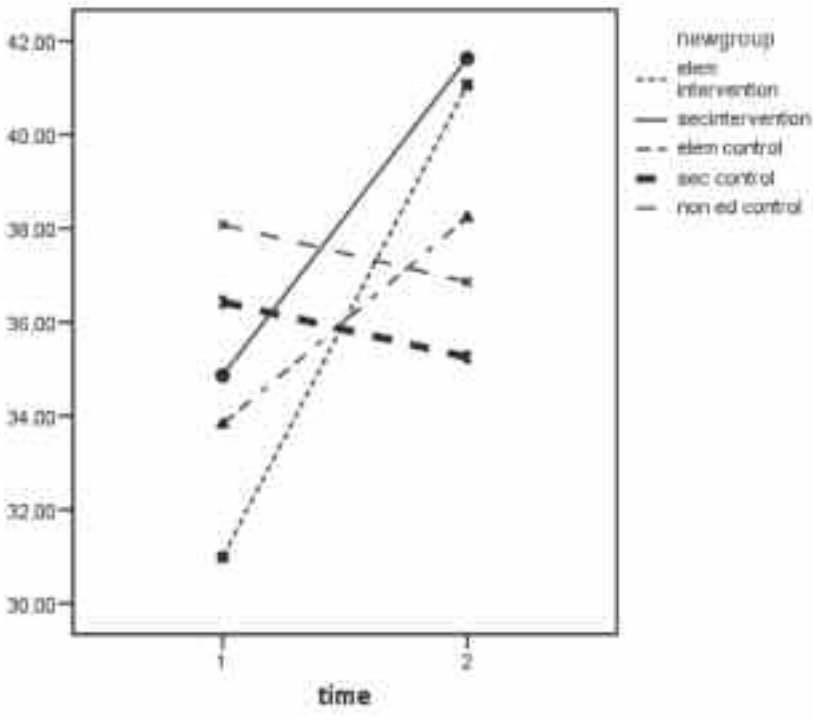
Table 1 presents descriptive statistics for DIT pretest to posttest scores. In light of previous research, a surprising finding was that no pretest differences were found among the five subgroups, $F(4, 277) = 1.987$, $p = ns$, an indication that in this sample, moral reasoning scores of education students did not differ from those of students with other majors.

**Table 1. Means and Standard Deviations for Pretest and Posttest DIT P-scores for Intervention and Control Groups**

| Group | *M* (pre) | SD | *M* (post) | SD |
|---|---|---|---|---|
| Inter-elem *(n=49)* | 30.99 | 10.74 | 41.07 | 15.42 |
| Inter-sec *(n=50)* | 34.87 | 12.91 | 41.63 | 15.12 |
| Con-elem *(n=45)* | 33.83 | 1391 | 38.23 | 15.45 |
| Con-sec *(n=48)* | 36.43 | 13.07 | 35.25 | 15.65 |
| Con-Eng/Phil *(n=42)* | 38.08 | 13.22 | 36.86 | 13.00 |

To investigate the effect of intervention on moral reasoning scores, a 2 × 5 mixed ANOVA (time by group) with repeated measures on time was conducted to analyze pretest and posttest2 DIT P-scores for all five subgroups. All assumptions for the ANOVA were met. The ANOVA main effect for time and the interaction were significant, time: $F(1,229) = 22.20$, $p < .001$, partial $^2 = .09$; time by group: $F(4,229) = 7.758$, $p < .001$, partial $^2 = .12$, whereas the main effect for group was not significant, group: $F(4,229) = .35$, $p = .84$, partial $^2 = .006$. See Figure 1 for a line graph of the interaction.

**Figure 1. Effect of moral intervention on DIT scores: Interaction of time by group in a 2 × 5 mixed ANOVA**




*Simple Effects Analyses*

Simple effects analyses (paired-samples *t* tests with Bonferroni corrections) were conducted to test for pretest/posttest2 differences for each of the five subgroups. An alpha level of .01 was set for each analysis to keep the family-wise alpha at .05. Significant increases in mean DIT P-scores were found for the elementary intervention group, pre-posttest2: $M$ = 30.99, $SD$ = 10.74; $M$ = 41.07, $SD$ = 15.42; $t(48) = 5.05$; $p < .001$; $d = .72$, and the secondary intervention group, pre-posttest2: $M$ = 34.87, $SD$ = 12.91; $M$ = 41.63, $SD$ = 15.12; $t(49) = 4.47$; $p < .001$; $d = .63$, but not for the control groups: secondary control, pre-posttest2: $M$ = 36.43, $SD$ = 13.07; $M$ = 35.25, $SD$ = 15.64; $t(47) = .62$; $p > .01$; $d = .09$; elementary control, pre-posttest2: $M$ = 33.83, $SD$ = 13.91; $M$ = 38.23, $SD$ = 15.45; $t(44) = 2.38$; $p > .01$; $d = .35$; noneducation control (English/philosophy), pre-posttest2: $M$ = 38.08, $SD$ = 13.22; M = 36.86, $SD$ = 13.0; $t(41) = .78$; $p > .01$; $d = .12$.

Results indicate that direct instruction in moral development theory and dilemma discussions were effective in advancing moral reasoning in undergraduate teacher education students.

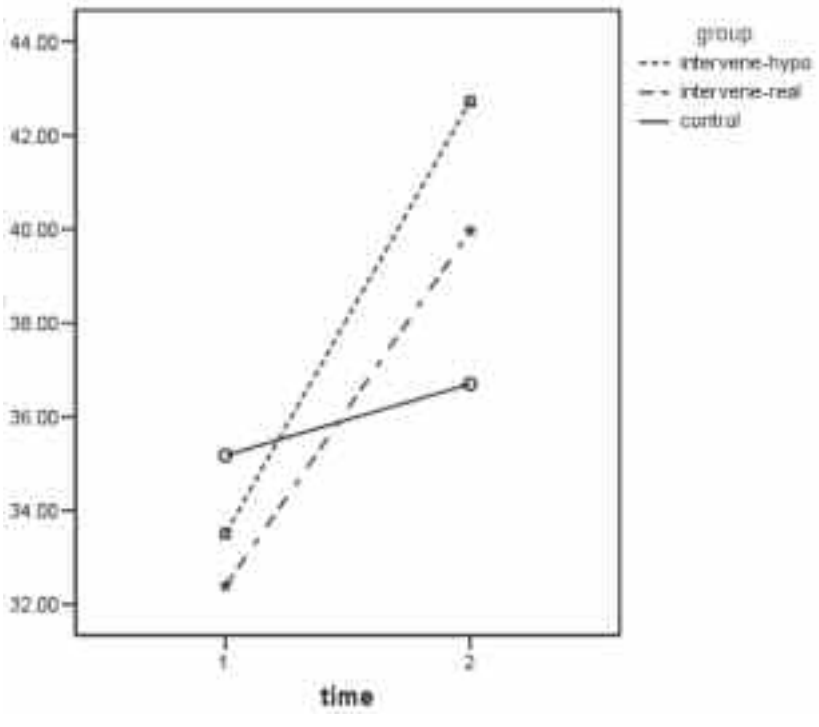
In the past, some concerns have been raised about whether direct instruction in moral development theory amounts to "teaching to the test," such that pretest to posttest gains in DIT scores reflect student memorization of instructional content rather than reorganization of moral schema. One way to address these concerns is to see if gains attained immediately after instruction are retained longitudinally because information learned through memorization would not be expected to be remembered over time.

For the elementary and secondary intervention education groups, to determine if immediate gains in DIT P-scores were maintained 5 weeks later, at the end of the semester, a one-way repeated measures ANOVA (pre to post1 to post2) was conducted on scores from each of the two intervention groups (elementary, secondary). Both ANOVAs were significant: elementary, $F(2,94) = 18.92$, $p < .001$, $\eta^2 = .41$; secondary, $F(2,88) = 10.38$, $p < .001$, $\eta^2 = .28$. In both cases, paired samples $t$ tests were used as multiple comparison tests (Bonferroni adjustments were used with all paired samples $t$ tests in this study). Significant gains were found immediately after the 5-week intervention for the elementary intervention group, pre-posttest1, $M = 33.44$, $SD = 11.95$; $M = 40.91$, $SD = 14.49$; $t(47) = 4.2$; $p < .001$; $d = .61$, and for the secondary intervention group, pre-posttest1, $M = 32.19$, $SD = 11.67$; $M = 40.62$, $SD = 15.29$; $t(44) = 3.86$; $p < .001$; $d = .58$. The gains in both the elementary and secondary groups were maintained at posttest2, at the end of the semester: elementary pre-posttest2, $M = 33.44$, $SD = 11.95$; $M = 42.83$, $SD = 15.58$; $t(47) = 5.73$, $p < .001$; $d = .83$; secondary pre-posttest2, $M = 32.19$, $SD = 11.67$; $M = 39.62$, $SD = 15.40$; $t(44) = 3.56$; $p = .001$; $d = .54$. For both the elementary and secondary education intervention groups, there were no significant differences from posttest1 to posttest2: elementary posttest1-posttest2, $M = 40.91$, $SD = 14.49$; $M = 42.83$, $SD = 15.58$; $t(47) = 1.38$, $p = .18$, $d = .20$; secondary posttest1-posttest2, $M = 40.62$, $SD = 15.29$; $M = 39.62$, $SD = 15.40$; $t(44) = .56$, p = .58, $d = .08$. Thus, DIT P-score gains that occurred immediately after the intervention were maintained 5 weeks later, at the end of the semester. In addition, there were no differences in DIT P-scores from posttest1 to posttest2. This indicates that delivery of course content by the regular course instructor after the intervention did not produce an increase in DIT scores. This seems to imply that the intervention may have resulted in structural changes in students' moral reasoning, whereas instruction in regular course content had no such effects.

## EFFECT OF MORAL INTERVENTION ON HYPOTHETICAL VERSUS REAL-LIFE DILEMMAS

To determine the effectiveness of hypothetical versus real-life dilemma discussion on moral reasoning, a 2 × 3 mixed ANOVA (time by group) was conducted. All assumptions for the ANOVA were met. Levels of the time variable were pretest and posttest2. Intervention groups were elementary and secondary education students who engaged in real-life dilemma discussion ($n$ = 49), elementary and secondary education students who engaged in hypothetical dilemma discussion ($n$ = 50), and those in a control group of elementary and secondary education students who attended class only ($n$ = 133). The ANOVA main effect for time and the interaction were significant, time: $F(1, 229) = 43.89$, $p < .001$, partial $\eta^2 = .16$; time by group: $F(2, 229) = 10.79$, $p < .001$, partial $\eta^2 = .09$, whereas the main effect for group was not significant, group: $F(2,229) = .38$), $p = .68$, partial $\eta^2 = .003$. See Figure 2 for a line graph of the interaction.

**Figure 2. Hypothetical versus real-life dilemmas: Interaction of time by group in a 2 × 3 mixed ANOVA**



Simple effects for each of the three groups (hypothetical, real-life, and control) were calculated using paired samples $t$ tests (pretest-posttest2) with Bonferroni corrections. An alpha level of .01 was set for each analysis to keep the family-wise alpha at .05. Significant results were found for both the hypothetical dilemma group, pre-posttest2: $M = 33.51$, $SD = 12.18$; $M = 42.72$, $SD = 15.36$; $t(49) = 5.77$; $p < .001$; $d = .82$, and the real-life dilemma group, pre-posttest2: $M = 32.38$, $SD = 11.88$; $M = 39.96$, $SD = 15.05$; $t(48) = 3.89$; $p < .001$; $d = .56$. The control group analysis was not significant, pre-posttest2: $M = 36.02$, $SD = 13.47$; $M = 36.96$, $SD = 14.49$; $t(132) = .91$; $p > .01$; $d = .08$.

Results of this analysis suggest that both hypothetical and real-life dilemmas may have an effect on advancing moral reasoning in students, but neither type of dilemma seems to be superior to the other.

## CONCLUSIONS AND IMPLICATIONS

Results of the present study support findings of previous studies providing evidence that principled moral reasoning can be advanced by deliberate educational interventions. The intervention conducted in the present study used intensive instruction in moral development theory and dilemma discussions via an online bulletin board in an attempt to advance moral reasoning scores in teacher education students. Results of the study indicate that this may have been a successful attempt, especially in view of the fact that initial gains in scores immediately after the intervention were maintained for another 5 weeks, until students were tested at the end of the semester. To provide further support for lasting effects of instruction on moral reasoning scores, future studies should investigate whether gains will be maintained over longer periods of time than a single semester and whether mere gains in moral reasoning scores translate to a broader range of moral behaviors.

This study also examined the efficacy of hypothetical versus real-life dilemma discussion. This was in response to suggestions in the literature that Kohlbergian hypothetical dilemmas are artificial and restricted in terms of sampling the entire range of the moral domain. Results of this study indicate no differences between hypothetical and real-life dilemmas; both were effective in improving moral reasoning scores of teacher education students. Thus, interventions designed to advance moral reasoning that include dilemma discussion may be effective when Kohlberg's hypothetical dilemmas are used, when real-life dilemmas based on current events and issues are used, or when a combination of hypothetical and real-life dilemmas is used.

Finally, the intervention in the present study taught theoretical

concepts that required critical thinking of students. Results suggest that students were stimulated to think abstractly about complex moral issues. This is an indication that teacher education students may benefit from instruction that includes abstract, complex content. This is reflected in significant increases in DIT scores, which have been shown to correlate significantly with measures of verbal ability, general cognitive ability, and reflective judgment (see chapters 4 and 5 in Rest, Narvaez, Bebeau, & Thoma, 1999b). Thus, increases in DIT scores suggest advances in participants' critical thinking ability. Future research might investigate whether teacher education courses could be redesigned to combine instruction in theory and critical thinking with required methodologies.

## LIMITATIONS OF THE STUDY

The present study found that an intervention using direct instruction in moral development theory, combined with dilemma discussion, may raise DIT scores in elementary and secondary education students. However, it is possible that other factors, such as classroom dynamics and the instructor's effectiveness in delivering the intervention, may have accounted for the gains. Therefore, this study should be replicated to see if similar findings result.

In addition, although it is possible that these findings could be generalized to education students in other higher education settings, the methods used in the present study might not be appropriate to use with students in other college disciplines. This study found no pretest differences between education students and students enrolled in courses in philosophy and literature, a finding that ran counter to our expectations about education and non–education majors. This may have occurred because the philosophy and English courses, which were lower level courses, included some students who were not majors in those disciplines. Therefore, future research should attempt to replicate the present study with education students in other institutions and devise and test discipline-specific interventions for students in other fields of study.

Finally, whether there is a link between gains in moral reasoning scores and increased moral behavior of preservice teachers was not explored. Future studies should investigate this link.

## AN AGENDA FOR FUTURE RESEARCH

The limitations of the present study suggest the need for a rich agenda of future research. Much more work needs to be accomplished to address issues that go beyond the moral reasoning of teacher education students

and include additional questions and concerns.

First, future studies should offer a multitrait, multimethod approach to the study of moral reasoning and behavior. Multiple measures of moral reasoning would enhance the validity of this construct. Other measures, such as the Moral Judgment Test (MJT; Lind, 2002) and the Sociomoral Reflection Measure-Short Form (SRM-SF; Gibbs, Basinger, & Fuller, 1992), have been shown to be reliable and valid measures of moral reasoning/judgment (Gibbs et al.; Ferguson, McLernon, & Cairns, 1994; Lee, 2005; Lerkiatbundit, Utaipan, Laohawiriyanon, & Teo, 2006) The MJT measures two components of moral judgment: (a) moral judgment competence and (b) moral orientations, both of which are based on Kohlberg's theory. However, in contrast to the DIT, the MJT measures affective and cognitive aspects of moral judgment. The SRM-SF also is based on Kohlberg's theory and requires participants to justify the importance of certain moral values. The SRM-SF differs from the DIT in that it asks participants to go beyond making a moral choice, requiring them to provide justification for moral values they deem important. Because each of these measures has unique strengths, using all three would provide a more comprehensive assessment of moral reasoning and judgment.

Second, future intervention studies should offer a multimethod approach, including measures of moral behavior, to investigate possible relationships between preservice teachers' moral reasoning and their moral behavior. The DIT yields an experimental U-score, or utilizer score, which may be regarded as an intermediate step between assessment of moral reasoning (the DIT P-score) and assessment of actual moral behavior. According to Rest et al. (1999b), the U-score takes into account the possibility that differences exist among people both in terms of their concepts of justice and in the degree to which justice reasoning is utilized in making decisions about actual behavior. The U-score measures the relationship between a subject's choice of what is most important in each DIT dilemma and the action that individual chooses to resolve the dilemma. For example, the Heinz dilemma involves a situation in which a husband must choose between breaking the law and stealing an expensive drug to save his wife's life, and obeying the law and allowing his wife to die. Subjects first decide whether Heinz should steal the drug (a moral action), and then rank the four most important of 12 rationalizing statements. If a subject responds to the Heinz dilemma by ranking as most important the notion that a community's laws ought to be obeyed and decides that Heinz should not steal the drug, then that individual's moral choice corresponds with what he chooses as an appropriate moral action.

According to Rest et al. (1999b), "The *U-score* represents the degree of

match or fit between items endorsed as most important and the action choice on that story. A high *U-score* represents good fit between item endorsement and action choice; a low *U-score* represents poor fit" (p. 105). Thoma (1994), in a reanalysis of five studies on behavior and attitude, found that use of the U-score increased the predictability between moral judgment, as measured by the DIT, and measures of behavior and attitude. Thus, future research should investigate whether the U-score is a useful measure of moral action generally, and whether there may be a relationship between education students' DIT P-scores, DIT U-scores, and actual classroom behaviors, first as student teachers and then as professional classroom teachers.

A third suggestion for future research is to follow students for a period of months or years after the initial intervention to determine whether posttest gains were maintained over time. Follow-up investigations also should evaluate students after they graduate and begin their teaching careers to determine if a relationship exists between moral reasoning scores on the DIT and teachers' actual behaviors in the classroom. One way to assess teachers' classroom behaviors is through the use of classroom observation instruments, such as Flanders Interaction Analysis Categories (FIAC; Flanders, 1970) and the Verbal Interaction Category System (VICS; Amidon & Hunter, 1966). The FIAC identifies 10 categories of behavior that characterize teacher–student interaction within the classroom; the VICS evaluates teachers' verbal interactions with students in terms of how much freedom is accorded to students' verbalizations. Measures such as these could be adapted to focus directly on indicators of moral action in classrooms, including, for example, attention to issues of social justice and establishing classroom deportment rules that reflect moral behavior.

Finally, future studies should identify areas other than moral reasoning that may be related to the psychology of morality. The four-component model (Narvaez & Rest, 1995) may be useful. This model hypothesizes four psychological processes that, alone or together, may influence overt behavior: (a) moral sensitivity, (b) moral judgment (as measured by the DIT), (c) moral motivation, and (d) moral character. Future research should assess the contribution of each of these processes to behavior and describe the interactions among them that may exist.

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