A CROSS-CULTURAL STUDY OF THE RELATIONSHIPS BETWEEN EPISTEMOLOGICAL BELIEFS AND MORAL JUDGMENT AS A PSYCHOLOGICAL FOUNDATION FOR MORAL EDUCATION

by

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(Under the Direction of RONALD L. VANSICKLE)

ABSTRACT

Contemporary research has examined relationships between individuals' epistemological assumptions and their judgments about what is right, fair, and good. However, existing studies primarily have utilized interviews and a questionnaire method with U.S. college students, so less is known about other populations. For this reason, in this dissertation I investigated cultural differences and similarities in the relationships between epistemological beliefs and moral reasoning between Korean and U.S. college students.

To accomplish these tasks, the present study utilized a measure of principled moral reasoning (P scores) as the criterion variable. Predictor variables were five epistemological dimensions (simple knowledge, certain knowledge, omniscient authority, quick learning, and innate ability), age, education, gender, syllogistic reasoning skill, grade point average, and academic major. Data analyses included correlations and all possible regressions.

The results of the present study indicated that both cross-national similarities and differences exist in psychological functioning. With respect to similar results, omniscient authority and grade point average were the strongest predictors of Korean and U.S. college students' P scores. Also, the analysis revealed that the five epistemological variables explained a substantial proportion of the variance in P scores over and above all other variables.

The present study also revealed differences between the two groups. The results revealed that Korean college students who viewed the nature of knowledge as certain produced lower P scores, whereas U.S. students' beliefs about certain knowledge had no statistically significant correlations with P scores and accounted for little variance in P scores. On the other hand, U.S. college students who endorsed simple knowledge produced lower P scores, whereas Korean students' beliefs about simple knowledge had no statistically significant correlations with P scores and accounted for little variance. The current research may provide evidence in support of a neo-Kohlbergian model of

cognitive/moral development in the debate between cultural psychologists and Kohlbergian psychologists.

INDEX WORDS: Moral development, Moral reasoning, Epistemological beliefs, Cross-cultural research, Neo-Kohlbergian approach

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CHAPTER 1

INTRODUCTION

Statement of the Problem

Epistemology is an area of philosophy concerned with the nature and justification of human knowledge (Hofer & Pintrich, 1997). A growing area of interest for psychologists and educators is that of personal epistemological development and epistemological beliefs: how individuals come to know, the theories and beliefs they hold about knowing, and the manner in which such epistemological premises influence the cognitive processes of thinking and reasoning. This dissertation focuses on the third approach about how epistemological assumptions influence thinking and reasoning processes, focusing on moral judgment.

Contemporary theoretical assumptions about the development of epistemological beliefs and moral reasoning differ somewhat depending on the focus of the inquiry, but they share psychological and philosophical assumptions regarding constructivism and a cognitive developmental perspective. A first basic assumption underlying epistemological and moral development is that by thinking about and acting on the world, human beings construct meaning for themselves (Colby & Kohlberg, 1987). Individuals who take a constructivist view tend to have postconventional levels of moral thinking and a more sophisticated, and presumably less conventional, epistemological system. From a constructivist view, postconventional moral thinking reflects an awareness that rules and laws used to guide and frame moral decisions are actively formulated by the human

mind, in the context of a social group ideally based in cooperation among equals (Colby & Kohlberg, 1987). Thus rules and laws are understood to be flexible and adaptable to special situations and circumstances. Similarly, adoption of beliefs about constructed knowledge (i.e., a position in which individuals view all knowledge as contextual, experience themselves as creators of knowledge, and value both subjective and objective strategies for knowing) are associated with a more sophisticated, and presumably less conventional, epistemological system (Belenky, Clinchy, Goldberger, & Tarule, 1986).

A second basic assumption of epistemological and moral development is that they fit a cognitive-developmental pattern. Epistemology is an area of philosophy concerned with the nature and justification of human knowledge (Hofer & Pintrich, 1997). Most research on epistemological beliefs centers on their development (King & Kitchener, 1994; Kuhn, 1991; Perry, 1970) or the connection of students' epistemological beliefs to academic success (Schommer, 1994). However, across these approaches, epistemological beliefs seem to develop with education from naive beliefs that certain, compartmentalized knowledge comes from a single source to beliefs that evolving, interrelated knowledge from multiple sources must be evaluated (Hofer & Pintrich, 1997). Proposing a seven-stage developmental model that focuses on epistemological cognition, King and Kitchener (1994) claimed that their model is a developmental stage model, because the stages have an underlying organization, are qualitatively different, and appear to form an invariant sequence. Also, mechanisms of developmental change are Piagetian and Kohlbergian; beliefs about knowledge develop through assimilation and accommodation of existing cognitive structures as individuals interact with the environment.

The focus of most research on the development of epistemological cognition and moral judgment is on the collegiate years. In other words, literature on epistemological and moral development focuses almost entirely on college students in exploring the questions of how, when, and where we can promote moral and epistemological development. Because research consistently shows that moral reasoning scores increase in college and at a rate faster than that of the general population (Kurtines, 1982), there has been a considerable amount of research directed toward identifying specific variables of the college experience that contribute to increase in moral reasoning development. Rest and Narvaez (1991) reviewed research using the Defining Issues Test (DIT) of moral judgment on the effects of college upon moral judgment development. The findings showed that there is a "college effect" – that is, that gains in moral judgment are associated with going to college. They suggested that one of the influences of the college experience is that it provides general intellectual stimulation that causes students to overhaul and rethink the basic ways in which they make moral judgments. The literature on epistemological thinking also has focused almost entirely on college students because collegiate environments emphasize the acquisition, interpretation, and utilization of knowledge (Kuhn & Weinstock, 2002). Schommer (2002a) suggested that it is when students encounter complex, tentative information, which is typical at the college level, that the influence of their epistemological beliefs becomes most noticeable.

Researchers (Bendixen, Schraw, & Dunkle, 1998; King & Kitchener, 1994, 2002; Kohlberg, 1971a; Perry, 1970) have examined the relationship between reasoning in the intellectual and moral domains, that is, between individuals' epistemological assumptions and their assumptions about what is right, fair, and good. Kohlberg's (1971a) scheme of

moral development has presumed a correspondence between ethical and intellectual judgment. Kohlberg claimed that his stages of moral judgment were both parallel and isomorphic to Piaget's stages. Although such one-on-one correspondence between cognitive and epistemological development might be unlikely, certain intellectual preconditions might be necessary but not sufficient for certain types of epistemological beliefs to be possible. King and Kitchener (1994) also claimed that the development of epistemological cognition (in this case, reflective judgment) may be a necessary but not sufficient condition for moral judgment.

Bendixen, Schraw, and Dunkle (1998) examined the relationships among epistemological beliefs and moral reasoning. They posed two specific questions: (a) whether epistemological beliefs were related to moral reasoning over and above the effects of other variables and (b) which of those beliefs explained the greatest amount of sample variation in performance on the Defining Issues Test (Rest, 1979). The DIT is as an instrument to assess a subject's level of moral reasoning. Results showed that beliefs corresponding to simple knowledge, certain knowledge, omniscient authority, and quick learning each explain a portion of the variation in performance on the Defining Issues Test. In addition, these findings demonstrated that multiple epistemic assumptions play an important role in young adults' moral reasoning over and above other social and personal variables.

These studies on the relationships among epistemological beliefs and moral reasoning, however, might have an inherent methodological problem. Existing studies primarily have utilized interviews and a questionnaire method with White college students, so less is known about other populations. There is no study that incorporates

minority populations or examines cross-cultural similarities and differences, which means existing theory is based largely on findings from a mainly White, well educated U.S. population. For this reason, in this dissertation I investigate cultural differences and similarities in the relationships among epistemological beliefs and moral reasoning between Korean undergraduate students and American undergraduate students.

Research Questions

This dissertation explores whether cultural patterns exist in the relationship between epistemological beliefs and moral reasoning. Three research questions guide my work:

1. What are similarities and differences in the relationships between five epistemological beliefs (i.e., certain knowledge, innate knowledge, quick learning, simple knowledge, and omniscient authority) and moral reasoning between Korean and U.S. college students?

2. Will epistemological beliefs be related to moral reasoning over and above the effects of other critical variables (i.e., age, education, gender, syllogistic reasoning skill, grade point average, and academic major) in each respective group?

3. Which of five epistemological beliefs explains the greatest amount of sample variation in performance on the Defining Issues Test in each respective group?

Significance of the Study

As I noted earlier, cross-cultural studies of the relationships between epistemological beliefs and moral reasoning appear nonexistent, and existing findings based on U.S. student samples probably are shaped by underlying cultural beliefs. The formal abstract reasoning that is a hallmark of the higher stages of most schemes has

been noted as characteristic of Western-styled school cultures (Bidell & Fischer, 1992) and may be less prevalent in others. Existing epistemological and moral theories posit a movement toward increased individualism of thought and freedom from the dictates of authority. It is possible that in a more collectivist culture in which the view of self has interindividual implications, personal epistemology and moral thinking could evolve toward an acceptance of consensus, not a reliance on independent thinking (Triandis, 1989; Triandis, Bontempo, Villareal, Asai, & Lucca, 1988).

If the results of this study show strong relationships among epistemological beliefs and moral reasoning under two different cultural settings, we might suggest that Korean and American educators need to pay attention to universal aspects of development, instead of focusing on articulating cultural variation. Further, if the conclusion of the present study shows that considerable overlap exists in psychological functioning across cultures, it may provide evidence in support of Kohlberg's model of cognitive/moral development in the debate between cultural psychologists and Kohlbergians. In contrast, if this study shows that there are significant differences in the relationships in the Korean and American cultural settings, it may provide evidence in support of cultural psychologists (e.g., Shweder and Turiel) in the area of moral development.

CHAPTER 2

LITERATURE REVIEW

This literature review is divided into four sections. The first section describes the major theories of moral development and a critical review of cross-cultural research in the development of moral judgment. The second section describes an overview of current theories of epistemological development, categorized as developmental models, reflection models, and component models, and then, reviews cross-cultural studies of epistemological theories. The third section covers research on the relationship between epistemological beliefs and moral reasoning. The fourth and last section reviews related literature which may be helpful in suggesting some predictor variables to explain the significant variation in performance on the Defining Issues Test (DIT) (Rest, 1979).

Moral Development

This section will begin with a review of moral development as articulated by Kohlberg and modified by Rest, followed by a critical review of cross-cultural studies using the DIT and a discussion of moral development measurement.

The Cognitive Developmental Perspective on Moral Development

The major developmental perspectives underlying the present study derived from the theoretical writings of Lawrence Kohlberg (1969, 1971a, 1971b, 1973, 1975, 1976a, 1976b, 1981, 1984, 1987) and the modifications of this theory by James Rest (1973, 1979, 1983, 1986, 1990; Rest, Narvaez, Bebeau, & Thoma, 1999). Kohlberg (1975) asserted a sequential and hierarchical development and articulation of moral reasoning

extending from childhood into adulthood. His findings show culturally universal stages of moral development rather than relative values, and reflect developmental aspects as opposed to just learning rules or cultural mores. Stages are "structured wholes" or organized systems of thought, and imply qualitatively different modes of thinking, invariant sequence, and hierarchical integrations (Rich & DeVittis, 1994)

Kohlberg's studies reinforce four main qualities of stage development (Colby & Kohlberg, 1987). The first is that stage development is invariant: one must progress through the stages in order and one cannot get to a higher stage without passing through the stage immediately preceding it. Kohlberg (1971b) held that moral development is growth and like all growth it takes place in a pre-determined sequence. Secondly, people cannot comprehend moral reasoning at a stage more than one stage beyond their own. In order to understand a higher stage of moral reasoning, a series of cognitive adjustments have to be made. In a sequential theory, these adjustments cannot be skipped. However, persons are cognitively attracted to reasoning one level beyond their own, a third general characteristic of Kohlberg's theory. Since reasoning at one stage higher is intelligible and resolves more difficulties, it is attractive, which helps to create a natural progression. Additionally, Kohlberg (1973) believed that individuals tend to prefer their highest stages of moral reasoning because a higher stage resolves more problems.

The last main quality of stage development is that movement through the stages is effected by the creation of cognitive disequilibrium. If a person's cognitive framework cannot resolve a problem, the cognitive organism adjusts to a framework that does. If a person's orientation is not disturbed, there is no reason to expect any development. Stage movement can occur because data from the environment does not easily fit into a

person's existing system of thought or a person's cognitive outlook is not adequate to cope with a moral problem.

The resulting state is, according to Kohlberg (1975), a state of "disequilibrium" which brings about a condition of conflicting claims for a person where each claim is "given his due" (Kohlberg, 1975, p. 671) according to some principle of justice that is recognized as fair. Upward movement represents hierarchical integrations, because thinking at a higher stage includes or understands lower stage thinking but the individual tends to prefer the highest available stage. Except in cases of extreme trauma, stage movement is always forward to the next higher stage, not backward into a lower stage.

In order to characterize the development of moral reasoning structurally, Kohlberg sought a single unifying construct that generates the major structural features of each stage. This is the concept of sociomoral perspective, which refers to the point of view the individual takes in defining both social facts and sociomoral values, or oughts (Kohlberg, 1976a; Colby & Kohlberg, 1987). Corresponding to the three major levels of moral judgment, Kohlberg postulated the three major levels of social perspective as follows:

Moral Judgment	Social Perspective
Level 1. Preconventional	Concrete individual perspective
Level 2. Conventional	Member-of-society perspective
Level 3. Postconventional	Prior-to-society perspective

From this point of view, Level 1 (preconventional) is a perspective from which rules and social expectations are something external to the self; in the Level 2 perspective

the self is identified with or has internalized the rules and expectations of others, especially those of authorities; and the Level 3 (postconventional) perspective differentiates the self from the rules and expectations of others and defines moral values in terms of self-chosen principles. Within each of the three moral levels, briefly described in Table 2.1, there are two stages. The second stage is a more advanced and organized form of the general perspective of each level.

Table 2.1 The Six Moral Stages (Kohlberg)

	Content of Stage		
Level and Stage	What Is Right	Reasons for Doing Right	*Social Perspective of Stage*
LEVEL 1 – PRECONVENTIONAL Stage 1 – Heteronomous Morality	To avoid breaking rules backed by punishment, obedience for its own sake, and avoiding physical damage to persons and property	Avoidance of punishment, and the superior power of authorities	*Egocentric point of view.* Doesn't consider the interests of others or recognize that they differ from the actor's; doesn't relate two points of view. Actions are considered physically rather than in terms of psychological interests of others. Confusion of authority's perspective with one's own.
Stage 2 – Individualism, Instrumental Purpose, and Exchange	Following rules only when it is to someone's immediate interest; acting to meet one's own interests and needs and letting others do the same. Right is also what's fair, what's an equal exchange, a deal, an agreement.	To serve one's own needs or interests in a world where you have to recognize that other people have their interests, too.	*Concrete individualistic perspective.* Aware that everybody has his own interests to pursue and these conflict, so that right is relative (in the concrete individualistic sense).
LEVEL 2 – CONVENTIONAL Stage 3 – Mutual Interpersonal Expectations,	Living up to what is expected by people close to you or what people generally expect of people in	The need to be a good person in your own eyes and those of others. Your caring for others. Beliefs in	*Perspective of the individual in relationships with other individuals.* Aware of shared feelings,

Relationships, and Interpersonal Conformity	your role as son, brother, friend, etc. "Being good" is important and means having good motives, showing concern about others. It also means keeping mutual relationships, such as trust, loyalty, respect and gratitude.	the Golden Rule. Desire to maintain rules and authority which support stereotypical good behavior.	agreements, and expectations which take primacy over individual interests. Relates points of view through the concrete Golden Rule, putting yourself in the other guy's shoes. Does not yet consider generalized system perspective.
Stage 4 – Social System and Conscience	Fulfilling the actual duties to which you have agreed. Laws are to be upheld except in extreme cases where they conflict with other fixed social duties. Right is also contributing to society, the group, or institution.	To keep the institution going as a whole, to avoid the breakdown in the system "if everyone did it," or the imperative of conscience to meet one's defined obligations (Easily confused with Stage 3 belief in rules and authority).	*Differentiates societal point of view from interpersonal agreement or motives.* Takes the point of view of the system that defines roles and rules. Considers individual relations in terms of place in the system.
LEVEL 3 – POSTCONVENTIONAL, or PRINCIPLED Stage 5 – Social Contact or Utility and Individual Rights	Being aware that people hold a variety of values and opinions, that most values and rules are relative to your group. These relative rules should usually be upheld, however, in the interest of impartiality and because they are the social contract. Some nonrelative values and rights like life and liberty, however, must be upheld in any society and regardless of majority opinion.	A sense of obligation to law because of one's social contract to make and abide by laws for the welfare of all and for the protection of all people's rights. A feeling of contractual commitment, freely entered upon, to family, friendship, trust, and work obligations. Concern that laws and duties be based on rational calculation of overall utility, "the greatest good for the greatest number."	*Prior-to-society perspective.* Perspective of a rational individual aware of values and rights prior to social attachments and contracts. Integrates perspectives by formal mechanisms of agreement, contract, objective impartiality, and due process. Considers moral and legal points of view; recognizes that they sometimes conflict and finds it difficult to integrate them.
Stage 6 – Universal Ethical Principles	Following self-chosen ethical principles. Particular laws or social agreements are usually valid because they rest on such principles. When laws violate these principles, one acts in	The belief as a rational person in the validity of universal moral principles, and a sense of personal commitment to them.	*Perspective of a moral point of view* from which social arrangements derive. Perspective is that of any rational individual recognizing the nature of morality or the fact that persons are ends in

	accordance with the principle. Principles are universal principles of justice: the equality of human rights and respect for the dignity of human beings as individual persons.	themselves and must be treated as such.

From L. Kohlberg, "Moral Stages and Moralization" (pp. 34-35). In T. Lickona (Ed.), Moral Development and Behavior, 1976, New York: Holt, Rinehart & Winston.

Rest (1979) has argued that the question of the relations among developmental sequences in the various domains should not even be taken seriously. His reasons derive from his rejection of the strong Piagetian stage model. Rest agrees with Kohlberg's claim that qualitatively different forms of moral judgment can be identified and that development involves the increasing use of more advanced or sophisticated reasoning. He disagrees, however, with Kohlberg's claim that development proceeds through a stepwise sequence of internally consistent stages. He holds instead that individuals simultaneously use reasoning of many types and that an adequate description of an individual's moral judgment must include a quantitative account of the proportion of each type rather than a global designation for the person. He states that "people use various organizations of thinking, are somewhat inconsistent, and that the kind of logical organization they bring to a problem is considerably influenced by the particular content and properties of the problem" (Rest, 1979, p. 257).

The Review of Cross-cultural Research in Moral Development

What will be attended to in the following are the significant issues emerging from some crucial cross-cultural reviews (Colby & Kohlberg, 1987; Edwards, 1987; Gielen, 1990, 1991; Snarey, 1985) of the empirical studies that address the issues related to universality versus uniqueness of moral development. For example, Colby and Kohlberg (1987) pointed out that evidence for the claim of a universally invariant sequence had been provided by cross-sectional studies in Kenya (Edwards, 1975), Honduras (Gorsuch & Barnes, 1973), the Bahamas (White, 1975, 1986), India (Parikh, 1980), and New Zealand (Moir, 1974). Nevertheless, cross-sectional studies can confirm universality indirectly and in a weak sense. To test an invariant sequence robustly requires longitudinal studies, a few of which have been done from a cross-cultural perspective (Lei, 1984, 1989, 1990; Nisan & Kohlberg, 1982; Snarey, Reimer, & Kohlberg, 1984; Snarey, 1982; Walker, 1990; White, 1975; White, Bushnell, & Regnemer, 1978).

Among all those cross-cultural reviews, so far, Snarey's (1985) assessment of 45 empirical studies conducted in 27 countries remains the most comprehensive review of Kohlbergian research from a cross-cultural comparative perspective. For this reason it provides the backdrop against which the present study addresses the issue of relativity versus universality in moral judgment development. Snarey's conclusion can be summarized in the following statements: (a) The content of moral reasoning appears to be relative to sociocultural context; (b) on the other hand, the deep structure that underlies and operates on the content tends to be universal. Moreover, provided that the deep structure can be developmentally differentiated into stages, these stages and their developmental sequence are universal, too. Snarey further pointed out that only on the

preconventional and conventional levels in the Kohlbergian model of moral reasoning has consensus been reached among researchers so far as universality is concerned. It is still at issue whether principled or postconventional moral reasoning is also universal. The future research of moral development should examine how cultural factors affect the development and functions of the universal structure, and how content and structure interact with each other.

With respect to the process of becoming moral in Korean culture, Moon (1994) and Park and Johnson (1984) showed that a comparison of the Korean data with previous American data points to basic cross-cultural similarities in terms of sequence of stages and rate of development. Especially, Moon (1986), through a review of twenty cross-cultural studies on moral judgment, suggested that the sociocultural factors can speed up, slow down, or stop structural development, but they cannot reverse the developmental sequence or produce different kinds of stages.

These results were supported by a study by Kim (1998) using story variations (i.e., interview) and paired comparisons. In this study, Korean children gave weight to moral judgments about rights, justice, and welfare in evaluating the commands of authorities and did not judge acts in the moral domain to be contingent on authority directives. Acts like violating rights, selfishness in sharing, and threatening others' welfare were considered wrong even if they were condoned by authorities. The results suggested that the ideological emphasis on adult authority and status by virtue of holding positions of authority was not evident in the judgments made by the Korean children.

Most recently, Hong (2001) suggested that young children in Korea have a sense of co-existence. The Korean young children in her study were encouraged and able to

control their own minds and desires in order to be considerate towards others. They understood that people's intentions and desires can be changed in different contexts. To observe the contextual cues sensitively in order to understand other people's minds is regarded as an important ability. This ability is developed within a cultural context which views the self as a "connected," "context-based," and "interdependent" entity (Shweder, Goodnow, Hatano, LeVine, Markus, & Miller, P et al., 1998). This East Asian view of the self contrasts with the European American view idealizing the "separate," "consistent," and "independent" self (Shweder et al., 1998). As Kitayama and Markus claim, the East Asian cultural construct of the ideal self concerns interpersonal relationships and fitting into the group (cited in Hong, 2001). In short, the findings of Hong's study revealed that psychosocial competencies of Korean children are embedded in cultural frameworks previously suggested by social scientists.

In summary so far, studies that used cognitive developmental approaches in researching moral development revealed that the deep structure that underlies and operates on morally problematic situations tends to be similar, whereas studies that used psychosocial approaches showed the importance of cultural factors (e.g., interpersonal relationship oriented) in moral development. On the former part, the findings of studies on moral development affirmed the proposition that moral judgment cannot be directly inferred from cultural ideologies (Moon, 1994; Park & Johnson, 1984; Kim, 1998). A prevalence of group-oriented rather than individualistic attitudes, profound commitment to interpersonal relationships, and the ideological emphasis on adult authority and status by virtue of holding positions of authority were not evident in moral judgments made by the Korean children, adolescents, and adults. However, Hong's (2001) empirical study

showed that although American children in the early moral stages cannot take the perspective of others (Selman, 1980), Korean young children in a culture where relationships are emphasized can develop easily the ability to differentiate and co-ordinate the social perspectives of self and others. The finding suggests that psychosocial development in group-oriented cultures such as Korea differs from development in individualistic cultures such as the United States.

Moral Development Measurement

The measurement instrument devised by Kohlberg (Colby & Kohlberg, 1987) presents a series of moral dilemmas and asks probing questions that attempt to identify the moral stage represented by the individual's underlying moral reasoning process. Rest's (1979) Defining Issues Test (DIT) instrument also presents a moral problem, but then lists twelve statements and asks the subject to rank the relative importance of each of the statements. The frequency and quantity of stage responses identify an individual's moral stage with a separate index to represent the proportion of higher-level moral reasoning. Thus, Rest's (1979) DIT instrument asks the individual to assess the relative importance of statements indicative of a moral judgment level rather than produce the statements that would identify the person's use of a particular level of moral reasoning as Kohlberg's (Colby & Kohlberg, 1987) instrument requires.

It is important to note that Kohlberg viewed moral development as a progression of qualitative and quantitative changes in cognitive structure that relied upon or utilized an evolving representation of morality. A recognition instrument such as Rest's DIT, although useful, does not necessarily precisely ascertain a subject's underlying moral structures. Rest (1979) would argue that his identification of moral stage is sufficient,

and, in fact, his P score is a measure of "the relative importance a subject gives to principled moral considerations in making a decision about moral dilemmas" (Rest, 1990, p. 4.2).

For the purposes of the present research, the intent is to investigate various potential influences on higher-stage moral development, rather than identify influences on each individual's precise stage of moral development. Thus, the DIT is sufficient to establish a baseline for principled moral reasoning and to investigate variance related to epistemological beliefs and other critical variables such as age, education, gender, and basic reasoning skills.

It is also important to keep in mind that a large body of research calls into question the privileged place of interview data, dependent on conscious understanding, over recognition data, dependent on implicit understanding (Rest, 1986; Rest et al., 1999) By requiring participants in research to construct verbal arguments for their moral choices, and to credit someone only with cognition that they can articulate and defend, Kohlberg placed a verbal constraint that credited people with only understanding what they could explain. In short, an inherent problem in any production task such as that used by Kohlberg is that a subject is not credited with an idea unless the subject explicitly and articulately verbalizes the idea. Rest et al. believe that this is one reason why there is so little empirical evidence for Stage 5 and 6 reasoning using Kohlberg's scoring system. One advantage of the recognition task of the DIT is that postconventional thinking is not scored so rarely as in the Kohlberg interview.

In any recognition task such as that used by the DIT, on the other hand, there is the inherent problem that subjects can rate items and put check marks down next to items

even if they do not really understand them. As an attempt to minimize this problem, the DIT includes an internal reliability check. Further, Rest also has an internal consistency check in the DIT to determine if subjects are randomly responding without attending to any item feature. For the two reasons described above, Rest's (1979) modifications are accepted for this study, and his measurement instrument is utilized in this study.

Summary

The theories underlying the present study are derived from Kohlberg's Six Stages Theory of Moral Judgment Development and the neo-Kohlbergian approach to moral thinking. Kohlberg (Colby & Kohlberg, 1987) was a leading figure in the study of moral judgment development, and his research has dominated this field of study for decades. His work centered around the formulation of a stage theory of moral judgment development that has the following essential features: (a) Moral judgment is a component of morality. How a person reasons in a moral dilemma determines his or her morality; (b) Moral judgment is stage-like. It develops like climbing a staircase, one step at a time, with no stage skipping or reversal; (c) There are six stages of moral judgment, culminating in two postconventional stages that are philosophically appropriate. The major developmental event of adolescence and adulthood is the shift from Conventional stages to Postconventional stages; (d) The moral stages are universal; (e) Stage development is based on concepts of justice.

Rest (1979) used the DIT instrument to accumulate empirical evidence to make new claims and substantial deviations from Kohlberg's theory while retaining some of the basic tenets. Two important ideas retained are: (1) in moral cognition, individuals are capable of actively constructing moral epistemology; and (2) moral judgment

development as measured by the DIT occurs from simpler to more complex thinking involving mostly the shift from conventional thinking to postconventional thinking. He disagrees, however, with Kohlberg's claim that development proceeds through a stepwise sequence of internally consistent stages. He holds instead that individuals simultaneously use reasoning of many types and that an adequate description of an individual's moral judgment must include a quantitative account of the proportion of each type rather than a global designation for the person. He states that "people use various organizations of thinking, are somewhat inconsistent, and that the kind of logical organization they bring to a problem is considerably influenced by the particular content and properties of the problem" (Rest, 1979, p. 257).

Both Kohlberg (1971a, 1981, 1984) and Rest (Rest et al., 1999) agreed on the individual's construction of moral epistemology. Kohlberg proposed that the basic categories of morality (such as "justice," "duty," "rights," and "social order") are self-constructed by the individual. Rest suggested that in moral cognition, individuals are capable of actively constructing moral epistemology. However, they did not postulate that epistemological beliefs such as constructivist epistemology and objectivist epistemology are related to moral judgment development in important ways. This study extends the work in this area with the recognition that an important but rarely discussed variable contributing to moral reasoning may be students' epistemological assumptions about the nature of knowledge and knowing.

Epistemological Development

Epistemological Theories: An Introduction and Overview

According to Hofer and Pintrich (1997), epistemological beliefs refer to individuals' conceptions about the nature of knowledge and the nature or process of knowing. So far, psychological research on epistemological beliefs and reasoning has addressed six general issues: (a) refining and extending Perry's (1970) developmental sequence, (b) developing more simplified measurement tools for assessing such development, (c) exploring gender-related patterns in knowing, (d) examining how epistemological awareness is a part of thinking and reasoning processes, (e) identifying dimensions of epistemological beliefs, and, most recently, (f) assessing how these beliefs link to other cognitive and motivational processes.

In all this research there is very little agreement on the actual construct under study, the dimensions it encompasses, whether epistemological beliefs are domain specific or how such beliefs might connect to disciplinary beliefs, and what the linkages might be to other constructs in cognition and motivation. However, Hofer and Pintrich (1997) noted that since the mid-1950s, there have been three simultaneous and intersecting lines of research which cut across the six general issues. Led by the initial work of Perry (1970), most researchers in the field have posited models that are to some degree structural, developmental sequences. One group has been largely interested in how individuals interpret their educational experiences (Baxter Magolda, 1987, 1992; Belenky et al., 1986; Perry, 1970, 1981). Perry pioneered these endeavors with a sample that was almost entirely male; in response, Belenky et al. investigated "women's ways of knowing" with an exclusively female sample. Baxter Magolda, intrigued by gender

implications of these two lines of research, chose to investigate similar concerns with both men and women.

A second group of researchers have been interested in how epistemological assumptions influence thinking and reasoning processes, focusing on reflective judgment (King & Kitchener, 1994; Kitchener & King, 1981; Kitchener, King, Wood, & Davision, 1989) and skills of argumentation (Kuhn, 1991, 1993). The theories and models differ somewhat depending on the focus of the inquiry and the populations studied, but there have been some points of convergence about what individuals believe knowledge is and how it is they know.

The third and most recent line of work has taken the approach that epistemological ideas are a system of beliefs that may be more or less independent rather than reflecting a coherent developmental structure (Ryan, 1984a, 1984b; Schommer, 1990, 1994). These beliefs may influence comprehension and cognition for academic tasks, and this work has been the most concerned with classroom learning.

Schommer (1990, 1993a) suggested that multiple epistemic beliefs were related to adult cognition in several ways. Specifically, Schommer proposed five separate epistemic dimensions corresponding to beliefs about certain knowledge (i.e., absolute knowledge exists and will eventually be known), simple knowledge (i.e., knowledge consists of discrete facts), omniscient authority (i.e., authorities have access to otherwise inaccessible knowledge), quick learning (i.e., learning occurs in a quick or not-at-all fashion), and innate ability (i.e., the ability to acquire knowledge is innate). Schommer's (1990, 1993a, 1993b) studies indicated that multiple epistemic beliefs (i.e., certain

knowledge and quick learning) were related to an ill-defined story-completion task, differed by gender, and developed in a predictable sequence among adolescents.

Schommer (1990, 1993a, 2002b) conceptualized these five dimensions of epistemological beliefs based on the perspective that one's beliefs not only about the nature of knowledge but also the nature of knowledge acquisition should be included in an epistemic model. As a consequence, the three dimensions of "certainty of knowledge," "omniscient authority," and "simple knowledge" represent one's beliefs about the nature of knowledge. The two epistemic factors showing beliefs about knowledge acquisition are "innate ability" and "quick learning."

Epistemological Beliefs: Its Cross-cultural Context

As I reviewed in the previous section, most of these discussions on epistemological beliefs have been restricted to North American contexts where independent, democratic and pluralistic values are dominate and valued in the society at large and especially in higher education. In contrast to this epistemological orientation in these pluralistic academic and social communities, a few authors have speculated on the potential differences in epistemological beliefs in other cultures (Ballard & Clanchy, 1991; Lee, 1995; Qian & Pan, 2002).

Addressing cultural differences in epistemology, Ballard and Clanchy (1991) compared Australian university students with Asian university students in terms of different approaches toward learning. Ballard and Clanchy argued that most Asian students' epistemological attitudes toward learning can be placed on the conservative end of a continuum of views with conservative, analytic or extending as three points defining the continuum. In other words, most Australian students in college or postgraduate

schools were placed on the analytic or extending end of the learning goal continuum, but many Asian students were oriented toward the conservative goal for learning. These academic perspectives, Ballard and Clanchy proposed, are related to academic goals and practices in the cultures. Qian and Pan (2002) conducted *t*-tests to assess the differences between American and Chinese secondary school students in their beliefs about learning and ability. The results indicated that Chinese students had stronger beliefs about simple and certain knowledge and innate ability to learn than the American students.

With respect to the epistemological development in a Korean culture, Lee (1995) examined whether cultural differences in epistemological beliefs exist among three different graduate student groups: Korean graduate students in the United States (Group K-A), American graduate students (Group A), and Korean graduate students in Korea (Group K-K). The results suggested that many Korean graduate students seem to hold different epistemological assumptions from their counterpart American graduate students on all five epistemological dimensions identified by Schommer (1990) and Jehng, Johnson, and Anderson (1993). Even when other demographic variables were controlled, statistical analyses consistently showed that the two Korean graduate student groups held views on five epistemological dimensions different from the American students: Omniscient Authority; Simple View of Learning; Certainty of Knowledge; Quick Learning, and Innate Ability.

The majority of Korean graduate students tested tended to believe in the dominant role of epistemic authorities in their learning such as textbooks or other authoritative figures whom they believe are knowledgeable in an area (e.g., professors). They also showed more simplistic views on the nature of learning than most of the American

graduate students and they tended to believe that knowledge is more certain. Also, many Korean graduate students put more value on students' innate ability in learning than American students did. The fifth epistemological dimension, i.e., Quick Learning, also showed differences between Korean and American groups, even if the three graduate student groups as a whole tended to believe that learning does not happen quickly. A relatively large portion of Korean graduate students (33% as compared to 2% of American students) still professed that learning happens quickly. Results of this study suggested that differences in personal epistemological beliefs exist among different cultural groups despite similar age and educational level. Also, these differences seem to be influenced by and embedded in a system reflecting specific socio-cultural and educational environments.

One explanation of Korean students' stronger beliefs about certain and simple knowledge is that their beliefs may have been heavily influenced by school cultures that encourage docility and respect for authority, foster building consensus over controversial issues, but discourage assertiveness and raising "why" questions regardless of students' academic performance. The Korean students' beliefs may also be related to the lack of exposure to multiple sources of information and knowledge. Most often, they rely on authority figures such as parents or well-known scientists for information.

Epistemological Beliefs Measurement

Various methods have been used to measure an individual's epistemological beliefs ranging from a personal interview method to questionnaires (e.g., Belenky et al., 1986; Bendixen, Schraw, & Dunkle, 1998; Jehng et al., 1993; Perry, 1970; Schommer, 1990; Schraw, Bendixen, & Dunkle, 2002). Currently a number of reliable questionnaires

have been developed to measure multi-dimensional aspects of a person's beliefs about the nature of knowledge and knowing.

The Epistemological Questionnaire (EQ) developed by Schommer (1990) has been especially important in recent research. Schommer described five beliefs pertaining to Certain Knowledge (i.e., absolute knowledge exists and will eventually be known), Simple Knowledge (i.e., knowledge consists of discrete facts), Omniscient Authority (i.e., authorities have access to otherwise inaccessible knowledge), Quick Learning (i.e., learning occurs in a quick or not-at-all fashion), and Innate Ability (i.e., the ability to acquire knowledge is endowed at birth). Currently, there is debate as to whether Schommer's five beliefs constitute genuine epistemological dimensions (Hofer & Pintrich, 1997), but especially the omniscient authority and innate ability dimensions. Schommer (1990) found factor-analytic evidence for four of the five beliefs, but failed to identify an omniscient authority factor. This exclusion is important given that researchers have postulated a relationship between beliefs about authority and skilled reasoning (Curtis, Billingslea, & Wilson, 1988; Damon, 1988; Jehng et al., 1993; Perry, 1970; Presley, 1985).

Bendixen et al. (1998) conducted the Epistemic Beliefs Inventory (EBI) to measure adults' beliefs about Certain Knowledge, Simple Knowledge, Quick Learning, Omniscient Authority, and Innate Ability. The EQ and EBI were analyzed in two ways (Schraw et al., 2002). The first was a principal factor analysis with oblique rotation (i.e., correlated factors). The second was a principal factor analysis with varimax rotation. Because both oblique and varimax rotations led to highly similar solutions in which none

of the factors were correlated above the traditional .30 level (Gorsuch, 1983), Schraw et al. reported only the principal factor analysis with varimax rotation solutions.

The findings suggested four conclusions: (a) the EQ and EBI instruments differ with respect to the number of factors they yield and the degree to which these factors match theoretical predictions, (b) differences exist with respect to the proportion of sample variance explained by the two instruments, (c) the EBI had better predictive validity than the EQ when correlated with a test of reading comprehension, and (d) the EBI had considerably better test-retest reliability than the EQ.

One problem in Schommer's EQ is that it consistently yields a large number of potentially interpretable factors, each accounting for a relatively small share of total sample variation. A second difference concerned the proportion of sample variation the two instruments explained. The first five factors on the EQ explained 35.5% of total variation, while the EBI explained 60% of total sample variation. A one-month replication led to values of 39% and 64% respectively. A third difference concerned construct validity, or the degree to which the two instruments, and their individual factors, measured the hypothesized constructs. One interpretative problem of the EQ is that it generated two Certain Knowledge factors. In comparison, the EBI did not have any obvious interpretive problems in that each of the factors was conceptually distinct and all of the items that loaded on individual factors were related logically to the relevant construct. The EBI also had better predictive validity than the EQ. Four of the five factors from the EBI were modestly, though significantly, related to the test of reading comprehension. In contrast, none of the EQ factors was significantly correlated with total reading comprehension scores. The final difference was that the EBI yielded a close

replication of factors between the initial and replication analyses, while the EQ did not. This indicated the EBI is more reliable over time than the EQ. For these reasons described above, the Bendixen et al. (1998) modifications are accepted for this study, and their measurement instrument is utilized in this study.

Summary

As a philosophical enterprise, epistemology is concerned with the nature and justification of human knowledge. From a psychological and educational perspective, the focus of concern among those studying epistemological beliefs or epistemic cognition is how the individual develops conceptions of knowledge and knowing and utilizes them in developing understanding of the world. This includes beliefs about the definition of knowledge, how knowledge is constructed, how knowledge is evaluated, where knowledge resides, and how knowing occurs (Hofer, 2002; Hofer & Pintrich, 1997).

Epistemological beliefs seem to develop with education from naive beliefs that certain, compartmentalized knowledge comes from a single source to beliefs that evolving, interrelated knowledge from multiple sources must be evaluated. Most research on epistemological beliefs centers on their development or the connection of students' epistemological beliefs to academic success. This study extends the work in this area by examining the relationship among epistemological beliefs and previously unmeasured outcome variables such as moral reasoning.

Research on the Relationship between Epistemological Beliefs and Moral Reasoning

Research studies on the central topics of this study were located through a computer search of the Educational Resources Information Center (ERIC) database, Dissertation Abstracts International and the University of Georgia Library holdings.

Especially, ERIC abstracts were used to eliminate obviously irrelevant articles. However, the preliminary search revealed that there is only a paucity of research directly related to the present research concern. Therefore, a review of literature included studies relating epistemological beliefs to moral reasoning as well as to other various skilled reasoning such as argumentative reasoning, reflective judgment, and complex problem solving.

Approximately 12 studies remained. Techniques described by VanSickle (1986a, 1986b) were used to eliminate obviously inappropriate articles with regard to (a) conceptual and operational definition of all variables, (b) research design, (c) subject characteristics considered, (d) statistical technique, and (e) publication data. As a result of systematic consideration of these factors, eight articles were located for a separate review. Some articles were eliminated due to the small and homogenous sample (Harris, Mussen, & Rutherford, 1976) and the inadequacy of systematic definition of variables, especially between personality and attitudes toward authority (Johnson, Hogan, Zonderman, Callens, & Rogolsky, 1981). These factors were also used for analysis of the studies selected for review.

Because studies (King & Kitchener, 1994) reported that the development of higher-order reasoning such as reflective judgment is a necessary but not sufficient precursor of moral judgment, in this dissertation studies relating epistemological beliefs to moral reasoning as well as to other various skilled reasoning such as argumentative reasoning, reflective judgment, and complex problem solving were not combined. Therefore, five studies related to the relationship between epistemological beliefs and moral reasoning were reviewed initially (Bendixen et al., 1998; Curtis, Billingslea, & Wilson, 1988; Presley, 1985; Rest, Cooper, Coder, Masanz, & Anderson, 1974; Walker,

Rowland, & Boyes, 1991). And then, another 3 studies related to the relationship between epistemological beliefs and higher-order reasoning were reviewed (Bendixen, Dunkle, & Schraw, 1994; Kuhn, 1991; King & Kitchener, 1994).

Studies Related to the Relationship between Epistemological Beliefs and Moral Reasoning

The most relevant empirical study on the central topics of this dissertation was Bendixen, Schraw, and Dunkle's study (1998) on the relationship between epistemological beliefs and moral reasoning. Their study was originally intended to examine the relationships among age, education, gender, syllogistic reasoning skill, epistemological beliefs, and moral reasoning in adults. The subjects were provided with a packet that included a 32-item Epistemic Beliefs Inventory, a 12-item test of syllogistic reasoning, a brief demographic variable information sheet, and the Defining Issues Test (Rest, 1979). Results of the regression analysis showed that the gender variable reached statistical significance, accounting for 12% of sampling variation in P scores (i.e., r = .35). Neither the age nor the education variables reached significance once gender was entered into the equation. Syllogistic reasoning was significant, accounting for 4% of additional sample variation. All but one of the epistemic beliefs reached significance. The order of entry was simple knowledge, certain knowledge, omniscient authority, and quick learning. These variables accounted for 4%, 3%, 4%, and 2% of the sample variation, respectively (i.e., 13% combined), over and above the variation explained by other variables.

These results confirmed the authors' prediction that specific epistemic beliefs such as simple knowledge were related to P scores once the effects of other variables

were removed. Collectively, the four beliefs explained more variation in P scores than either gender, age, education, or syllogistic reasoning considered separately. Scores high on the simple knowledge, omniscient authority, and quick learning dimensions were correlated negatively with P scores, indicating that higher levels of principled moral reasoning were associated with a more sophisticated, and presumably less conventional, epistemic belief system.

These findings were consistent with those of Walker et al. (1991), who reported that DIT scores increased as epistemic beliefs measured on a unidimensional scale became more sophisticated. Specifically, those receiving a low score on the Walker et al. scale of epistemic beliefs (i.e., one that reflects a post-relativist world view) scored higher on the DIT. Gender differences were also observed, wherein the correlation between epistemic beliefs and P scores (i.e., an index of post-conventional moral reasoning) was significant for men *(r* = -.32) but not for women (*r* = -.20).

The consistent pattern to emerge from the literature is a link, found in several studies, between high level of moral judgment and willingness to resist authority (Curtis et al., 1988; Presley, 1985; Rest et al., 1974). Subjects from Milgram's pilot study who scored at the stage of personal principle (the highest stage) on Kohlberg's Moral Judgment Scale were significantly more likely to have disobeyed the experimenter than those who scored at lower stages (Kohlberg, 1969; cited in Presley, 1985). In another study showing a link between moral judgment and resistance, student activists who scored at the highest stages on the Kohlberg scale were more likely to have participated in civil disobedience in the Free Speech Movement (Haan, Smith, & Block, 1968).

In an exploration of the objective measure of moral development, Rest et al. (1974) pointed out that the P-score has been shown to be related inversely to scores on the Law and Order Test. On this particular test, responses were keyed as "Law and Order" if they advocated excessive power to authorities or support of the existing social order at the expense of individual freedoms and civil rights.

More recently, Curtis et al. (1988) and Presley (1985) found that principled moral reasoning scores among adults using the DIT were related inversely to support for authority. The Curtis et al.'s study was originally intended to explore the relations of empathy and socialization to moral reasoning and attitudes toward authority. One hundred five undergraduates completed the empathy and socialization scales of the California Psychological Inventory, the DIT, a questionnaire measuring subjects' evaluations of different authority figures (public, impersonal and private, personal). The correlations between subjects' P-scores and evaluations of authority figures were both significant and indicative of an inverse relationship. Furthermore, the effect was more pronounced for impersonal, public authority than for private, personal authority. They reported that the results are consistent with the position that the higher the individual's level of moral reasoning, the more one tends to view authority in a negative manner. Also, this result validates Rest et al.s' (1974) finding that subjects' P-scores were inversely related to scores on the Law and Order Test.

In an exploration of the personal basis of resistance to authority, Presley reported that resisters measured high in level of moral judgment (Presley, 1985). On the test, moral judgment and attitudes toward authority were examined in 183 men and women political resisters and compared to 34 liberal and 29 conservative activists. The measures

used were the DIT and a specially designed attitude survey. Strong rejection of political and social authority, a belief that individual conscience is a better guide to conduct than the law, a professed unwillingness to be in positions of authority over others, and the lack of conventional religious affiliation significantly differentiated the resisters from the nonresisters. Thus, Kohlberg's (1969) research showing a link between principled reasoning and resistance behavior is strongly supported by the evidence in Presley's study.

Other Related Studies: Studies Related to the Relationship among Epistemological Beliefs and Higher-Order Reasoning

Previous research has linked epistemological beliefs to a variety of higher-order reasoning, including argumentative reasoning and reflective judgment (Bendixen et al., 1994; Kuhn, 1991; King & Kitchener, 1994). Bendixen et al. (1994) reported that beliefs in Fixed Ability, Simple Knowledge, and Quick Learning accurately discriminated between higher and lower reflective judgment even after age, education, and home environment were controlled. On this test, materials included the Epistemological Questionnaire and the Student Characteristics Survey, both developed by Schommer (1990). Additionally, based on their responses to a philosophical dilemma, subjects were assigned to 1 of 7 levels of the Reflective judgment Model by Kitchener and King (1981). Results of a stepwise discriminant function analysis to examine the relationship between epistemological beliefs and reflective judgment indicated that individuals at higher levels of reflective judgment were less likely to endorse strong beliefs in Fixed Ability (approx. $F(4, 120) = 4.10$, $p < .01$), Simple Knowledge (approx. $F(4, 120) = 2.85$, $p < .05$), and Quick Learning (approx. $F(4, 120) = 2.50$, $p < .05$) than individuals at lower stages. This

developmental sequence closely mirrored the trend observed by Schommer (1993a) among high school students.

Kuhn (1991) reported that epistemological beliefs are related to argumentative reasoning. A critical element of Kuhn's design was the inclusion of a broader sample of subjects. The participants formed four age groups: teens, 20s, 40s, and 60s. In the interest of eliciting reasoning about complex, real-world phenomena, Kuhn selected three current urban social problems as the basis for the interviews. In this study, each individual was classified as an absolutist (one who believes that knowledge is absolutely right or wrong), a multiplist (one who believes that knowledge is completely relative), or an evaluative theorist (one who believes that knowledge, though relative, is constrained by situational factors such as commonly accepted rules) on the basis of their beliefs about the certainty of knowledge. Evaluative theorists were more likely than absolutists to provide legitimate evidence in support of an argument. In addition, compared with absolutists, evaluative theorists generated a greater number of plausible alternative theories and provided better counterarguments (Hofer & Pintrich, 1997).

Building on the work of Perry, as well as Dewey's work on reflective thinking, King and Kitchener have studied the epistemic assumptions that underlie reasoning (King & Kitchener, 1994; King & Kitchener, 2002). Fifteen years of interview studies with individuals from high school students through middle-age adults have led to the refinement of their reflective judgment model, a seven-stage developmental model that focuses on epistemic cognition, or "the ways that people understand the process of knowing and the corresponding ways they justify their beliefs about ill-structured problems" (King & Kitchener, 1994).

The seven different forms of epistemic cognition are descriptively distinct from each other and develop sequentially. They can be summarized into three general categories: the prereflective, the quasireflective, and the reflective. Generally, those in the prereflective period (stages 1-3) assume that knowledge is gained from an authority figure or through direct, personal observation. In other words, "to see is to know." Knowledge gained in these ways is assumed to be absolutely correct. Individuals holding these assumptions often do not perceive the ambiguity in a situation even when clear uncertainty is presented to them. During the quasireflective period (stages 4 and 5), individuals recognize that real uncertainty exists about some issues. They argue that knowledge can not be had with certainty. They do not understand, however, how to justify knowing anything in the face of ambiguity and often conclude many points of view are equally correct. By contrast, at the reflective level, an individual's assumptions represent the epistemological position that although knowledge is not a "given," probabilistic knowledge can be constructed by evaluating existing evidence and expert opinion (King & Kitchener, 1994).

King and Kitchener's model (1994) provides a useful framework for understanding the development of reasoning skills as they relate to changes in beliefs about the certainty and verifiability of knowledge. Individuals whose reasoning is typical of earlier stages view their world in a rather fixed and limited way, on the assumption that knowledge is certain; individuals in later stages see the world in a more flexible way, on the assumption that knowledge is not fixed.

Summary

Studies reported here suggest that epistemological beliefs are related to varieties of skilled thinking such as moral and argumentative reasoning, reflective judgment, and complex problem solving. The studies' findings suggest that students' naive beliefs hinder critical aspects of learning, whereas sophisticated beliefs facilitate higher level learning and moral reasoning. More specifically, these studies suggest three general conclusions:

1. Epistemological beliefs are related to reasoning even when other variables are removed from the equation (Bendixen et al., 1998; Bendixen et al., 1994).

2. Some beliefs are better predictors of the unique variation in skilled reasoning scores; beliefs about simple knowledge, certain knowledge, and omniscient authority played especially important roles in P scores (Bendixen et al., 1998; Walker et al., 1991); beliefs in fixed ability, simple knowledge, and quick learning accurately discriminated between higher and lower reflective judgment (Bendixen et al., 1994); beliefs about certain knowledge played especially important roles in argumentative reasoning (Kuhn, 1991; King & Kitchener, 1994).

3. There is a negative relationship between the acceptance of authority and P scores (Curtis et al., 1988; Presley, 1985; Rest et al., 1974).

Despite consistent evidence of the relationship between epistemological beliefs and skilled reasoning, however, we should note that the relationship between moral reasoning and other various kinds of complex thinking remain unclear. For instance, the Reflective Judgment Interview and DIT scores correlated moderately (between .46 and .58) (King, Kitchener, Wood, & Davison, 1989; King, Kitchener, & Wood, 1991, see

King and Kitchener, 1994, for review). The correlation between the measures remained positive but were lower when the effects of age and number of years of higher education were statistically controlled. King and Kitchener (1994) proposed that the development of reflective judgment is a necessary but not sufficient precursor of moral judgment. Wood (1993) also evaluated the necessary but not sufficient relationship between the two measures on the six-year retest. For this reason, there might be a danger in drawing firm conclusions about the relationship between epistemological beliefs and moral reasoning, based on the findings of a paucity of studies (i.e., Bendixen et al., 1998; Walker et al., 1991) directly related to this topic as well as studies related to the relationship between epistemological beliefs and other higher-order reasoning. Therefore, additional studies are needed to examine the complex interrelationships between epistemological beliefs and moral reasoning.

The existing literature in this area, on the other hand, is solely based on the responses of American subjects living in U.S. cultural contexts. Multiple questions remain to be answered from the conceptual and empirical relationship between the models to their generalizability to non-Euro-Americans to the mechanisms for the acquisition and change of epistemological and moral assumptions. Therefore, a cross-cultural analysis of the relations is required between epistemological beliefs and moral reasoning.

Variables of Interest

In the context of the initial choice of variables for any quantitative study, related literature may be helpful in suggesting some predictor variables – for practical or theoretical purposes (Huberty & Petoskey, 1999).

Epistemological Beliefs as Related to the Development of Moral Judgment

A fuller explanation of epistemological beliefs as related to moral development was found within the Review of Literature in the section on the relationship among epistemological beliefs and moral reasoning.

Education as Related to the Development of Moral Judgment

Research using the Defining Issues Test of moral judgment on the effects of college upon moral judgment development has examined whether there is a "college effect" – that is, a gain in moral judgment associated with going to college (Rest & Narvaez, 1991). Indeed, exposure to academia and the college experience has been shown to correlate positively with increased levels of moral reasoning (Davison, 1979; Kitchener, King, Parker, & Wood, 1984; Rest, 1979; Rest & Thoma, 1985; Rest et al., 1999).

Davison (1979) reported on a composite sample of 1,080 subjects made up of about 250 junior high students, 250 senior high students, 250 college students and 250 graduate students. The age range was 15 to 82 years, 424 males and 452 females. The sample was a composite of 23 smaller studies from various parts of the United States, each reporting education as well as P score. An ANOVA produced a main effect for educational level ($p < .001$), indicating very strong differentiation of education groups on the DIT. In a later composite sample of 4,565 subjects (Rest, 1979) from 136 different samples, grouping subjects by four educational levels produced a highly statistically significant finding, accounting for 38% to 49% of the DIT variance. Also, Thoma (Rest et al., 1999) compiled 56 studies into a composite sample of 6,863 subjects. Grouping by the four education levels (junior high, senior high, college, and graduate school), he

found that education accounted for 52.5% of the variance, whereas gender of subject accounted for only 0.2% of the variance.

Age as Related to the Development of Moral Judgment

It is commonly accepted that maturational effects are threats to the validity of any research involving teleological change. Kohlberg's (1984) theory of moral development proposed that moral reasoning ability increases over time, and both theory and research confirm that age is positively correlated to increasing moral reasoning scores through adolescence.

This study, however, concerns college students, adults who are 18 years of age or older. Research involving college students has produced contradictory results (Maclean, 2001). There is evidence that moral reasoning abilities increase in college and at a rate faster than the general population, with older students scoring higher than younger students (Kurtines, 1982; Rykiel, 1995). However, Duckett, Rowan, Ryden, and Krichbaum (1997), reporting on changes in moral reasoning between entry and exit from a baccalaureate nursing program (n = 348), found that age did not contribute significantly to explaining DIT measured moral reasoning score variance. Also, in a study of 143 graduate and undergraduate students from two universities in Florida, Bateman (1999) found no significant effect of age on moral development. Additionally, as previously noted, Bendixen et al. (1998) examined the relationship among age, education, gender, syllogistic reasoning skill, epistemological beliefs, and moral reasoning in undergraduate students (n = 154). Results of the regression analysis reported that neither the age nor the education variables reached significance once gender was entered into the equation.

In a dissertation investigating ethical decision making in federal managers, Gentle (1997) did not find a significant correlation with either age or education with moral reasoning scores. When age and education and their interaction were combined, she found that age and education combined are positively related with moral reasoning and result in higher P scores from the DIT. These results suggest an age-education interaction effect. Similarly, in Rykiel's (1995) study, a significant age-work interaction occurred in that older students who worked less scored highest in moral reasoning scores. Additionally, a number of large-scale secondary analyses of several thousand subjects each indicate that age-education differences account for about 40% to 50% of the variance in moral judgment scores (Rest, 1986). As previously discussed, years in college or professional school are very powerful in promoting development of moral judgment (Rest, 1994)

Cognitive Skills as Related to the Development of Moral Judgment

An understanding of Kohlberg's moral stages requires a clarification of the relationship between cognitive skill and moral reasoning development. Since moral reasoning includes logical reasoning, advanced moral reasoning depends on advanced logical reasoning. Kohlberg (1971a) asserted that intellectual ability may set a ceiling on moral reasoning: a person's ability to reason logically puts an upper limit on the moral stage one can attain. There is also debate as to whether or not moral reasoning is anything other than ethically valid logical reasoning (Fasco, 1994).

DIT scores are significantly related to cognitive capacity measures of moral comprehension (r = .60s) and to a lesser degree other cognitive developmental measures (Rest et al., 1999; Rest, Narvaez, Thoma, & Bebeau, 2000). In a study of 144

adolescents, some of whom were retarded, moral reasoning ability and IQ were found to be highly correlated (Hanks, 1985). Verbal ability has also been shown to correlate with DIT scores. A study of 360 Israeli students found moral reasoning scores correlated moderately with total aptitude scores; the strongest correlation found was with the verbal ability factor (Zeidner & Nevo, 1987).

In a study of 154 undergraduate students from a large midwestern university, Bendixen et al. (1998) performed a four-level hierarchical multiple regression in which gender was entered first, followed by age and education, then logical reasoning skill, and finally epistemological beliefs. Syllogisms were used to provide a measure of logical reasoning skill. Results of the regression analysis reported that logical reasoning skill was significant, accounting for 4% of additional sample variation in P scores.

There is general agreement that when the impact of higher education is assessed with critical thinking or moral development, intellectual ability must be considered as a potential confounding effect (Rest, 1979, 1994; Kitchener et al., 1984; Pascarella & Terenzini, 1991). Critical thinking, a subset of general intelligence, is strongly linked to moral development, and research utilizing the DIT to measure moral reasoning levels typically finds critical thinking and moral reasoning skills to be generally related (Fasco, 1994). A correlation as high as .41 between moral reasoning and critical thinking (as measured by the Cornell Critical Thinking Test) has been reported (Rest, 1990). However, critical thinking has been found to be necessary but not sufficient for moral reasoning (Stewart & Pascual, 1992) and high cognitive ability also appears to be necessary but not sufficient for high moral judgment (Narvaez, 1993). This implies that moral development, while influenced by general intelligence, is a unique developmental

process. As such, it would seem reasonable to expect to identify variables that contribute to moral reasoning skill increases. However, for college students, this has not been demonstrated with much success.

GPA as Related to the Development of Moral Judgment

In DIT studies, there are several direct relationships with academic achievement and moral development such as evidence indicating that grade point average (GPA) is highly associated with moral judgment (Johnson, Insley, Motwani, & Zbib, 1993; Pascarella & Terenzini, 1991). Johnson et al. investigated the relationship between students' facility with business writing and moral judgment. Using a sample of 72 juniors and seniors, they found that GPA was the best predictor of DIT scores, accounting for 70% of the variance. Similarly, they also found a significant relationship between students' grades on a series of writing assignments that were scored for writing mechanics, completeness, tone and design. Whether earning high scores on these aspects of good writing constitutes moral behavior is arguable.

Gender as Related to the Development of Moral Judgment

Gilligan's (1982) critique of Kohlberg's theory of moral reasoning and her assertion that two modes of moral reasoning (justice and care) exist have been the subject of debate within the field of psychology for more than 15 years. So far there is no evidence that there are two tracks of development, one for women and one for men. Those sex differences that do exist appear to be differences in mode or style rather than structure (Colby & Kohlberg, 1987). Furthermore, there is abundant evidence that girls' and women's responses to Kohlberg's hypothetical dilemmas are readily scorable by the

Standard Issue Scoring System and that, when education and occupation are controlled, there are no sex differences in stages (Gibbs, Arnold, & Burkhardt, 1984; Walker, 1984).

More currently, Jaffe and Hyde (2000) conducted a meta-analysis to review quantitatively the work on gender differences in moral orientation. The meta-analysis revealed small differences in the care orientation favoring females (d = -.28) and small differences in the justice orientation favoring males (d = .19). Together, the moderator variables accounted for 16% of the variance in the effect sizes for care reasoning and 17% of the variance in the effect sizes for justice reasoning. These findings do not offer strong support for the claim that the care orientation is used predominantly by women and that the justice orientation is used predominantly by men.

Academic Major as Related to the Development of Moral Judgment

The DIT has been used to measure differences in the moral reasoning of college students across academic disciplines (Cummings, Days, & Maddux, 2001; Icerman, Karcher, & Kennelley, 1991; King & Mayhew, 2002; Paradice & Dejoie, 1991; Jeffrey, 1993; Ponemon & Gabhart, 1994; Snodgrass & Behling, 1996; St. Pierre, Nelson, & Gabbin, 1990; Zeidler & Schafer, 1984). Variability of moral reasoning scores within certain disciplines has also been observed (Icerman et al., 1991; Jeffrey, 1993; Paradice & Dejoie, 1991).

Several studies have attempted to measure differences in moral reasoning between academic disciplines (St Pierre et al., 1990; Snodgrass & Behling, 1996), yielding inconclusive results. For example, St Pierre et al. (1990) found that accounting majors and students majoring in other business disciplines (i.e., finance, information systems, hotel/restaurant management, management, marketing and international business)

showed lower levels of postconventional moral reasoning than did students in psychology, math and social work. Snodgrass and Behling (1996), by contrast, found no significant differences in the moral reasoning levels between business and non-business majors (i.e., arts and humanities, social sciences, natural sciences and undeclared).

Summary

There is considerable evidence that moral reasoning is significantly related with cognitive abilities such as logical reasoning (Bendixen et al., 1998), moral comprehension (Rest et al., 1999), IQ (Hanks, 1985), and verbal ability (Zeidner & Nevo, 1987). Previous research also suggests that moral reasoning level is affected by certain background variables such as age (Kurtines, 1982; Rest, 1986; Rykiel, 1995), gender (Bendixen et al., 1998: Jaffe & Hyde, 2000), education (Davison, 1979; Kitchener et al., 1984; Rest, 1979; Rest & Thoma, 1985; Rest et al., 1999), GPA (Johnson et al., 1993; Pascarella & Terenzini, 1991), and academic major (St Pierre et al., 1990).

This study investigated whether epistemological beliefs are related to moral reasoning over and above the effects of other critical variables (i.e., age, education, gender, syllogistic reasoning skill, GPA, and academic major) in Korean and U.S. college students and whether differences between the two groups exist. Therefore this study extends the work of Rest and associates (1986, 1999) by studying the effects of epistemological beliefs, age, education, gender, basic reasoning skill, GPA, and academic major on the acquisition of moral reasoning ability.

CHAPTER 3

METHODOLOGY

This correlational study is cross-sectional and non-experimental in nature utilizing subjects where random sampling is not possible. The study utilizes a measure of student moral reasoning ability as the criterion variable. All-possible regressions using two criteria (R^2 and the Mallows C_p) examine the predictive probability of: (a) students' epistemological beliefs, and (b) other critical variables such as age, education, gender, syllogistic reasoning skill, grade point average (GPA), and academic major.

This dissertation explores whether cultural patterns exist in the relationship among epistemological beliefs and moral reasoning. Three research questions guide my work: (a) What are similarities and differences in the relationships among five epistemological beliefs and moral reasoning between Korean and U.S. college students? (b) Will epistemological beliefs be related to moral reasoning over and above the effects of other critical variables (i.e., age, education, gender, syllogistic reasoning skill, GPA, and academic major) in each respective group? and (3) Which of five epistemological beliefs explains the greatest amount of sample variation in the performance on the Defining Issues Test in each respective group?

Participants

A total of 481 undergraduate college students from Korea and the United States were involved in this study. All the participants were undergraduate students taking education courses at their respective institution. The Korean sample consisted of 267

undergraduate students who are enrolled in three universities: Seoul National University (n = 49), Chuncheon National University of Education (n = 118), and Incheon National University of Education (n = 100). Responses by 24 subjects were eliminated; twenty two for failure to pass the internal check for consistency of responses on the Defining Issues Test, and two for returning the questionnaires substantially incomplete. Of the remaining 243 subjects, subjects' ages ranged from 18-38 with the average age being 22.1 years. Regarding subjects' gender, 151 (62.1%) were female and 92 (37.9%) were male. The average GPA was 3.33. The sample included 44 freshmen (18.1%), 26 sophomores (10.7%), 125 juniors (51.4%), and 48 seniors (19.8%). In the Korean sample, all the subjects came from ethics education (33.7%), mathematics education (26.7%), social science education (23%), education (6.2%), computer education (5.8%), and Korean language education (4.5%).

The U.S. sample consisted of 214 undergraduate students who were studying at the University of Georgia. Twenty three sets of responses were eliminated; seventeen for failure to pass the internal check for consistency of responses on the Defining Issues Test, and six for returning the questionnaires substantially incomplete. Of the remaining 191 subjects, subjects' ages ranged from 17-49 with the average age being 21.2 years. Regarding subjects' gender, 142 (74.3%) were female and 49 (25.7%) were male. The average GPA was 3.37. The sample included 20 freshmen (10.5%), 48 sophomores (25.1%), 82 juniors (42.9%), and 41 seniors (21.5%). In the U.S. sample, early childhood education, social science education, science education, and mathematics education were chosen by approximately 71.2% of respondents, while the remaining 28.8% chose a

variety of 9 other major fields. Table 3.1 presents demographic data for all the participants.

Table 3.1 Demographic Descriptions of Participants

	Korean	American
	(*n* = 243)	(*n* = 191)
Age	Mean (Range)	Mean (Range)
	22.1 (18-38)	21.2 (17-49)
GPA	Mean (*SD*)	Mean (*SD*)
	3.33 (.398)	3.37 (.497)
Gender	Frequency (Percent)	Frequency (Percent)
Male	92 (37.9)	49 (25.7)
Female	151 (62.1)	142 (74.3)
Class Status		
Freshman	44 (18.1)	20 (10.5)
Sophomore	26 (10.7)	48 (25.1)
Junior	125 (51.4)	82 (42.9)
Senior	48 (19.8)	41 (21.5)
Majors (College of Education)		
Education	15 (6.2)	
Ethics	82 (33.7)	
Language	11 (4.5)	10 (5.2)
Mathematics	65 (26.7)	22 (11.5)
Social Science	56 (23.0)	39 (20.4)
Computer Science	14 (5.8)	
Early Childhood		44 (23.0)
Elementary		6 (3.1)
Middle School		7 (3.7)
Science		31 (16.2)
Communication Science & Disorder		5 (2.6)
Art		6 (3.1)
Business		6 (3.1)
Family & Consumer Sciences		3 (1.6)
Educational Psychology		3 (1.6)
Special Education		3 (1.6)

Data Collection Methods

Because I had to manage various subjects from different places at the same time, I needed individuals to help me collect data in Korea. I contacted professors and friends in

Korea whom I knew personally. I asked them to help me with the study and they agreed to administer the instruments for me. As a result, three moral education professors and four graduate students were involved in this study. In terms of my explanations of this study, I only provided instructions for administering the instruments. I restricted other information as much as possible to reduce the likelihood of any experimental bias. At the University of Georgia I administered all the instruments.

After securing permission from appropriate faculty members, the researcher (or research assistants) addressed the classes and asked for students to volunteer for the study following procedures approved by the University of Georgia Institutional Review Board. The consent document (see Appendix E) was reviewed and students were assured of their anonymity and the confidentiality of their responses. They were also informed that if they chose not to participate they would not incur negative consequences. On a voluntary basis three Korean students and 86 students at UGA chose not to participate. For those students who chose to participate, they could either complete the questionnaires in a specially provided room or complete the instrument at home and return it to the researcher (or research assistants).

To be consistent with Bendixen et al. (1998), procedures were the same as the Bendixen et al. study. Participants were asked to indicate the degree to which they agreed with each statement on the Epistemic Beliefs Inventory (EBI), using the 5-point scale. Mean completion time was approximately five minutes. Participants next completed the 12-item syllogism test by circling the most plausible option from the four possible responses. Mean completion time was about 10 minutes. After completing the brief

demographic questionnaire, participants were given the short form of the Defining Issues Test (DIT), for which the mean completion time was about 20 minutes.

Instrumentation

The Defining Issues Test (DIT)

Rest (1979) formulated the Defining Issues Test (see Appendix A) as an instrument to assess a subject's level of moral reasoning (Rest, 1979, 1986; Rest et al., 1999). The DIT presents each subject with a set of stories containing a moral dilemma and a list of statements reflecting possible considerations for deciding how to solve the dilemma. The subjects are asked to rate the statements in importance and then rank the four statements they see as the most important considerations.

Principled moral reasoning is moral reasoning at Stages 5 and 6. Rest (1979) devised a P score (sum of weighted ranks given to Stage 5 and Stage 6 items) as a measure of principled moral reasoning. This score is interpreted as "the relative importance a subject gives to principled moral considerations in making a decision about moral problems" and is "the most utilized and sensitive index from this instrument" (Rest, 1990, p. 4.2). The P score gives a percentage type score varying between .00 and 1.00. Thus, a score of .65 would indicate that the individual utilized principled moral reasoning 65% of the time, while a score of .20 would indicate that the individual utilized Level 5 or 6 moral reasoning 20% of the time.

A summary of seven studies concluded that the test-retest reliabilities for the P are in the high .70s or .80s (Rest et al., 1974). Internal consistency measurements are also satisfactory. A 1974 study of 160 subjects yielded an alpha of .77 for the P index (Rest et al., 1974). A more recent sample of 1,080 subjects also yielded an alpha of .77 for the P

index (Rest, 1990). For the current study, a coefficient alpha on the sample was computed. The entire instrument was utilized for the present research because, "although the DIT can be divided into two sets of three stories each, the two sets should not be considered alternative forms of the DIT" (Rest, 1990, p. 5.3).

The Defining Issues Test has two validity checks imbedded within the test. The first is an M score that is derived from the number of statements selected that are pretentious and mostly meaningless. There is an overall correlation of zero between M scores and P scores (Rest, 1990). Selection of these answers as the first or second most important consideration in making a moral decision suggests that the subject is making choices based on lofty sounding verbiage rather than personal values. These items do not represent any stage of moral reasoning, and in fact, selection of one of these items in the first four positions is contraindicated by test instructions. When the M score is greater than eight, the authors recommend invalidating the entire test (Rest, 1990).

A further internal validity test involves the consistency of a person's choices. The instrument requires the subject to rank 12 questions or statements in their relative order of importance. The subject is not being consistent if an item ranked as "little importance" is rated as a subject's first or second choice and selected ahead of items rated "very important." If there are inconsistencies on more than two stories, or if the number of inconsistencies on any one story exceeds eight, Rest (1990) recommends invalidation and exclusion of that person's protocol.

An additional inconsistency check regards a subject's lack of discrimination. When a test protocol shows most items ranked the same, there is a suspicion that the subject is not taking the test seriously. If a story has more than 9 items rated the same,

e.g., “some importance,” the authors recommend rejection of the entire protocol. In the current study, all of these validity measures were utilized according to Rest’s (1986, 1990) recommendations.

The short form of Rest’s (1979) DIT was used in this study. The P score from the short form correlates (r = .93) with the full DIT and separate stage score correlations using the two forms range from .57 (Stage 5b) to .88 (both Stage 5a and 6) (Rest, 1990). Also, the Korean version of the DIT (Moon, 1994) was used for assessing levels of principled moral reasoning in the Korean sample. A variety of studies have been completed on moral judgment development using the Korean version of the DIT (Moon, 1994). However, only two studies reported test-retest stability and internal consistency of the Korean DIT (Park 1989, test-retest r = .47, α = .64; Moon 1994, α = .52). These tend to be somewhat lower than the original DIT. The short form of the Korean version of the DIT consists of three separate dilemmas (i.e., the Husband, Prisoner, and Doctor stories). For the collection of the U.S. data, the equivalent stories used for Korean data were selected (i.e., the Heinz, Prisoner, and Doctor stories).

Epistemic Beliefs Inventory (EBI)

To measure students’ epistemological beliefs, a 32-item Epistemic Beliefs Inventory (see Appendix B) was used (Bendixen et al., 1998). As previously discussed, Schraw et al. (2002) reported that the EBI had several advantages over an exploratory analysis of the Epistemological Questionnaire (EQ) developed by Schommer (1990). First, Schommer’s EQ yielded a large number of potentially interpretable factors, each accounting for a relatively small share of total sample variation. In comparison, the five factors identified by the EBI provided a close fit with the five epistemological

dimensions hypothesized by Schommer (1990). Second, the first five factors on the EQ explained 35.5% of total variation, while the EBI explained 60% of total sample variation. A one-month replication led to values of 39% and 64% respectively. Third, the EBI had better predictive validity than the EQ when correlated with a test of reading comprehension.

Each of the 32 items was written as a grammatically simple statement to which individuals responded using a five-point Likert-type scale ranging from "strongly disagree" (1) to "strongly agree" (5). Individuals made their ratings by circling the number that most closely reflected their agreement with the statement.

To measure Korean students' beliefs about knowledge and knowing, a new Korean translation of Bendixen, Schraw, and Dunkle's (1998) 32-item Epistemic Beliefs Inventory was developed. In order to minimize possible linguistic and cultural discrepancies between the original scale and the new scale, two psychological testing procedures necessary for a reliable and valid test were performed: (a) back-translation, and (b) principle factor analysis as the extraction method. Principle factor analysis was used to examine whether the theoretical factors of the Epistemic Beliefs Inventory (EBI) could be recovered in the Korean translation of the instrument.

The back-translation method is required when transposing psychometric instruments from one language to another in order to assure equivalence between an original scale and its translation (Brislin, 1970). For this study, the EBI was translated using a three-stage translation/back-translation/translation procedure: (a) the translation from English to Korean was performed by the investigator, (b) the back-translation from Korean to English was performed by a fluent English speaking Korean researcher in the

field of linguistics, and (c) the back-translation was compared with the original scales to detect any discrepancies by an American researcher in the field of social science education. As a result, the original EBI and the Korean EBI were sufficiently equivalent and translation error was not detected. Additionally, principal factor analysis via SPSS graduate pack 10.0 (SPSS Inc., 2002) was performed to examine whether the theoretical factors of the EBI could be recovered in this Korean translation of the instrument.

Sixty undergraduates enrolled in a cyber-ethics class at Chuncheon National University of Education were involved in the pilot study. Prior to any factor analysis, it is necessary to determine the appropriateness of this type of analysis. The KMO (Kaiser-Meyer-Olkin Measure of Sampling Adequacy) is a measure of how amenable the matrix is to factoring (Gorsuch, 1983). Specifically, it compares the correlations among pairs of variables to their correlations when the effects of the other variables are removed or partialed out. Reasonably large values are needed for a good factor analysis, so the KMO measure should be greater than .60 for the factor analysis to proceed (Gorsuch, 1983; Hair, Anderson, & Tatham, 1987). Results for all factors used were .70 or higher, indicating adequate correlation among items.

It was also necessary to test the hypothesis that the correlation matrix came from a population of variables that are independent. Attempting to correlate independent items will, by definition, yield poor results. If this hypothesis is not rejected, the data are not appropriate for factor analysis. Bartlett's test of sphericity of the residual covariance matrix tests the hypothesis that the correlation matrix is an identity matrix and therefore unsuitable for further analysis. In order to not accept this hypothesis, Bartlett's test

should indicate an approximate chi-square value of $p < .001$ (Gorsuch, 1983; Hair et al., 1987).

Results of this analysis produced an approximate chi-square value of $p < .001$ in all cases, supporting the rejection of the hypothesis and suggesting that the data set was a sample from a multivariate population. The KMO Measure of Sampling Adequacy and Bartlett's test of Sphericity and significance ($p < .001$) indicated that the necessary prerequisite conditions existed in order to proceed with the factor analysis.

The principle factor analysis as the extraction method yielded 12 factors with eigenvalues greater than one that explained 73% of the total sample variation. The researcher selected the first five observed factors for closer inspection to determine whether they corresponded to the five factors proposed by Bendixen et al. (1998; Schraw et al., 2002). These factors explained 43% of the total sample variation. Items with loadings greater than .30 were used to construct composite scores for each factor. The remaining seven factors included a couple of items but did not suggest clearly interpreted factors in the context of Schommer's hypothesized five-factor model (1990) and Bendixen, Schraw, and Dunkle's EBI (1998, Schraw et al., 2002). Factor labels, item-to-factor loadings, eigenvalues, and values of coefficient α for each of the five factors are shown in Table 3.2.

Table 3.2 Factor Structure of the Korean Translation of the Epistemic Beliefs Inventory (N = 60)

Factor 1: Innate Ability (Eigenvalue = 3.59; α = .64)
Some people are born with special gifts and talents. (.74)
Some people just have a knack for learning and others don't. (.60)
Smart people are born that way. (.43)
Some people will never be smart no matter how hard they work. (.39)
Factor 2: Quick Learning (Eigenvalue = 3.47; α = .31)

If you haven't understood a chapter the first time through, going back over it won't help. (.62)
If a person tries too hard to understand a problem, they will most likely end up being confused. (.40)
Working on a problem with no quick solution is a waste of time. (.39)

Factor 3: Omniscient Authority (Eigenvalue = 2.44; α = .36)
People who question authority are trouble makers. (.39)
Children should be allowed to question their parents' authority. (.35)
When someone in authority tells me what to do, I usually do it. (.33)

Factor 4: Simple Knowledge (Eigenvalue = 2.21; α = .33)
Too many theories just complicate things. (.65)
The best ideas are often the most simple. (.33)
You can study something for years and still not really understand it. (.42)
It bothers me when instructors don't tell students the answers to complicated problems. (.31)
Instructors should focus on facts instead of theories. (.30)

Factor 5: Certain Knowledge (Eigenvalue = 1.92; α = .38)
Truth means different things to different people. (.51)
The moral rules I live by apply to everyone. (.37)
Absolute moral truth does not exist. (.32)

The five factors were labeled Innate Ability, Quick Learning, Omniscient Authority, Simple Knowledge, and Certain Knowledge. These factors were identical to the five epistemological dimensions hypothesized by Schommer (1990) and Schraw, Bendixen, and Dunkle's (2002) findings (see Table 3.3). Each factor included at least three items with loadings in excess of .30.

Table 3.3 Factor Structure of The Epistemic Beliefs Inventory

Factor 1: Omniscient Authority (Eigenvalue = 1.63; α = .68)
People should not question authority. (.73)
Children should be allowed to question their parents' authority. (.66)
When someone in authority tells me what to do, I usually do it. (.62)

Factor 2: Certain Knowledge (Eigenvalue = 1.63; α = .62)
The moral rules I live by apply to everyone. (.72)
What is true today will be true tomorrow. (.63).
Parents should teach their children all there is to know about life. (.50)

Factor 3: Quick Learning (Eigenvalue = 1.47; α = .58)

Working on a problem with no quick solution is a waste of time. (.71)
If you haven't understood a chapter the first time through, going back over it won't help. (.53)
If you don't learn something quickly, you won't ever learn it. (.49).

Factor 4: Simple Knowledge (Eigenvalue = 1.43; α = .62)
Instructors should focus on facts instead of theories. (.78)
Too many theories just complicate things. (.57)
Most things worth knowing are easy to understand. (.44)

Factor 5: Innate Ability (Eigenvalue = 1.36; α = .62)
How well you do in school depends on how smart you are. (.76)
Smart people are born that way. (.56)
Really smart students don't have to work as hard to do well in school. (.30)

From Schraw et al., "Development and validation of the epistemic belief inventory (EBI)" (pp. 261-275). In B. K. Hofer & P. R. Pintrich (Eds.), Personal epistemology, 2002, Mahwah, NJ: Erlbaum.

These findings indicated that the Korean translation of the EBI might yield the five epistemic dimensions identified by Bendixen, Schraw, and Dunkle's EBI (1998; Schraw et al., 2002) in a similar way. However, the results of this study also suggest three limitations. Firstly, the Korean translation of the EBI yielded 12 factors with eigenvalues greater than one, while the EBI provided a close fit with the five epistemic dimensions hypothesized by Schommer (1990). Secondly, the first five factors on the Korean translation of the EBI explained 43% of total variation, while the EBI explained 60% of total sample variation. Lastly, a comparison of internal consistency coefficients using Cronbach's α indicated that the Korean translation of the EBI was less reliable than the EBI. These pilot study results may be due to the use of relatively few participants (i.e., sixty undergraduates). Therefore, after completing official data collection at three universities in Korea, the factor structure of the EBI was analyzed again using varimax factor analysis with a larger sample (n = 243).

The varimax solution yielded ten factors with eigenvalues greater than one and explained 58.1% of the total sample variation. The first five observed factors

corresponded to the five epistemological factors described by Schommer (1990) and Bendixen et al. (1998; Schraw et al., 2002). These factors explained 40.5% of the total sample variation. The internal consistency was equal to .65 for omniscient authority, .63 for certain knowledge and quick learning, .49 for innate ability, and .44 for simple knowledge. The internal consistency was low with simple knowledge and innate ability, although it was high with the overall 32-item questionnaire (alpha = .71). The factor structure, loadings, eigenvalues, and values of coefficient alpha for each of the five factors are reported in Table 3.4.

Table 3.4 Factor Structure of the Korean Translation of the Epistemic Beliefs Inventory (N = 241)

Factor 1: Quick Learning (Eigenvalue = 3.24; α = .63)
Working on a problem with no quick solution is a waste of time. (.76)
If you haven't understood a chapter the first time through, going back over it won't help. (.66)
If you don't learn something quickly, you won't ever learn it. (.58)
Factor 2: Omniscient Authority (Eigenvalue = 2.26; α = .65)
People should always obey the law. (.73)
When someone in authority tells me what to do, I usually do it. (.72)
Children should be allowed to question their parents' authority. (.56)
People who question authority are trouble makers. (.48)
Parents should teach their children all there is to know about life. (.46)
Factor 3: Certain Knowledge (Eigenvalue = 2.02; α = .63)
Absolute moral truth does not exist. (.74)
Truth means different things to different people. (.64)
What is true today will be true tomorrow. (.61)
The moral rules I live by apply to everyone. (.42)
Sometimes there are no right answers to life's big problems. (.34)
Factor 4: Simple Knowledge (Eigenvalue = 1.85; α = .44)
Too many theories just complicate things. (.65)
The best ideas are often the most simple. (.62)
Things are simpler than most professors would have you believe. (.46)
Factor 5: Innate Ability (Eigenvalue = 1.53; α = .49)
Some people will never be smart no matter how hard they work. (.75)
Really smart students don't have to work as hard to do well in school. (.51)
How well you do in school depends on how smart you are. (.47)

An inspection of these factors shows that they meet the operational definitions for each of the five factors described earlier. All items but item 15 loaded unambiguously on only one factor and were related directly to the construct in question. Item 15 (i.e., How well you do in school depends on how smart you are.) with a loading of .47 on the innate ability factor also loaded on the quick learning factor (.43). In this study, item 15 was interpreted as an innate ability factor that led to a relatively high item-to-factor loading and corresponded to the factor structure of the EBI and EQ. In conclusion, analysis of the items using the larger sample data indicated that the Korean translation of the EBI was suitable for further use.

With the U.S. sample, the EBI was analyzed using the same factor-analytic procedures used to analyze the Korean translation of the EBI. This analysis yielded eight factors with eigenvalues greater than one that explained 63.5 % of the total sample variation. The first five observed factors corresponded to the five epistemological factors described by Schommer (1990) and Bendixen, Schraw, and Dunkle (1998; Schraw et al., 2002). These factors explained 44.4% of the total sample variation. The factor structure, loadings, eigenvalues, and values of coefficient alpha for each of the five factors are reported in Table 3.5.

All items but item 10 loaded unambiguously on only one factor and were related directly to the construct in question. Item 10 (i.e., Too many theories just complicate things.) with a loading of .69 on the simple knowledge factor also loaded on the quick learning factor (.31). In this study, item 10 was interpreted as a simple knowledge factor that led to a relatively high item-to-factor loading and corresponded to the factor structure of the EBI and EQ. The internal consistency using coefficient α was equal to .69 for

simple knowledge, .65 for quick learning and certain knowledge, .66 for omniscient authority, and .53 for innate ability. The overall alpha for the EBI was equal to .79. A comparison of internal consistency coefficients indicated that the results of the present study and Schraw, Bendixen, and Dunkle's study (2002) were quite similar on this dimension, although neither result produced factors that were highly reliable.

Table 3.5 Factor Structure of the Epistemic Beliefs Inventory (U.S. Sample N = 191)

Factor 1: Simple Knowledge (Eigenvalue = 2.50; α = .69)
Things are simpler than most professors would have you believe. (.77)
The best ideas are often the most simple. (.70)
Too many theories just complicate things. (.69)
Instructors should focus on facts instead of theories. (.37)
It bothers me when instructors don't tell students the answers to complicated problems. (.30)
Factor 2: Quick Learning (Eigenvalue = 2.42; α = .65)
If you haven't understood a chapter the first time through, going back over it won't help. (.75)
Working on a problem with no quick solution is a waste of time. (.73)
If you don't learn something quickly, you won't ever learn it. (.47)
Factor 3: Certain Knowledge (Eigenvalue = 1.91; α = .65)
Absolute moral truth does not exist. (.73)
Sometimes there are no right answers to life's big problems. (.70)
The moral rules I live by apply to everyone. (.46)
What is true today will be true tomorrow. (.42)
Factor 4: Omniscient Authority (Eigenvalue = 1.84; α = .66)
People should always obey the law. (.80)
When someone in authority tells me what to do, I usually do it. (.80)
People who question authority are trouble makers. (.53)
Factor 5: Innate Ability (Eigenvalue = 1.81; α = .53)
Some people will never be smart no matter how hard they work. (.73)
Really smart students don't have to work as hard to do well in school. (.72)
Smart people are born that way. (.41)

Syllogisms

Syllogisms (Appendix C) were used to provide a measure of cognitive reasoning. The syllogisms test developed by Bendixen et al. (1998) includes 12 items in a two-statement logical form that provides premises to the test taker (e.g., "No mammal is a

reptile." "Some quadrupeds are mammals."). After each set of premises, the test taker is asked to select a valid conclusion from among four alternatives (e.g., "Some quadrupeds are not reptiles."). Premises differ from item to item on several dimensions, including whether they are positive or negative (e.g., "No mammal is a reptile"), include universals such as "all" or "always," are abstract (e.g., "Some K's are P's"), and are empirically plausible (e.g., "Glass always bounces when it falls").

To measure Korean students' cognitive skill, a new Korean translation of Bendixen, Schraw, and Dunkle's (1998) 12-item Syllogisms test was developed. In order to minimize possible linguistic and cultural discrepancies between the original scale and the new scale, the same procedures used with the EBI were applied.

Both the difficulty and discrimination indices (i.e., the point biserial and biserial correlations) via a computer program for classical item analysis (CIA) (Kim, 1999) were determined for twelve items. The computer program CIA provides classical item analyses. The results of the item analysis from the sixty undergraduates enrolled in a cyber-ethics class at Chuncheon National University of Education are listed in Table 3.6.

In the Table 3.6 below, PROP indicates the proportion of examinees who selected the correct response. RPBI is the point biserial correlation between the dichotomous item score and the total score, whereas RBIS is the biserial correlation between the same variables with the bivariate normal assumption (RBIS values in general are slightly higher than that of RPBI). It is suggested that items with discrimination indices (RPBI) below .25 should be rewritten or discarded (Payne, 1997). The difficulty index (PROP) of .625 might be considered optimal because there are four choices. The results reported in Table 3.5 showed that the discrimination levels for all items were acceptable, with the

range of .30 to .56. In addition, the average PROP index of .73 with a range from .30 to .90 suggested that all items are within an acceptable range.

Table 3.6 Item Analysis of the Korean Translation of Bendixen, Schraw, and Dunkle's (1998) 12-item Syllogisms

Item #	Difficulty Index	Discrimination Indices	
	PROP	RPBI	RBIS
1	0.667	0.307	0.369
2	0.300	0.337	0.481
3	0.733	0.301	0.298
4	0.900	0.353	0.603
5	0.900	0.384	0.656
6	0.667	0.523	0.678
7	0.833	0.507	0.756
8	0.417	0.305	0.386
9	0.883	0.555	0.908
10	0.850	0.484	0.741
11	0.750	0.405	0.552
12	0.817	0.391	0.524

N PERSONS	60
N ITEMS	12
MEAN	8.71667
VARIANCE	3.16972
SD	1.78037
MINIMUM	4.00000
MAXIMUM	12.0000
ALPHA	0.45200
SEM	1.31795
MEAN PROP	0.72641
MEAN RPBI	0.40433
MEAN RBIS	0.57935

Two internal consistency estimates of reliability were computed for the syllogisms test: coefficient alpha and a split-half coefficient expressed as a Spearman-Brown corrected correlation. The split-half coefficient was .60, indicating satisfactory reliability. However, a coefficient alpha of .452 indicated a relatively low degree of reliability. With regard to a relatively low degree of internal-consistency reliability, it should be recognized that internal-consistency reliability estimates are the results of an

interplay between the number of items comprising the instrument and the interrelations among the items (Pedhazur & Schmelkin, 1991). By and large, alpha becomes increasingly larger, as the number of items is increased. Therefore, because the number of items in Bendixen, Schraw, and Dunkle's 12-item Syllogisms is relatively small, the measure has a low estimate of internal-consistency reliability.

Demographic Questionnaire

Demographic questions (Appendix D) include: (a) age, (b) gender, (c) academic major, (d) current GPA, (e) ethnic background, and (f) educational level.

Data Analysis

For the investigation of the relationship among epistemological beliefs and moral reasoning between Korean and U.S. college students, a multiple regression analysis was employed. Especially, an all-possible multiple regression model was used to select the best regression model from among all possible regressions. Although popular, the stepwise procedures have been criticized for their reliance on multiple tests, for their inappropriate use of the *F* distribution, for their claim of identifying the best subset of explanatory/predictor variables, and for yielding nonreplicable models (Henderson & Denison, 1989; Huberty, 1989; Olejnik, Mills, & Keselman, 2000; Snyder, 1991; Thompson, 1995; Wilkinson, 1979). As an alternative to the stepwise procedures, many methodologists have recommended that researchers examine all of the possible regression models that might be developed from the list of possible explanatory/predictor variables (Olejnik et al., 2000; Thompson, 1995). The two criteria used most frequently are the value of R^2 achieved by the least squares fit and the C_p statistic. Mallow's C_p statistic [$C_p = RSS_p/s^2 - (n - 2p)$, where RSS_p is the residual sum of squares from a model containing

p parameters, p is the number of parameters in the model including β^0, and s^2 is the residual mean square from the largest equation postulated containing all the Z's and is presumed to be reliable unbiased estimate of the error variance σ^2 (Draper & Smith, 1998; Montgomery & Peck, 1992). The expected value of C_p is p when model bias is 0, so one definition of the best model is the one in which the absolute value of the difference between C_p is p is smallest.

An examination of the individual variables entered in the multiple regression will reveal (a) whether epistemological beliefs are related to moral reasoning over and above the effects of other critical variables (i.e., age, education, gender, and basic reasoning skills) in each group, and (b) which of five epistemological beliefs (i.e., certain knowledge, innate knowledge, quick learning, simple knowledge, and omniscient authority) explains the greatest amount of sample variation in each group.

Valid data analyses require several important assumptions: (a) the observations should be independent (independence), (b) the observations on the dependent variables should follow a multivariate normal distribution in each group (multivariate normality), (c) homogeneity of the dependent variable variance across the independent variable score possibilities should be satisfied (variance homogeneity), (d) there should be a significant relationship between a set of dependent variables and a set of covariates (linearity), and (e) independent variables should not be perfectly correlated (collinearity) (Huberty & Petoskey, 1999; Pedhazur, 1997).

Before the application of the assumption check-up, diagnostic procedures to detect any observations that demonstrate real uniqueness in comparison with the remainder of the population (i.e., outliers) were used. For these purposes, the data were

examined graphically. In addition, to identify multivariate outliers the Mahalanobis D^2, which is a measure of the distance in multidimensional space of each observation from the mean center of the observations, was used (Stevens, 1996). As a result of these diagnostic tests, no observations seemed to demonstrate the characteristics of extreme outliers.

Then, the assumptions of multivariate normality and variance homogeneity were checked to see if there were any violations of the assumptions for multiple regression analysis. Multivariate normality was assessed by examining a normal probability plot. The plot was virtually linear, indicating that the condition of normality was satisfied. Also, homogeneity of Y-variable variance across the X-variable-score possibilities was assessed by examining a residual plot. The plot of residuals showed that the condition of variance homogeneity was met.

Collinearity was diagnosed by examining the variance inflation factor (VIF), as it indicates the inflation of the variance of *b* as a consequence of the correlation between the independent variables (Pedhazur, 1997). The variance inflation factor (VIF) is at a minimum (1.00) when the correlations between the independent variable in question with the remaining independent variables are zero. The test for the assumption of collinearity indicated that all the VIFs were close to the minimum with a range of 1.11 to 1.63, thus showing that the condition of collinearity was satisfied.

For the two continuous variables (moral reasoning and cognitive skill), measures used are simply the test scores. The two dichotomous variables (academic major and gender) were converted into sets of variables by dummy variable coding. In the case of sixteen academic majors as a categorical variable, a dummy variable transformation

produces fifteen new variables. However, because the all possible regression approach is most reasonable when the number of predictor variables is not too large (Olejnik et al., 2000), sixteen academic majors were grouped under two categories (sciences and non-sciences). Mathematics, science, and computer science education were categorized into sciences, while the remaining thirteen majors were categorized into non-sciences. For the two categorical variables with ordered categories (epistemological beliefs and educational level), this study used integer scaling to obtain variable measures. For example, for epistemological beliefs with five ordered categories, a "1" was assigned to the lowest category, …, and a "5" to the highest category.

CHAPTER 4

RESULTS

The purpose of this study was to explore whether cultural patterns exist in the relationships between epistemological beliefs and moral reasoning. Therefore, two sets of analyses were conducted. In the first, descriptive statistics and correlations among all variables were used to assess the relationships between moral reasoning and each of the eleven independent variables between Korean and U.S. college students. The second set of analyses consisted of all possible regressions that examined whether epistemological beliefs explain a substantial proportion of variation above and beyond other variables and which of five epistemological beliefs contributes substantially to higher levels of principled moral reasoning.

Descriptive Statistics

Table 4.1 summarizes the means and standard deviations for all variables and results of the *t*-tests. Simple independent *t*-tests were used to assess the differences between Korean and U.S. college students in all variables. The results indicated that Korean college students tended to believe more strongly than U.S. college students that authorities have access to otherwise inaccessible knowledge, $t(432) = -11.05$, $p < .001$, ability to learn is innate, $t(432) = -4.05$, $p < .001$, and knowledge is simple, $t(432) = -2.99$, $p = .003$. Korean students believed more strongly than their counterparts that knowledge is certain, but the difference was not statistically significant. U.S. students believed more strongly than their counterparts that learning is quick, $t(432) = 5.9$, $p <$

.001, although the two college students groups as a whole tended to believe that learning does not happen quickly. The analyses indicated that U.S. college students obtained significantly higher P scores (M = 49.20, SD = 14.86) in comparison to the Korean students (M = 43.01, SD = 14.37).

As recommended by Cohen (1988), effect sizes with respect to each of the independent variables were computed. Cohen's criteria for evaluating the effect sizes suggest that the effect size pertaining to omniscient authority was quite large and quick learning indicated a medium effect size. Also, the effect sizes pertaining to P scores and syllogisms approached moderate levels, whereas those pertaining to simple knowledge and innate ability were small.

Table 4.1 Means and Standard Deviations for Korean and U.S. College Students

	Korean (n = 243)		American (n = 191)			
Variable	*M*	*SD*	*M*	*SD*	*t*	*d*
Epistemological Variables						
Simple Knowledge	3.35	.59	3.16	.70	-2.99**	-.32
Certain Knowledge	2.62	.84	2.57	.69	-.65	-.06
Quick Learning	1.39	.44	1.70	.62	5.9**	.70
Omniscient Authority	3.42	.71	2.74	.56	-11.05**	-.96
Innate Ability	2.53	.77	2.24	.71	-4.05**	-.38
Syllogisms	9.08	1.48	9.70	1.60	4.19**	.42
P scores	43.01	14.37	49.20	14.86	4.37**	.43

*p < .05, two-tailed. **p < .01, two-tailed.

Correlations and All Possible Regressions Analysis

The Korean Sample

Of the five epistemological variables, three were significantly related to P scores (see Table 4.2). Those variables were omniscient authority, certain knowledge, and quick learning. Scores high on those dimensions were correlated negatively with P scores, indicating that higher levels of principled moral reasoning were associated with a more sophisticated and presumably less conventional, epistemological belief system.

Table 4.2 Correlations Matrix for the Measure on Korean College Students

	SK	CK	QL	OA	IA	Gen	Age	Edu	GPA	Maj	Syllo	P
Simple Knowledge (SK)	−											
Certain Knowledge (CK)	-.07	−										
Quick Learning (QL)	.04	.09	−									
Omniscient Authority (OA)	.03	.32**	.07	−								
Innate Ability(IA)	.14*	.04	.35**	.05	−							
Gender	-.16*	-.02	.02	.15*	.10	−						
Age	-.07	-.07	.01	-.15*	.04	-.21**	−					
Education	-.03	.06	-.11	-.01	-.05	-.25**	.34**	−				
GPA	-.13*	-.08	-.03	-.12	-.07	.34**	.07	-.16*	−			
Major	.19**	-.08	.00	.11	.07	.05	-.03	.05	-.04	−		
Syllogisms	-.02	-.11	-.07	-.03	-.03	.05	-.11	.07	.06	-.02	−	
P score (P)	-.07	-.32**	-.13*	-.35**	-.11	-.09	.14*	.09	.33**	-.11	.09	−

*$p < .05$, two-tailed. **$p < .01$, two-tailed.

These findings replicated those of previous studies, the results of which had shown a negative relationship between the acceptance of authority and P scores (Bendixen et al., 1998; Curtis et al., 1988; Haan, Smith, & Block, 1968; Presley, 1985); the findings were also consistent with those of Walker et al. (1991), who reported that the DIT scores increased as epistemological beliefs measured on a unidimensional scale became more sophisticated.

A statistically significant association was noted between GPA and the P score (r = .33, $p < .01$). This result supports the view that educational achievement has a significant correlation with the P score (Ji, 1997; Kohlberg, 1969; Rest, 1986). Age was significantly correlated with P score, but this correlation (r = .14) was very small. On the other hand, Gilligan's (1982) charge of gender-bias in Kohlberg's model was not warranted by the present evidence. Male and female students were not significantly different in terms of their P scores (r = -.09, $p > .05$). However, age, education, and GPA had statistically significant correlations with gender. A significant correlation between GPA and gender indicated that GPA was statistically higher for female students than for male students. Significant correlations of age and education with gender indicated that age and education were statistically higher for male students than for female students. Education, major, and syllogistic reasoning had no significant correlations with P scores.

All possible regressions were used to compare the proportion of variance in the principled moral reasoning explained by each variable. Scale scores for each of the five epistemic dimensions consisted of the average among all items with a loading of .30 or higher on that dimension. The results were shown in ascending order, beginning with one-predictor equations and concluding with an eleven-predictor equation. At each stage,

the value of R^2 achieved by the least squares fit and the C_p statistic were presented in descending order (see Table 4.3). For this study, the criterion mainly used was the maximum proportion of variance explained (R^2), because it not only provides an important measure of effect size (Cohen, 1988), but also the largest R^2 and the C_p statistic are related to each other, in fact (Draper & Smith, 1998).

As single predictors were used at this stage, the R^2's are, of course, the squared zero-order correlations of each predictor with the criterion. Omniscient authority was listed first because it has the highest R^2 with P scores, whereas simple knowledge was listed last because its correlation with P scores is the lowest. Omniscient authority explained about 12.1% of the variance in P scores. GPA, the next predictor, explained 10.6% of the variance in P scores, followed by certain knowledge (10.3%).

Table 4.3 Values of R^2 and C_p for All Possible Regressions (Korea)

Number in Model	R-Square	C(p)	Variables in Model
1	0.1208	52.3477	OA
1	0.1060	57.2538	GPA
1	0.1030	58.2676	CK
1	0.0186	86.2387	AGE
1	0.0180	86.4203	QL
1	0.0113	88.6337	MAJOR
1	0.0113	88.6527	IA
1	0.0085	89.5801	EDUC
1	0.0075	89.8940	GENDER
1	0.0074	89.9302	SYLLOGI
1	0.0044	90.9523	SK
2	0.2035	26.9560	OA GPA
2	0.1935	30.2759	CK GPA
2	0.1699	38.0755	CK OA
2	0.1501	44.6640	GENDER GPA
2	0.1332	50.2402	QL OA
2	0.1290	51.6329	OA IA
2	0.1289	51.6702	OA EDUC
2	0.1281	51.9457	OA AGE
2	0.1277	52.0744	EDUC GPA
2	0.1264	52.5050	OA SYLLOGI

2	0.1253	52.8562	OA MAJOR
3	0.2470	14.5481	CK OA GPA
3	0.2366	17.9729	CK GENDER GPA
3	0.2257	21.6017	OA GENDER GPA
3	0.2229	22.5374	OA EDUC GPA
3	0.2198	23.5689	CK EDUC GPA
3	0.2146	25.2860	QL OA GPA
3	0.2085	27.2931	OA IA GPA
3	0.2084	27.3385	OA AGE GPA
3	0.2080	27.4684	CK GPA MAJOR
3	0.2071	27.7770	OA GPA MAJOR
3	0.2070	27.8070	OA GPA SYLLOGI
4	0.2732	7.8414	CK OA GENDER GPA
4	0.2701	8.8767	CK OA EDUC GPA
4	0.2550	13.8813	CK QL OA GPA
4	0.2546	14.0107	CK OA GPA MAJOR
4	0.2514	15.0754	CK OA IA GPA
4	0.2513	15.1226	CK OA AGE GPA
4	0.2512	15.1404	CK GENDER EDUC GPA
4	0.2486	16.0180	SK CK OA GPA
4	0.2484	16.0799	CK OA GPA SYLLOGI
4	0.2481	16.1805	CK GENDER GPA MAJOR
4	0.2451	17.1598	CK QL GENDER GPA
5	0.2879	4.9815	CK OA GENDER EDUC GPA
5	0.2807	7.3826	CK QL OA GENDER GPA
5	0.2799	7.6271	CK OA GENDER GPA MAJOR
5	0.2795	7.7743	CK OA EDUC GPA MAJOR
5	0.2771	8.5586	SK CK OA GENDER GPA
5	0.2754	9.1278	CK OA IA GENDER GPA
5	0.2753	9.1701	CK QL OA EDUC GPA
5	0.2751	9.2187	CK OA GENDER GPA SYLLOGI
5	0.2741	9.5440	CK OA GENDER AGE GPA
5	0.2734	9.7924	CK OA IA EDUC GPA
5	0.2712	10.5139	SK CK OA EDUC GPA
5	0.1863	39.6098	SK CK QL OA IA
6	0.2961	4.2809	CK OA GENDER EDUC GPA MAJOR
6	0.2931	5.2546	CK QL OA GENDER EDUC GPA
6	0.2907	6.0436	SK CK OA GENDER EDUC GPA
6	0.2897	6.4002	CK OA IA GENDER EDUC GPA
6	0.2889	6.6501	CK OA GENDER EDUC GPA SYLLOGI
6	0.2880	6.9467	CK OA GENDER AGE EDUC GPA
6	0.2873	7.1941	CK QL OA GENDER GPA MAJOR
6	0.2844	8.1298	CK QL OA EDUC GPA MAJOR
6	0.2840	8.2696	SK CK QL OA GENDER GPA
6	0.2822	8.8679	SK CK OA GENDER GPA MAJOR
6	0.2821	8.9009	CK QL OA GENDER GPA SYLLOGI
7	0.3011	4.6132	CK QL OA GENDER EDUC GPA MAJOR
7	0.2974	5.8383	SK CK OA GENDER EDUC GPA MAJOR
7	0.2974	5.8439	CK OA IA GENDER EDUC GPA MAJOR
7	0.2969	6.0147	CK OA GENDER EDUC GPA MAJOR SYLLOGI
7	0.2962	6.2268	CK OA GENDER AGE EDUC GPA MAJOR
7	0.2956	6.4184	SK CK QL OA GENDER EDUC GPA

7	0.2939	6.9943	CK QL OA GENDER EDUC GPA SYLLOGI
7	0.2935	7.1446	CK QL OA IA GENDER EDUC GPA
7	0.2932	7.2460	CK QL OA GENDER AGE EDUC GPA
7	0.2919	7.6514	SK CK OA IA GENDER EDUC GPA
7	0.2917	7.7252	SK CK OA GENDER EDUC GPA SYLLOGI
8	0.3022	6.2357	SK CK QL OA GENDER EDUC GPA MAJOR
8	0.3017	6.4088	CK QL OA GENDER EDUC GPA MAJOR SYLLOGI
8	0.3013	6.5593	CK QL OA IA GENDER EDUC GPA MAJOR
8	0.3012	6.5935	CK QL OA GENDER AGE EDUC GPA MAJOR
8	0.2984	7.5083	SK CK OA IA GENDER EDUC GPA MAJOR
8	0.2982	7.5755	SK CK OA GENDER EDUC GPA MAJOR SYLLOGI
8	0.2981	7.5936	CK OA IA GENDER EDUC GPA MAJOR SYLLOGI
8	0.2976	7.7590	SK CK OA GENDER AGE EDUC GPA MAJOR
8	0.2975	7.8166	CK OA IA GENDER AGE EDUC GPA MAJOR
8	0.2969	7.9916	CK OA GENDER AGE EDUC GPA MAJOR SYLLOGI
8	0.2964	8.1671	SK CK QL OA GENDER EDUC GPA SYLLOGI
9	0.3028	8.0329	SK CK QL OA GENDER EDUC GPA MAJOR SYLLOGI
9	0.3023	8.2006	SK CK QL OA GENDER AGE EDUC GPA MAJOR
9	0.3023	8.2126	SK CK QL OA IA GENDER EDUC GPA MAJOR
9	0.3019	8.3564	CK QL OA IA GENDER EDUC GPA MAJOR SYLLOGI
9	0.3017	8.4039	CK QL OA GENDER AGE EDUC GPA MAJOR SYLLOGI
9	0.3013	8.5446	CK QL OA IA GENDER AGE EDUC GPA MAJOR
9	0.2991	9.2589	SK CK OA IA GENDER EDUC GPA MAJOR SYLLOGI
9	0.2985	9.4612	SK CK OA IA GENDER AGE EDUC GPA MAJOR
9	0.2983	9.5348	SK CK OA GENDER AGE EDUC GPA MAJOR SYLLOGI
9	0.2982	9.5861	CK OA IA GENDER AGE EDUC GPA MAJOR SYLLOGI
9	0.2965	10.1272	SK CK QL OA IA GENDER EDUC GPA SYLLOGI
10	0.3029	10.0108	SK CK QL OA IA GENDER EDUC GPA MAJOR SYLLOGI
10	0.3029	10.0191	SK CK QL OA GENDER AGE EDUC GPA MAJOR SYLLOGI
10	0.3024	10.1825	SK CK QL OA IA GENDER AGE EDUC GPA MAJOR
10	0.3019	10.3538	CK QL OA IA GENDER AGE EDUC GPA MAJOR SYLLOGI
10	0.2992	11.2396	SK CK OA IA GENDER AGE EDUC GPA MAJOR SYLLOGI
10	0.2965	12.1224	SK CK QL OA IA GENDER AGE EDUC GPA SYLLOGI
10	0.2916	13.7740	SK CK QL OA IA GENDER AGE GPA MAJOR SYLLOGI
10	0.2860	15.6241	SK CK QL OA IA AGE EDUC GPA MAJOR SYLLOGI
10	0.2727	20.0220	SK CK QL IA GENDER AGE EDUC GPA MAJOR SYLLOGI
10	0.2526	26.6775	SK QL OA IA GENDER AGE EDUC GPA MAJOR SYLLOGI
10	0.2075	41.6236	SK CK QL OA IA GENDER AGE EDUC MAJOR SYLLOGI
11	0.3029	12.0000	SK CK QL OA IA GENDER AGE EDUC GPA MAJOR SYLLOGI

Moving on to the results with two predictors, the combination of OA and GPA appeared to be the best. OA and GPA accounted for about 20.4% of the variance in P scores. The next best (i.e., CK and GPA) accounted for about 1% less of the variance as compared with that accounted by OA and GPA. Two epistemological beliefs (CK and OA) accounted for about 17% of the variance.

Of the three-variable equations, the best combination was CK, OA, and GPA, together accounting for about 24.7% of the variance. The increment from the best subset of two predictors to the best subset of three was about 4%. Of the four-variable equations, the best combination was CK, OA, gender, and GPA, together accounting for about 27.3% of the variance. The increment from the best subset of three predictors to the best subset of four was about 2.6%. The combination among all eleven predictors accounted for about 30.3% of the variance in the P score. The increment from the best subset of four predictors to the best subset of all eleven was only 3%.

The analysis revealed that variables (OA and CK) from the five epistemological predictors explained a substantial proportion of the variance in P scores over and above the effects of gender, age, education, GPA, academic major, and syllogistic reasoning. The combination of omniscient authority and certain knowledge accounted for about 17% of the variance. In other words, collectively, the two beliefs explained more variance in P scores than either gender, age, education, GPA, academic major, and syllogistic reasoning considered separately. However, the increment from the subset of omniscient authority and certain knowledge to the subset of the five epistemological variables was only about 1.6%. Therefore, these results indicated that simple knowledge, innate ability, and quick learning may be of little or no use for prediction.

The assessment of the relative importance of the five epistemological predictors addresses the issue about which variables contribute substantially to Korean college students' moral reasoning. Results obtained from the largest R^2 and the C_p statistic in an all possible regressions analysis with the Korean sample indicated that omniscient authority was the best discriminator among the five epistemological predictors, followed

by certain knowledge and quick learning. This finding (i.e., the relative importance of omniscient authority and certain knowledge) parallels that of a previous study (Lee, 1995), the result of which had shown the association of omniscient authority and certain knowledge with academic writing among Korean graduate students.

The U.S. Sample

Table 4.4 Correlations Matrix for the Measure on U.S. College Students

	SK	CK	QL	OA	IA	Gen	Age	Edu	GPA	Maj	Syllo	P
Simple Knowledge (SK)	−											
Certain Knowledge (CK)	.10	−										
Quick Learning (QL)	.30**	.04	−									
Omniscient Authority (OA)	.30**	.30**	.06	−								
Innate Ability (IA)	.20**	.20	.23**	-.01	−							
Gender	.06	.06	-.02	.18*	-.18	−						
Age	-.08	-.08	-.19	-.03	-.03	-.07	−					
Education	-.14	-.14	-.06	-.04	-.06	-.13	.41**	−				
GPA	-.19*	-.19*	-.08	-.07	.00	.21**	.10	.10	−			
Major	-.06	-.06	-.09	-.02	.10	-.12	.08	-.17*	-.21**	−		
Syllogisms	-.13	-.13	-.16*	-.10	.12	-.09	-.00	-.06	.04	.07	−	
P score (P)	-.31**	-.04	-.18*	-.35**	-.03	.03	.05	.16	.26**	-.09	.07	−

*$p < .05$, two-tailed. **$p < .01$, two-tailed.

Correlations among all variables in the U.S. sample were reported in Table 4.4 and show that the correlations between subjects' P scores and evaluations of beliefs in omniscient authority (r = -.35, p < .01), simple knowledge (r = -.31, p < .01), and quick learning (r = -.18, p < .05) were both significant and indicative of an inverse relationship. A significant association was noted between GPA and the P score (r = .26, p < .01). This result supports the view that educational achievement has a significant correlation with the P score (Ji, 1997; Kohlberg, 1969; Rest, 1986).

Gilligan's (1982) charge of gender-bias in Kohlberg's model was not warranted by the present evidence. Male and female students were not significantly different in terms of their P scores (r = .03, p > .05). Also, age, education, major, and syllogistic reasoning had no significant relationships with P scores.

The results of an all possible regressions analysis on U.S. college students were reported in Table 4.5. Omniscient authority was the best predictor, explaining 12.3% of the variance in P scores. Simple knowledge, the next predictor, explained 9.4% of the variance in P scores, followed by GPA (about 6.6%) and quick learning (about 3.2%).

Table 4.5 Values of R^2 and C_p for All Possible Regressions (U.S)

Number in Model	R-Square	C(p)	Variables in Model
1	0.1229	17.8252	OA
1	0.0937	24.6464	SK
1	0.0663	31.0606	GPA
1	0.0316	39.1520	QL
1	0.0133	43.4256	EDU
1	0.0089	44.4505	MAJOR
1	0.0047	45.4427	SYLLO
1	0.0027	45.9122	AGE
1	0.0015	46.1793	CK
1	0.0008	46.3489	GENDER
1	0.0006	46.3875	IA

2	0.1778	7.0041	OA GPA
2	0.1679	9.3287	SK OA
2	0.1471	14.1747	QL OA
2	0.1354	16.9095	SK GPA
2	0.1334	17.3919	OA EDU
2	0.1331	17.4484	OA MAJOR
2	0.1313	17.8792	OA GENDER
2	0.1273	18.8124	CK OA
2	0.1246	19.4382	OA AGE
2	0.1243	19.5123	OA SYLLO
2	0.1238	19.6350	OA IA
3	0.2081	1.9368	SK OA GPA
3	0.1968	4.5816	QL OA GPA
3	0.1841	7.5334	OA EDU GPA
3	0.1822	7.9815	CK OA GPA
3	0.1807	8.3410	SK OA MAJOR
3	0.1806	8.3503	OA GPA MAJOR
3	0.1794	8.6410	OA GENDER GPA
3	0.1787	8.8109	OA IA GPA
3	0.1786	8.8193	OA GPA SYLLO
3	0.1782	8.9222	OA AGE GPA
3	0.1774	9.1091	SK QL OA
4	0.2165	1.9723	SK QL OA GPA
4	0.2130	2.7898	SK OA GPA MAJOR
4	0.2128	2.8375	SK CK OA GPA
4	0.2116	3.1089	SK OA EDU GPA
4	0.2103	3.4123	SK OA GENDER GPA
4	0.2082	3.9100	SK OA GPA SYLLO
4	0.2082	3.9174	SK OA IA GPA
4	0.2082	3.9217	SK OA AGE GPA
4	0.2020	5.3534	QL OA EDU GPA
4	0.2015	5.4754	CK QL OA GPA
4	0.2015	5.4846	QL OA GPA MAJOR
5	0.2227	2.5389	SK QL OA GPA MAJOR
5	0.2214	2.8256	SK CK QL OA GPA
5	0.2199	3.1894	SK QL OA EDU GPA
5	0.2185	3.5065	SK QL OA GENDER GPA
5	0.2178	3.6641	SK CK OA GPA MAJOR
5	0.2172	3.8088	SK QL OA IA GPA
5	0.2166	3.9577	SK QL OA AGE GPA
5	0.2165	3.9716	SK QL OA GPA SYLLO
5	0.2156	4.1939	SK CK OA GENDER GPA
5	0.2154	4.2361	SK OA EDU GPA MAJOR
5	0.2154	4.2400	SK CK OA EDU GPA
5	0.1828	12.1055	SK CK QL OA IA
6	0.2277	3.3583	SK CK QL OA GPA MAJOR
6	0.2247	4.0556	SK QL OA EDU GPA MAJOR
6	0.2242	4.1809	SK QL OA GENDER GPA MAJOR
6	0.2241	4.1934	SK QL OA IA GPA MAJOR
6	0.2239	4.2457	SK CK QL OA GENDER GPA
6	0.2238	4.2717	SK CK QL OA EDU GPA
6	0.2228	4.5067	SK QL OA GENDER EDU GPA
6	0.2227	4.5369	SK QL OA GPA MAJOR SYLLO

6	0.2227	4.5386	SK QL OA AGE GPA MAJOR
6	0.2217	4.7721	SK CK QL OA AGE GPA
6	0.2216	4.7841	SK CK QL OA IA GPA
7	0.2297	4.8994	SK CK QL OA GENDER GPA MAJOR
7	0.2290	5.0598	SK CK QL OA EDU GPA MAJOR
7	0.2284	5.2081	SK CK QL OA IA GPA MAJOR
7	0.2278	5.3420	SK CK QL OA AGE GPA MAJOR
7	0.2277	5.3583	SK CK QL OA GPA MAJOR SYLLO
7	0.2271	5.5019	SK CK QL OA GENDER EDU GPA
7	0.2270	5.5314	SK QL OA GENDER EDU GPA MAJOR
7	0.2264	5.6649	SK QL OA IA GENDER GPA MAJOR
7	0.2262	5.7031	SK QL OA IA EDU GPA MAJOR
7	0.2252	5.9400	SK QL OA AGE EDU GPA MAJOR
7	0.2252	5.9512	SK CK QL OA AGE EDU GPA
8	0.2315	6.4613	SK CK QL OA GENDER EDU GPA MAJOR
8	0.2308	6.6268	SK CK QL OA IA GENDER GPA MAJOR
8	0.2297	6.8935	SK CK QL OA IA EDU GPA MAJOR
8	0.2297	6.8937	SK CK QL OA GENDER AGE GPA MAJOR
8	0.2297	6.8966	SK CK QL OA GENDER GPA MAJOR SYLLO
8	0.2296	6.9101	SK CK QL OA AGE EDU GPA MAJOR
8	0.2294	6.9642	SK QL OA IA GENDER EDU GPA MAJOR
8	0.2290	7.0581	SK CK QL OA EDU GPA MAJOR SYLLO
8	0.2284	7.1939	SK CK QL OA IA AGE GPA MAJOR
8	0.2284	7.2033	SK CK QL OA IA GPA MAJOR SYLLO
8	0.2283	7.2101	SK CK QL OA GENDER AGE EDU GPA
9	0.2329	8.1382	SK CK QL OA IA GENDER EDU GPA MAJOR
9	0.2322	8.3196	SK CK QL OA GENDER AGE EDU GPA MAJOR
9	0.2316	8.4473	SK CK QL OA GENDER EDU GPA MAJOR SYLLO
9	0.2309	8.6236	SK CK QL OA IA GENDER AGE GPA MAJOR
9	0.2308	8.6261	SK CK QL OA IA GENDER GPA MAJOR SYLLO
9	0.2303	8.7461	SK CK QL OA IA AGE EDU GPA MAJOR
9	0.2299	8.8571	SK QL OA IA GENDER AGE EDU GPA MAJOR
9	0.2297	8.8914	SK CK QL OA GENDER AGE GPA MAJOR SYLLO
9	0.2297	8.8928	SK CK QL OA IA EDU GPA MAJOR SYLLO
9	0.2296	8.9089	SK CK QL OA AGE EDU GPA MAJOR SYLLO
9	0.2294	8.9607	SK QL OA IA GENDER EDU GPA MAJOR SYLLO
10	0.2335	10.0009	SK CK QL OA IA GENDER AGE EDU GPA MAJOR
10	0.2329	10.1368	SK CK QL OA IA GENDER EDU GPA MAJOR SYLLO
10	0.2322	10.3073	SK CK QL OA GENDER AGE EDU GPA MAJOR SYLLO
10	0.2309	10.6228	SK CK QL OA IA GENDER AGE GPA MAJOR SYLLO
10	0.2303	10.7451	SK CK QL OA IA AGE EDU GPA MAJOR SYLLO
10	0.2299	10.8541	SK QL OA IA GENDER AGE EDU GPA MAJOR SYLLO
10	0.2292	11.0130	SK CK QL OA IA GENDER AGE EDU GPA SYLLO
10	0.2231	12.4332	SK CK OA IA GENDER AGE EDU GPA MAJOR SYLLO
10	0.2127	14.8683	CK QL OA IA GENDER AGE EDU GPA MAJOR SYLLO
10	0.2099	15.5095	SK CK QL OA IA GENDER AGE EDU MAJOR SYLLO
10	0.1550	28.3451	SK CK QL IA GENDER AGE EDU GPA MAJOR SYLLO
11	0.2335	12.0000	SK CK QL OA IA GENDER AGE EDU GPA MAJOR SYLLO

Moving on to the results with two predictors, the combination of OA and GPA appeared to be the best. OA and GPA accounted for about 17.8% of the variance in P scores. The next best (i.e., SK and OA) accounted for about 1% less of the variance as compared with that accounted for by OA and GPA. Also, the combination of another two epistemological beliefs (QL and OA) accounted for about 14.7% of the variance.

Of the three-variable equations, the best combination was SK, OA, and GPA, together accounting for about 20.8% of the variance. The increment from the best subset of two predictors to the best subset of three was about 3%. Of the four-variable equations, the best combination was SK, QL, OA, and GPA, together accounting for about 21.7% of the variance. The increment from the best subset of three predictors to the best subset of four was about 1%. The combination among all eleven predictors accounted for about 23.4% of the variance in the P score. The increment from the best subset of four predictors to the best subset of all eleven was only 1.7%.

The analysis revealed that variables (OA, SK, and QL) from the five epistemological predictors explained a substantial proportion of the variance in P scores over and above the effects of gender, age, education, GPA, academic major, and syllogistic reasoning. The combination of omniscient authority, simple knowledge, and quick learning accounted for about 17.7% of the variance. In other words, collectively, the three beliefs explained more variance in P scores than either gender, age, education, GPA, academic major, and syllogistic reasoning considered separately. However, the increment from the subset of omniscient authority, simple knowledge, and quick learning to the subset of the five epistemological variables was only about 0.5%. Therefore, these

results indicated that certain knowledge and innate ability may be of little or no use for prediction.

The relative importance of omniscient authority, simple knowledge, and quick learning of the five epistemological predictors in moral reasoning provides support for findings in a series of studies (Bendixen et al., 1998; Curtis et al; 1988; Presley, 1985; Walker et al., 1991). Bendixen et al.s' findings (1998) indicated that simple knowledge, omniscient authority, and quick learning each explained a significant proportion of the variation in P scores over and above the effects of gender, age, education, and syllogistic reasoning. Walker et al. (1991) reported that P scores increased as epistemological beliefs measured on a unidimensional scale became more sophisticated and that epistemological beliefs are related to P scores even when other variables are removed from the equation.

Summary

The present study revealed similar results in the relationship among epistemological beliefs and moral reasoning between Korean and U.S. college students. First, the results showed that the epistemological belief omniscient authority and GPA were the strongest predictors in Korean and U.S. college students' P scores. Also, the analysis revealed that variables from the five epistemological predictors explained a substantial proportion of the variance in P scores over and above the effects of gender, age, education, GPA, academic major, and syllogistic reasoning. With the U.S. sample, the combination of omniscient authority, simple knowledge, and quick learning accounted for about 17.7% of the variance in P scores. With the Korean sample, the combination of omniscient authority and certain knowledge accounted for about 17% of the variance in P scores.

Second, with both Korean and U.S. college students, Gilligan's (1982) charge of gender-bias in Kohlberg's model was not warranted by the present evidence. Male and female students were not significantly different in terms of their P scores. Also, education, major, and syllogistic reasoning had no significant correlations with P scores. With the Korean college students, age was significantly correlated with P score, but this correlation (r = .14) was very low.

The present study also revealed differences between the two groups. The results revealed that Korean college students who viewed the nature of knowledge as certain scored lower on the DIT, whereas U.S. students' beliefs about certain knowledge had no significant relationship with P scores and accounted for little variance in P scores. On the other hand, U.S. college students who endorsed simple knowledge produced lower principled moral reasoning scores, whereas Korean students' beliefs about simple knowledge had no significant relationship with P score and accounted for little variance in P scores.

CHAPTER 5

DISCUSSION AND RECOMMENDATIONS

This chapter begins with an introduction prior to a discussion of the results of this research. The results will be discussed and related to the research questions and the general purpose of the study. Following the discussion, there will be some conclusions presented regarding the findings and suggestions for their practical application. The chapter will conclude with limitations of this research.

Introduction

Contemporary research (Bendixen et al., 1998; King & Kitchener, 1994, 2002; Kohlberg, 1971a; Perry, 1970) has examined the relationship between reasoning in the intellectual and moral domains, that is, between individuals' epistemological assumptions and their judgments about what is right, fair, and good. These studies on the relationships between epistemological beliefs and moral reasoning, however, might have an inherent methodological problem. Existing studies primarily have utilized interviews and a questionnaire method with U.S. college students, so less is known about other populations. For this reason, in this dissertation I investigated how the relationships between epistemological beliefs and moral reasoning are similar and different between Korean and U.S. college students.

The major developmental perspectives underlying the present study derived from the theoretical writings of Lawrence Kohlberg (1969, 1971a, 1971b, 1973, 1975, 1976a, 1976b, 1981, 1984, 1987) and the modifications of this theory by James Rest (1973,

1979, 1983, 1986, 1990; Rest et al., 1999). Both Kohlberg (1971a, 1981, 1984) and Rest (Rest et al., 1999) contended that an individual actively constructs moral meaning; an individual does not simply passively absorb the ideology of his or her culture. Kohlberg proposed that the basic categories of morality (such as "justice," "duty," "rights," and "social order") are self-constructed by the individual. Rest suggested that in moral cognition, individuals are capable of actively constructing moral epistemology. However, they did not postulate that epistemological beliefs such as constructivist epistemology and objectivist epistemology are related to moral judgment development in important ways. This study extends the work in this area with the recognition that important but rarely discussed variables contributing to moral reasoning may be students' epistemological assumptions about the nature of knowledge and knowing.

To examine the role of epistemological beliefs, the present study utilized a measure of student moral reasoning ability as the criterion variable. Predictor variables were five epistemological dimensions, age, education, gender, syllogistic reasoning skill, GPA, and academic major. Two sets of analyses were conducted. In the first, descriptive statistics and correlations among all variables were used to assess the relationships among moral reasoning and each of the 11 independent variables for Korean and U.S. college students. The second set of analyses consisted of all possible regressions that examined whether epistemological beliefs explain a substantial proportion of variation above and beyond other variables and how strongly five epistemological beliefs predict higher levels of principled moral reasoning.

The present study revealed similar results in the relationships between epistemological beliefs and moral reasoning between Korean and U.S. college students.

First, the results showed that an epistemological belief, omniscient authority, and GPA were the most significant predictors of Korean and U.S. college students' P scores. Also, the analysis revealed that variables from the five epistemological predictors explained a substantial proportion of the variance in P scores over and above the effects of gender, age, education, GPA, academic major, and syllogistic reasoning. With the U.S. sample, the combination of omniscient authority, simple knowledge, and quick learning accounted for about 17.7% of the variance in P scores. With the Korean sample, the combination of omniscient authority and certain knowledge accounted for about 17% of the variance in P scores.

Second, with both Korean and U.S. college students, Gilligan's (1982) charge of gender-bias in Kohlberg's model was not warranted by the present evidence. Male and female students were not significantly different in terms of their P scores. Also, education, major, and syllogistic reasoning had no significant correlations with P scores. With the Korean college students, age was significantly correlated with P score, but this correlation (r = .14) was very low.

The present study also revealed differences between the two groups. The results revealed that Korean college students who viewed the nature of knowledge as certain scored lower on the DIT, whereas U.S students' beliefs about certain knowledge had no significant correlations with P scores and accounted for little variance in P scores. On the other hand, U.S. college students who endorsed simple knowledge scored lower on principled moral reasoning scores, whereas Korean students' beliefs about simple knowledge had no significant correlations with P score and accounted for little variance in P scores.

Discussion

Differences in Epistemological Beliefs and Moral Reasoning Between Korean and U.S. College Students

The Korean college students in the present study had stronger beliefs about omniscient authority, simple knowledge, and innate ability to learn than U.S. college students. The results are consistent with the literature on epistemological beliefs from a cross-cultural comparative perspective (Lee, 1995; Qian & Pan, 2002; Tasaki, 2001). One explanation for their stronger beliefs about omniscient authority and simple knowledge is that they were heavily influenced by school cultures that encourage student docility and respect for authority, foster building consensus over controversial issues, but discourage assertiveness and raising "why" questions regardless of students' academic performance (Kim, 1998; Pai, 1997; Qian & Pan, 2002). Unlike American students, Korean students grew up in school cultures that emphasized collectivism, acceptance of consensus, and strong respect for authority.

Korean college students were found to have stronger beliefs about innate ability to learn. Students' beliefs may be related to the highly exam-oriented atmosphere in Korean school cultures. Some educators say that Korean students live in "exam hell." The highly competitive atmospheres in classrooms and schools concentrate students' attention only on academic learning. This condition may help students develop the belief that they cannot succeed unless they are born smart.

The analyses indicated that U.S. college students obtained significantly higher P scores in comparison to the Korean students, $t(432) = 4.4$, $p < .001$. This finding parallels the results of other studies of moral reasoning from a cross-cultural comparative

perspective (Ji, 1997; Park & Johnson, 1984). Studies in the literature have documented that the mean difference in the P scores between the Asian and Euro-American subjects was statistically significant; the latter obtained significantly higher P scores than the Asian students.

The significantly negative correlations between omniscient authority and moral reasoning among both Korean and U.S. college students indicate that individuals who are less likely to accept the moral position of authority must necessarily be more active in constructing their own standards. In support of this view, Bendixen et al. (1998) and Curtis et al. (1988) found that principled moral reasoning scores among adults using the DIT were inversely related to favorable attitudes toward authority (see also Laupa, 1991; Presley, 1985; Rest, 1975; Turiel, 1994). Also, a significant association was noted between GPA and the P score among both Korean and U.S. college students. This result supports the view that educational achievement has a significant correlation with the P score (Ji, 1997; Kohlberg, 1969; Rest, 1986).

The correlational analyses, however, revealed that certain knowledge was a significant factor only in the case of Korean college students, whereas simple knowledge was a significant factor only in U.S. college students. Since a comparison of findings from correlational and all possible regressions analyses indicated a high degree of similarity, the interpretation will be discussed in the following section.

Relationship Among Epistemological Beliefs and Moral Reasoning Between Korean and U.S. College Students

The results of the present study indicate that multiple epistemological assumptions play important roles in young adults' moral reasoning over and above other

social and personal variables. The moderate association between epistemological beliefs and moral reasoning in both Korean and U.S. college students adds support for the relationship reported by Bendixen et al. (1998). Their study indicated that epistemological beliefs explained a substantial proportion of the variation in P scores over and above the effects of gender, age, education, and syllogistic reasoning. In the current research the moderate association between epistemological beliefs and moral reasoning appears to support the Bendixen et al. findings about the relationship between epistemological beliefs and moral reasoning, and this study adds new evidence from a cross-national perspective.

The results of the present study indicate that belief in omniscient authority was the strongest single predictor in both Korean and U.S. college students' P scores. These findings indicate that individuals across cultures who are less supportive of authority and established practices tend to be more active in constructing their own standards. The relative importance of omniscient authority largely parallels that of a number of other studies (Bendixen et al., 1998; Curtis et al., 1988, Laupa, 1991; Presley, 1985; Rest, 1975; Turiel, 1994), the results of which had shown the inverse association of omniscient authority and principled moral reasoning.

An additional result, supporting previous researchers' (Ji, 1997; Kohlberg, 1969; Rest, 1986) findings, was the significant role of GPA. Although a self-reported estimate of how a student performs academically in college may indicate intellectual ability such as logical reasoning, it is interesting to find that syllogistic reasoning in both Korean and U.S. college students was not a strong predictor for using principled moral reasoning. The results of the present study indicate that active participation in formal academic

experiences and the positive consequences of academic achievement may help to engender moral development across cultures.

Rest (1994) stressed that the amount of formal education is a stronger predictor of principled moral reasoning scores than is age. In the present study this is not supported; there were no significant relationships between principled moral reasoning and the four education levels in both Korean and U.S. students. In the U.S. sample, a student's year in school accounted for about 1.3% of the variance in P scores. In the Korean sample, a student's year in school accounted for about 0.9% in P scores.

Gilligan's (1982) critique of Kohlberg's theory of moral reasoning and her assertion that two modes of moral reasoning (justice and care) exist have been the subject of debate within the field of psychology for more than 15 years. In the current research there was no evidence that there are two tracks of development, one for women and one for men. In both the Korean and U.S. samples, Gilligan's (1982) charge of gender-bias in Kohlberg's model was not warranted by the present evidence.

In contrast to the similar relationships between epistemological beliefs and moral reasoning among Korean and U.S. college students, the results of the present study also suggest that differences in the relationships between epistemological beliefs and moral reasoning exist between the two cultural groups despite similar age and educational level. Research on epistemological beliefs documented that individuals who believe in simple solutions to complex moral problems may be less inclined to explore broader, more dialectical solutions (Bendixen et al., 1998; Damon, 1988; Kohlberg, 1984; Piaget, 1997). This does not appear to be the case with the Korean students, whereas in the U.S. sample belief in simple knowledge predicted the use of principled moral reasoning. Schommer

(2002a) found that the less the participants believed in certain knowledge, the more likely they were to suggest that absolute answers would be difficult to obtain, because too many factors affected controversial issues and the nature of the issues would always be evolving. However, contrary to what would be predicted by Schommer's findings, certain knowledge was not a strong predictor of principled moral reasoning scores in the U.S. sample. In contrast, with the Korean students, belief in certain knowledge accounted for about 10.3% of the variance in P scores.

One explanation of these different results in the relation of epistemological beliefs and moral reasoning across cultures may be that epistemological beliefs may be relatively independent of one another (Schommer, 1990; Hofer & Pintrich, 1997) and may be influenced by and embedded in a system reflecting specific socio-cultural and educational environments. More specifically, although the five dimensions of "certainty of knowledge," "omniscient authority," "simple knowledge," "innate ability," and "quick learning" represent one's beliefs about the nature of knowledge and knowledge acquisition, the results of the present study indicate that the dimensions may operate independently. Moreover, cultural differences might provide differing opportunities and constraints on epistemological and moral development. It is possible that in a more collectivist culture in which the view of self has more interindividual implications, personal theories of knowledge and knowing could evolve toward an acceptance of consensus, not a reliance on independent thinking (Hofer & Pintrich, 1997; Triandis, 1989; Triandis et al., 1988)

In summary, the results of the present study indicate that cross-national similarities and differences simultaneously exist in psychological functioning. The

similarities in the relationships between moral reasoning and belief in omniscient authority in both the Korean and U.S. samples may provide evidence in support of the universal aspect of development. The significant differences in the relationships between moral reasoning and belief in simple knowledge and certain knowledge in the Korean and U.S. samples can be accounted for in terms of differences in cultural context.

Conclusions and Implications for Moral Education

The findings regarding the relation of epistemological beliefs and moral reasoning from a cross-national comparative perspective appear to suggest that the most advantageous condition for increasing principled moral reasoning is for people to hold "sophisticated" views of knowledge. That is, believe that knowledge is not directly handed down from authority, is constantly evolving and has not all been discovered, and tends to change (Arredondo & Rucinski, 1998; Bendixen et al., 1998; Kardash & Scholes, 1996; Schommer, 1990). The current research also demonstrates that academic achievement is positively related to the highest stages of moral reasoning across cultures.

However, this study also adds new evidence that cross cultural differences exist in the relationships of epistemological beliefs and moral reasoning and those relationships may be mediated by culture-specific educational environments and interactions. The relatively greater contribution made by beliefs about simple knowledge to moral reasoning among U.S. college students parallels the results of other studies (Bendixen et al., 1998; Damon, 1988; Kohlberg, 1984; Piaget, 1997) of epistemological and moral development. However, this does not appear to be the case with the Korean students who have been heavily influenced by school cultures that encourage docility and respect for authority, foster building consensus over controversial issues, but discourage

assertiveness and raising "why" questions. Rather, results from the Korean sample indicate the relative importance of certain knowledge in principled moral reasoning.

In conclusion, the current research may provide evidence in support of a neo-Kohlbergian model of cognitive/moral development in the debate between cultural psychologists and Kohlbergian psychologists. Assuming a universal morality may be a result of a kind of arrogance in the form of cultural "imperialism," as several critics of Kohlberg's theory have charged (Simpson, 1974). In contrast, advocates for cultural diversity in moral development may miss many of the essential ways of being human and underestimate our common humanity. Rather, in a neo-Kohlbergian's (Rest et al., 1999; Narvaez, Getz, Rest, & Thoma, 1999) view, both (a) the individual's cognitive construction of social and moral meaning and (b) socialization of the individual into cultural ideology are involved in the formation of moral thinking. Neo-Kohlbergians take the view that both processes are simultaneous, parallel, and reciprocal. Therefore, a neo-Kohlbergian's position points to the necessity of extending the Kohlbergian approach to include cultural ideology as a factor which might affect the person's moral development.

There are several theoretical and pedagogical implications that can be drawn from the results. College is thought to be the time in the life cycle for developing postconventional moral reasoning (Kohlberg, 1969, 1975; Rest, 1979, 1990, 1994). The findings from the research support those who assert that students' university experiences may limit opportunities that are conducive to development of sophisticated epistemological beliefs and principled moral reasoning. Undergraduate education is characterized by the lecture-examination method of instruction, which may seem more applicable to the obedience-punishment stages of preconventional moral reasoning. Many

students are likely to identify with individuals in authority, to avoid punishment by accepting and deferring to their authority, and to accept their interpretation of right and wrong. Professors can also stress materials that are important to read or memorize and then test them to reward for right answers and to punish them for wrong answers (Chickering, 1981; Kohlberg, 1984; Maclean, 2001).

Academia is concerned with providing the environment and experiences that foster moral development, with an emphasis on principled moral reasoning. The results of the present study indicate that by providing a fertile environment (i.e., encouraging, inviting, or enabling a student to become a learner with more sophisticated beliefs about knowledge and learning) may help to engender moral development. In support of this view, Johnson and Johnson (1979) suggested that when students are encouraged to grapple with controversial issues in the ambience of cooperative "safe" contexts, they are likely to develop cognitively and morally, to generate a greater number of ideas for solving problems, and to ultimately produce better quality solutions.

Conditions that are conducive to increased usage of principled moral reasoning by university students are, within limits, appropriate and feasible also at the elementary and secondary level. Especially, the results of the present study could have implications for the development of a comprehensive program of civic and moral education for use in public schools, balancing developmental psychology and cultural differences that exist among nations. The results of the present study support those who suggest that an appropriate moral education program for schools should be one that involves the universal aspects of morality and moral functioning as well as its particular manifestations contextualized in specific cultures. In other words, the encompassment of

developmental psychology and cultural differences that exist among nations is essential for the development of a comprehensive program of moral education because the results of the present study indicate both universal and particular aspects of epistemological and moral development across cultures.

The results of the present study also suggest that moral education in Korean and American schools must be grounded in a constructivist vision of learning, but not direct instruction. For the most part, it may be relatively easy to teach children the "virtues and core values" included in many traditional character education curricula. Nevertheless, it is not desirable even for these children to continue in blind obedience and rigid adherence to the external rules of adult authorities as they mature in age and experience. Constructivist learning environments are necessary if we want to help children become moral people, as opposed to people who merely do what they are told – or reflectively rebel against what they are told.

Suggestions for Further Study

The present comparison of epistemological beliefs and moral reasoning between Korean and U.S. college students suggests several directions for further research. First, the present research identified several factors associated with greater use of principled moral reasoning. However, the combination of all eleven predictors in the U.S. sample explained 23.4% of total variation, while the combination of all eleven predictors in the Korean sample explained 30.3% of total sample variation. Therefore, although the present research has identified a few factors conducive to the use of principled moral reasoning, there are undoubtedly many more. Additional research is recommended, with

other variables (e.g., moral comprehension, political attitudes and political choices, and religion) that may be conducive to increased use of principled moral reasoning.

Second, because Schommer's "sophisticated" view of knowledge is quite similar to the constructivist perspective of knowledge and learning described by Brooks and Brooks (1993) and others (Arredondo & Rucinski, 1998), constructivist learning environments may produce cognitive disequilibrium (Kohlberg, 1969, 1975; DeVries & Zan, 1994). Therefore, future research in needed to examine how constructivist learning environments can be conducive to increased use of principled moral reasoning.

Third, the epistemological belief questionnaire may need to be adapted to take into account Korean culture and students' school experiences because the questionnaire used in the present study was originally developed for white middle-class adults in the U.S. (Schommer, 1998). Evidence obtained from an item analysis with the Korean sample indicates that there are some problematic items that do not fit the factor structures. The internal consistency reliability is low with simple knowledge (alpha = .44) and innate ability (alpha = .49), although the internal consistency is high with the overall 32-item questionnaire (alpha = .71). Therefore, future research is needed to identify dimensions that underlie Korean students' epistemological beliefs by taking into account their unique cultural, educational, and social backgrounds. The focus should be on finding ways to characterize Korean students' epistemological beliefs.

Fourth, from a methodological perspective, because random sampling was not possible in the present study, a large random sample of multiple universities would give more information about the actual moral development of university students and the influence of several social and personal factors. Also, in-depth interviews to complement

quantitative data may be necessary for a more trustworthy study of epistemological beliefs and moral reasoning.

Fifth, the results and conclusions of the study may not be generalizable to elementary and secondary school students, because only college students from Korea and the United States participated in this study. More longitudinal studies are needed, particularly those that track students' epistemological and moral development through the educational transition from elementary school to secondary school and from secondary school to college.

Despite the limitations, the current research identified conditions significantly related to students' use of higher-stage moral reasoning. The study of Korean and U.S. students' epistemological beliefs and moral reasoning will open a new avenue to examine the relations among their unique cultural, educational, and social backgrounds, their development of beliefs about knowledge and knowing, and moral judgment development. It also suggests a direction for future research to aid in academia's attempts to engender moral development. The findings of this research may lead to interventions and policy changes that will foster increased usage of higher level moral reasoning.

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APPENDICES

APPENDIX A

THE DEFINING ISSUES TEST

DEFINING ISSUES TEST

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.

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 on 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? __Should Steal __Can't Decide __Should not steal

Please rate the following statements in terms of their importance.

(1=Great importance, 2=Much importance, 3=Some Importance, 4=Little importance, 5=No importance)

__1. Whether a community's laws are going to be upheld.

__2. Isn't it only natural for a loving husband to care so much for his wife that he'd steal?

__3. Is Heinz willing to risk getting shot as a burglar or going to jail for the chance that stealing the drug might help?

__4. Whether Heinz is a professional wrestler, or had considerable influence with professional wrestlers.

__5. Whether Heinz is stealing for himself or doing this solely to help someone else.

__6. Whether the druggist's rights to his invention have to be respected.

__7. Whether the essence of living is more encompassing than the termination of dying, socially and individually.

__8. What values are going to be the basis for governing how people act towards each other.

__9. Whether the druggist is going to be allowed to hide behind a worthless law which only protects the rich anyhow.

__10.Whether the law in the case is getting in the way of the most basic claim of any member of society.

__11.Whether the druggist deserves to be robbed for being so greedy and cruel.

__12.Would stealing in such a case bring about more total good for the whole society or not.

Now please rank the top four most important statements. Put the number of the statement in the blank:

__ Most important item

__ Second most important item

__ Third most important item

__ Fourth most important item

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? __Should report him __Can't Decide __Should not report him

Please rate the following statements in terms of their importance.

(1=Great importance, 2=Much importance, 3=Some Importance, 4=Little importance, 5=No importance)

__1. Hasn’t Mr. Thompson been good enough for such a long time to prove he isn’t a bad person?

__2. Everytime someone escapes punishment for a crime, doesn’t that just encourage more crime?

__3. Wouldn’t we be better off without prisons and the oppression of our legal system?

__4. Has Mr. Thompson really paid his debt to society?

__5. Would society be failing what Mr. Thompson should fairly expect?

__6. What benefits would prisons be apart from society, especially for a charitable man?

__7. How could anyone be so cruel and heartless as to send Mr. Thompson to prison?

__8. Would it be fair to all the prisoners who had to serve out their full sentences if Mr. Thompson was let off?

__9. Was Mrs. Jones a good friend of Mr. Thompson?

__10.Wouldn't it be a citizen's duty to report an escaped criminal, regardless of the circumstances?

__11.How would the will of the people and the public good best be served?

__12.Would going to prison do any good for Mr. Thompson or protect anybody?

Now please rank the top four most important statements. Put the number of the statement in the blank:

__ Most important item

__ Second most important item

__ Third most important item

__ Fourth most important item

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? __He should give the lady an overdose that will make her die __Can't Decide __Should not give the overdose.

Please rate the following statements in terms of their importance.

(1=Great importance, 2=Much importance, 3=Some Importance, 4=Little importance, 5=No importance)

__1.Whether the woman's family is in favor of giving her the overdose or not.

__2. Is the doctor obligated by the same laws as everybody else if giving an overdose would be the same as killing her.

__3. Whether people would be much better off without society regimenting their lives and even their deaths.

__4. Whether the doctor could make it appear like an accident.

__5. Does the state have the right to force continued existence on those who don't want to live.

__6. What is the value of death prior to society's perspective on personal values.

__7. Whether the doctor has sympathy for the woman's suffering or cares more about what society might think.

__8. Is helping to end another's life ever a responsible act of cooperation.

__9. Whether only God should decide when a person's life should end.

__10.What values the doctor has set for himself in his own personal code of behavior.

__11.Can society afford to let everybody end their lives when they want to.

__12.Can society allow suicides or mercy killing and still protect the lives of individuals who want to live.

Now please rank the top four most important statements. Put the number of the statement in the blank:

__ Most important item

__ Second most important item

__ Third most important item

__ Fourth most important item

APPENDIX B

THE EPISTEMIC BELIEFS INVENTORY

Epistemic Beliefs Inventory

Please indicate how strongly you agree or disagree with each of the statements listed below. Please circle the number that best corresponds to the strength of your belief.

1. It bothers me when instructors don't tell students the answers to complicated problems.

Strongly Disagree	1	2	3	4	5	Strongly Agree

2. Truth means different things to different people.

Strongly Disagree	1	2	3	4	5	Strongly Agree

3. Students who learn things quickly are the most successful.

Strongly Disagree	1	2	3	4	5	Strongly Agree

4. People should always obey the law.

Strongly Disagree	1	2	3	4	5	Strongly Agree

5. Some people will never be smart no matter how hard they work.

Strongly Disagree	1	2	3	4	5	Strongly Agree

6. Absolute moral truth does <u>not</u> exist.

Strongly Disagree	1	2	3	4	5	Strongly Agree

7. Parents should teach their children all there is to know about life.

Strongly Disagree	1	2	3	4	5	Strongly Agree

8. Really smart students don't have to work as hard to do well in school.

Strongly Disagree	1	2	3	4	5	Strongly Agree

9. If a person tries too hard to understand a problem, they will most likely end up being confused.

Strongly Disagree	1	2	3	4	5	Strongly Agree

10. Too many theories just complicate things.

Strongly Disagree	1	2	3	4	5	Strongly Agree

11. The best ideas are often the most simple.

Strongly Disagree	1	2	3	4	5	Strongly Agree

12. People can't do too much about how smart they are.

Strongly Disagree	1	2	3	4	5	Strongly Agree

13. Instructors should focus on facts instead of theories.

Strongly Disagree	1	2	3	4	5	Strongly Agree

14. I like teachers who present several competing theories and let their students decide which is best.

Strongly Disagree	1	2	3	4	5	Strongly Agree

15. How well you do in school depends on how smart you are.

Strongly Disagree	1	2	3	4	5	Strongly Agree

16. If you don't learn something quickly, you won't ever learn it.

Strongly Disagree	1	2	3	4	5	Strongly Agree

17. Some people just have a knack for learning and others don't.

Strongly Disagree	1	2	3	4	5	Strongly Agree

18. Things are simpler than most professors would have you believe.

Strongly Disagree	1	2	3	4	5	Strongly Agree

19. If two people are arguing about something, at least one of them must be wrong.

Strongly Disagree	1	2	3	4	5	Strongly Agree

20. Children should be allowed to question their parents' authority.

Strongly Disagree	1	2	3	4	5	Strongly Agree

21. If you haven't understood a chapter the first time through, going back over it won't help.

Strongly Disagree	1	2	3	4	5	Strongly Agree

22. Science is easy to understand because it contains so many facts.

Strongly Disagree	1	2	3	4	5	Strongly Agree

23. The moral rules I live by apply to everyone.

Strongly Disagree	1	2	3	4	5	Strongly Agree

24. The more you know about a topic, the more there is to know.

Strongly Disagree	1	2	3	4	5	Strongly Agree

25. What is true today will be true tomorrow.

Strongly Disagree	1	2	3	4	5	Strongly Agree

26. Smart people are born that way.

Strongly Disagree	1	2	3	4	5	Strongly Agree

27. When someone in authority tells me what to do, I usually do it.

Strongly Disagree	1	2	3	4	5	Strongly Agree

28. People who question authority are trouble makers.

Strongly Disagree	1	2	3	4	5	Strongly Agree

29. Working on a problem with no quick solution is a waste of time.

Strongly Disagree	1	2	3	4	5	Strongly Agree

30. You can study something for years and still not really understand it.

Strongly Disagree	1	2	3	4	5	Strongly Agree

31. Sometimes there are no right answers to life's big problems.

Strongly Disagree	1	2	3	4	5	Strongly Agree

32. Some people are born with special gifts and talents.

Strongly Disagree	1	2	3	4	5	Strongly Agree

APPENDIX C

SYLLOGISMS

Syllogisms

For the following items, circle the letter that corresponds to the correct conclusion. Base your answers on the information given.

1. All whales live in water. All fish live in water too.
   Therefore:
   a) all whales are fish
   b) all fish are whales
   c) some whales are fish
   d) none of these conclusions are valid

2. Some shelves are black. Some shelves are wooden.
   Therefore:
   a) some shelves are not wooden
   b) all shelves are black
   c) some shelves are black and wooden
   d) none of these conclusions are valid

3. No mammal is a reptile. Some quadrupeds are mammals.
   Therefore:
   a) all mammals are quadrupeds
   b) all reptiles are quadrupeds
   c) some quadrupeds are not reptiles
   d) none of these conclusions are valid

4. Firefighters wear black boots. Tom is a firefighter.
   Therefore:
   a) Tom wears black boots
   b) Tom does not wear black boots
   c) firefighters do not wear black boots
   d) none of these conclusions are valid

5. All dogs are black animals. All black animals always drool when they see food.
   Therefore:
   a) some dogs drool when they see food
   b) all dogs drool when they see food
   c) all dogs do not drool when they see food
   d) none of these conclusions are valid

6. Some cats are black. Every cat is a mammal.
   Therefore:
   a) some cats are mammals
   b) every mammal is a cat
   c) some mammals are black
   d) none of these conclusions are valid

7. Every bear is fuzzy. Some animals are fuzzy.
   Therefore:
   a) some bears are fuzzy
   b) all animals are fuzzy
   c) some bears are not fuzzy
   d) none of these conclusions are valid

8. If a card has an A on the left, it has a 7 on the right. The card has a 7 on the right.
   Therefore:
   a) the card has an A on the right
   b) the card has an A on the left
   c) the card has a 7 on the left
   d) none of these conclusions are valid

9. Some men are beekeepers. All beekeepers are bankers.
   Therefore:
   a) all men are bankers
   b) some men are bankers
   c) all men are beekeepers
   d) none of these conclusions are valid

10. If there is a solar eclipse, all of the streets will be dark. There is a solar eclipse.
    Therefore:
    a) some of the streets are not dark
    b) some of the streets are dark
    c) all of the streets are dark
    d) none of these conclusions are valid

11. Glasses bounce when they fall. Everything that bounces is made of rubber.
    Therefore:
    a) glasses are made of rubber
    b) glasses do not bounce
    c) glasses are not made of rubber
    d) none of these conclusions are valid

12. Some children are Canadians. All Canadians are happy.
    Therefore:
    a) some children are happy
    b) all children are happy
    c) all children are Canadians
    d) none of these conclusions are valid

APPENDIX D

DEMOGRAPHIC QUESTIONNAIRE

Demographic Questionnaire

Please answer each of the following questions.

1. Gender _____Male _____Female

2. Age _____

3. Class Status

   _____Freshman _____Sophomore _____Junior _____Senior

4. Your Current Major _____

5. Current GPA at UGA _____

6. Ethnic Background

   _____White/European American _____Asian _____African American

   Other _____

APPENDIX E

INFORMED CONSENT FORM

INFORMED CONSENT

DEAR VOLUNTEER

The following questionnaire is part of a research project undertaken to fulfill doctoral requirements in the Department of Social Science Education at the University of Georgia. Any undergraduate student from the College of Education is eligible to participate. Your anonymous participation is invited and very much appreciated, but it is not required and you can withdraw at any time. We will only use completed questionnaires.

The purpose of this study is to examine the relationships among epistemological beliefs and moral reasoning between Korean and U.S. college students.

While there are no direct benefits to you from participating in this survey, the results will be useful in future research in human behavior. The results of this study may be published in appropriate journals and/or presented at appropriate professional meetings. There will not be a penalty or any negative effect on your grade or standing in your class or department if you choose not to participate. Your participation is entirely voluntary. It is expected that completing the questionnaires will take less than 40 minutes.

Changwoo Jeong, Social Science Education, University of Georgia, will answer any further questions about the research, now or during the course of the study, and can be reached by telephone (706-542-4135) or by e-mail (cjeong@coe.uga.edu). Jeong's advisor is Ronald VanSickle, Ed.D., Social Science Education, University of Georgia, 628 Aderhold Hall, 706-542-6486.

For additional questions about your rights please call or write: Chris A. Joseph, Ph.D., Human Subjects Office, University of Georgia, 606A Boyd Graduate Studies Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-6514; E-Mail Address IRB@uga.edu.

APPENDIX F

LETTER OF AUTHORIZATION

Letter of Authorization (허락서)

October 24, 2002 (2002년 10월 24일)

Dear Mr. Jeong

I grant you permission to collect data necessary for conducting a study on "Cross-cultural similarities and differences in the relationship among epistemological beliefs and moral reasoning between Korean and U.S. college students". Please feel free contact me if you need any further assistance.

정창우의 박사 학위 논문 "개인의 인식론과 도덕적 추론 능력의 문화간 비교 연구"를 위해 서울대학교에서 자료 수집을 할 수 있도록 허가합니다. 도움이 필요한 경우 언제든지 연락바랍니다.

Seoul National University 서울대학교

Department of National Ethics Education 국민윤리교육과

Professor 교수 Sae-Gu Chung 정세구

Letter of Authorization (허락서)

October 24, 2002 (2002년 10월 24일)

Dear Mr. Jeong

I grant you permission to collect data necessary for conducting a study on "Cross-cultural similarities and differences in the relationship among epistemological beliefs and moral reasoning between Korean and U.S. college students". Please let me know if I can be of any further assistance to you.

정창우의 박사 학위 논문 "개인의 인식론과 도덕적 추론 능력의 문화간 비교 연구"를 위해 본 대학에서 자료 수집을 할 수 있도록 허가합니다. 도움이 필요한 경우 언제든지 연락바랍니다.

Incheon National University of Education 인천교육대학교

Department of Ethics Education 윤리교육과

Department Head 학과장 Yong Gyeong Im 임용경

Letter of Authorization (허락서)

October 25, 2002 (2002년 10월 25일)

Dear Mr. Jeong

We are indeed delighted to grant you permission to collect data at Chuncheon National University of Education. We look forward to the final report of your study (i.e., Cross-cultural similarities and differences in the relationship among epistemological beliefs and moral reasoning between Korean and U.S college students) and are most pleased that you have chosen our school for your research. Please let me know if I can be of any further assistance to you.

춘천교육대학교에서 정창우 씨의 박사 논문을 위한 자료 수집을 허락하게 되어 대단히 기쁘게 생각합니다. 우리는 정창우 씨의 연구 결과를 기대하며, 본 대학을 선택하신 점에 대해 감사 드립니다. 자료 수집 과정에서 도움이 필요할 경우 언제든지 연락바랍니다.

Chuncheon National University of Education 춘천교육대학교

Department of Ethics Education 윤리교육과

Professor 교수 Beong Wan Chu 추병완