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LEVELS OF MORAL DEVELOPMENT, CRITICAL THINKING AND SELF-CONCEPT IN COLLEGE STUDENTS

By

Becky Lynn Stewart

A DISSERTATION

Submitted to
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ABSTRACT

LEVELS OF MORAL DEVELOPMENT,
CRITICAL THINKING AND SELF-CONCEPT
IN COLLEGE STUDENTS

By

Becky Lynn Stewart

Standards of ethics, values and morality have been widely questioned in government, business, academia and families. The central focus of this study was on moral development. The purpose was to determine if there were relationships between a person's level of moral development, critical thinking skills and self-concept.

To measure each of the variables, three instruments were used: for moral development, the Defining Issues Test (DIT); for critical thinking, the Watson-Glaser Critical Thinking Appraisal (WGCTA); and for self-concept, the Tennessee Self-Concept Scale (TSCS).

The sample was composed of 290 students from Michigan State University (MSU), in East Lansing, Michigan and 147 students from Aquinas College (AQ), in Grand Rapids, Michigan. The data were analyzed utilizing descriptive statistics, correlations, t-tests, and analysis of variance (ANOVA) tests. Though not randomly drawn, the sample from each institution was quite representative in some respects of the student population at each institution.

Results of this study found the sample to be lower in levels of moral development and critical thinking compared to normative populations and to be

similiar to normative populations in self-concept. Although none of the correlations were strong, statistically significant correlations were noted between moral development and critical thinking. There were also statistically significant correlations between aspects of self-concept and moral development and aspects of self-concept and aspects of critical thinking. Relationships and/or differences were also examined between moral development, critical thinking and self-concept and demographic, contextual and religion variables.

The results of the findings are analyzed and compared to past research results. Recommendations include teaching and modeling high levels of morality, critical thinking and self-concept. The assumption is that if people see themselves as worthy, can think through situations and understand right and wrong, perhaps they will act morally.

DEDICATION

To my parents, Paul and Helen Stewart

The lessons and values you imparted to me are the gifts I will treasure always . . . they were imparted not only through your words, but through your actions as well. Thank you for instilling in me the courage to press onward, a love for learning and the knowledge of where true wisdom is acquired (James 1:5).

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In completing a project of this size, one realizes that many people have formed a support network to foster its accomplishment and bring this seemingly impossible dream to a reality.

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Finally, but most importantly, I thank God, for His never ending strength and unfailing love and faithfulness. He has held me in His hands through it all. The honor and glory are all His.

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CHAPTER I

INTRODUCTION

Statement of the Problem

Scandals and corruption throughout the country have brought the public's attention to ethics and morality. Whether in government, business, professions, academia or families, the list of unethical or immoral practices seems to be unending. These are forcing virtually all aspects of American society to question the morality of the American people (Thomas, 1988).

Erosion of trust in government resulting from Watergate still presents a problem for members of Congress (The Legacy of Watergate, 1982). As the Reagan years started there was a significant increase in public confidence in governmental leadership. This confidence was shattered with the news of the Iran-Contra affair. In 1987 McLoughlin, Sheled, and Witkin reported that polled Americans indicated that when it came to truth telling they felt that the President of the United States told the truth only eight percent of the time, and leaders of congress told the truth only three percent of the time. As President Bush took over the presidency, bad habits and ethically questionable practices in Congress "accumulated like barnacles on the underside of the political process" (Benson, 1989), giving people more reasons not to trust the United States government and politicians. Additional moral questions were raised with the Persian Gulf war,

people pondered whether this was a "moral, just war" as it was often called. The loss of confidence and trust in leaders is not confined to government. Americans also distrust business and business people. A *New York Times* poll found that 55 percent of the American public felt that American corporate executives are not honest (Williams, 1985). A poll conducted by *U.S. News & World Report* (McLoughlin, Sheled, & Witkin, 1987) indicated that 69 percent of the public thinks most or many employees take office supplies and small tools home with them. A Harris survey compared the percentage of professional people in whom the respondents had a great deal of confidence (Table 1.1).

TABLE 1.1

Percentage Expressing Confidence in the Professions

Profession	1966	1976
Medicine	73	42
Military	62	23
Education	61	31
Major companies	55	16
Organized religion	41	24
Press	29	20
Law firms	24	12
Organized Labor	22	10
Ad Agencies	21	7

Note. Adapted from "More Confidence in Leadership" (1977, April). Current Opinion, 5, p. 37.

Jaksa and Prichard (1988) site the July 1983 Gallup Report (#214) which showed similar results indicating that the public regarded the moral and ethical behavior of those in the professions as decreasing rather than increasing. A study by Etzoni of George Washington University cites that two-thirds of the nations' 500 largest industrial corporations have been involved in at least one significant illegal incident in the past decade (Rosenfeld, 1985).

This mounting evidence and dissatisfaction with the ethical practices of corporate America has led many critics and supporters of business alike to suggest that corporate America is facing an 'ethics crisis' (Robin & Reidenbach, 1989).

In professional fields biomedical ethics has become a very important issue. As new situations are being placed in front of the public almost daily, many new ethical issues regarding prolongation of life, health care and insurance are rising. These issues are causing people to evaluate their own moral standards on issues such as: the care of the dying, euthanasia, genetic engineering, surrogate motherhood, AIDS, abortions, organ transplants, financing nursing home care and rationing health care (Bach, 1987; Callahan, 1989; Filippo, 1989; Masterman, 1989; Mayer, 1989; McCue, 1989; Monaco & Mansell, 1989; Porter, 1989).

Academia has also been under close scrutiny in the past years. There has been talk about hyped and falsified scientific research, with one study accusing 47 scientists at the Harvard and Emory University medical schools of producing misleading papers (McLoughlin, Sheled, Witkin, 1987). One of the nation's top psychiatrists resigned after a student recognized plagiarism in the professor's writing (Hunt, 1989; Top psychiatrist resigns, 1988). High school instructors have been found guilty of giving test answers to students when instructors were under pressure to bolster their students' test scores (Putka, 1989).

At this time of moral disarray, many Americans have been trying to decide who to blame for the moral decay and are seeking to rebuild a structure of values. Bowen (1987) noted a poll in which:

> more than 90% of the respondents agreed that morals have fallen because parents fail to take responsibility for their children or to imbue them with

> decent moral standards; 76% saw lack of ethics in businessmen as contributing to tumbling moral standards; and 74% decried failure by political leaders to set a good example (p. 26).

In recent years, the government has passed laws and regulations setting standards for congressional workers. Many businesses are trying to set standards for their employees. Kleiman (1989) reports on a national survey by a magazine for human resource executives which noted that 72 percent of the firms surveyed have ethics codes and 53 percent require employees to sign an ethics statement. However, the same report indicates that 77 percent of the firms surveyed do not make ethics checks of their employees and only 23 percent would fire employees who committed an unethical act.

Parents are trying to discover what they can do to help their children develop moral standards. Educators are conducting research and writing articles and books to assist parents in this process (Bubolz, 1988; Darnton, 1989; Dworkin, 1987; Karrby, 1973; LaFarge, 1988; Lickona, 1985, 1988; Peterson, Peterson & Hey, 1980; Remley, 1988; Ruggiero, 1988; Schulman & Mekler, 1985; Segal, 1988; Thomas & Melvin, 1981).

In the academic area, more courses are being taught, research being done and papers being published than previously in the area of ethics (Callahan & Bok, 1980; Collins, 1983; Craig, 1983; Gandz & Hayes, 1988; Harmin, 1988; Jensen, 1985; Rosen, & Caplan, 1980; Saterlie, 1988; Solorzano, 1985; Sproule, 1987; Stone, 1980). There is a trend for teaching ethics across the curriculum, in more than just philosophy courses (Christians, Rotzolli & Fackler, 1991; Jaksa & Pritchard, 1988; Johannesen, 1991; Parr, 1980; Peterson & Wilkins, 1991) and for

teaching ethics at a young age (Paul, Binker & Charbonneau, 1986; Stiggins, Rubel & Quellmalz, 1988). Many articles are being written to help educators understand and teach ethics through moral education and teach critical thinking skills (Benninga, 1988; Berkowitz, 1981; Johnson & Johnson, 1988; Landfried, 1988; McCarthy, 1988; Moral Education, 1988; Sweers, 1988).

Throughout this section it has been shown that the moral standards of people today have caused great alarm. Beginning steps are being taken to solve this problem.

Purpose and Research Questions

The central focus of this study is on moral development. The purpose was to determine if there were relationships between levels of moral development, critical thinking skills and self-concept. Such a relationship, if found, can be useful for understanding why different individuals may react differently when confronted with the same ethical or moral dilemmas. Further, the results of this descriptive research study could be used as the basis for future work in the development of tools which persons can use to aid themselves and others in their ethical and moral development.

The research questions addressed in this study are:

1. What are the levels of moral development, critical thinking and self-concept in a sample of contemporary American college students?
2. Are there significant relationships between levels of moral development, critical thinking skills and self-concept?
3. Are there significant relationships and/or differences between the levels of

moral development, critical thinking, and self-concept and each of the following demographic and contextual variables?

a. age

b. sex (male or female)

c. type of undergraduate school attending (large public university versus small private religious college)

d. current self-reported grade point average

e. family structure (e.g., two parent family, single parent family)

f. community type (e.g., large city, suburban area, farm)

g. level of education of mother

h. level of education of father

i. socio-economic status (parental income or own income)

j. race/ethnic background

k. marital status

4. When controlling for the variables presented, what are the relationships between the levels of moral development, critical thinking, and self-concept?

5. Are there significant relationships and/or differences between levels of each of the following: moral development, critical thinking, and self-concept and the participant's religion, perception of the influence his or her religious beliefs have had on his or her life and how liberal/conservative these beliefs are?

Theoretical Background for the Study

The theoretical background for this study is based on a human ecological perspective. Human ecology emphasizes the relationships of humans with their relevant context. This perspective is used because it is interdisciplinary and holistic (Andrews, Bubolz & Paolucci, 1980; Bubolz, Eicher & Sontag, 1979; Herrin & Wright, 1988; Ray, 1988; Sontag & Bubolz, 1988; Westney, Brabble & Edwards, 1988; Wright, & Herrin, 1988a; Wright & Herrin, 1988b; Wright & Herrin, 1988c).

First, human ecology is interdisciplinary in that it expands upon and has been influenced by the perspectives of anthropology, arts, biological ecology, communication, economics, education, humanities, law, management, psychology, and sociology. Human ecology is not a single discipline, but integrates concepts, theories, research and methodologies from these various fields.

Second, human ecology utilizes a holistic approach. This means one does not look only at the individual, or a group, but rather at individuals interacting with each other and within an environmental context. A holistic view focuses on humans as part of a system in which the environment and other living species must be taken into consideration. A person's moral development, critical thinking ability and self-concept do not occur in a void or vacuum, rather they are influenced by the context in which a person lives and grows. Though limited, information in this study gathered from demographic and contextual variables will give a more holistic view of the participants.

Review of the Literature

This section will review related literature and research in the major areas of the study: moral development, critical thinking, and self-concept.

Moral Development

The idea that moral development progresses thorough stages was first articulated by Plato. However, there is little agreement among researchers on a definition of morality. One thing on which they do agree is that morality involves judgment of right and wrong. Lifton (1985) notes that there are three different definitions corresponding with three different theoretical perspectives about morality. The first, a psycho-analytical perspective, views morality as synonymous with the rules, norms, values, and traditions of a particular society. Freud's concept of the superego defines morality in this way (1960, 1961). Standards pass from society to a child through a child's parents.

The second, an interactional, socio-analytical and personological perspective, views morality as synonymous with values, standards, beliefs and principles developed by an individual for the purpose of effective interaction with others. Researchers in this area include Haan, Hogan and Lifton (Lifton, 1985). In his work Lifton found morality was related to the development of identities both intrapersonally, as shaped by the uniqueness of personality, and interpersonally, as shaped by the uniqueness of the social interactions.

The third, a cognitive-developmental perspective, views morality with certain universal and transhistorical principles common to all human kind. In his book *The Moral Judgment of the Child* (1965), Piaget proposed three overlapping stages

of moral development. According to Piaget, justice is the principle underlying moral judgments. Children base moral judgment at three levels: first with consideration of self only, then on the standards of other people, usually authority figures, and last on their own logical consideration of all moral view points.

Kohlberg continued Piaget's work on moral development. Kohlberg, like Piaget, also believed that cognitive development underscores moral development, with justice as the universal principle. Both men defined moral judgment by how an individual reasons, rather than by what he/she thinks. Instead of just three stages as Piaget outlines with the highest reached in adolescence, Kohlberg notes a three level, six-stage sequence, illustrated by changing views of justice, in which the highest level is reached during adulthood if ever (Galbraith, & Jones, 1976; Gibbs, 1977; Kohlberg, 1978; Kohlberg & Hersh, 1977; Kohlberg, Levine, Hewer, 1983; Munsey, 1980) (See Appendix A for further information). Kohlberg's work has been criticized for: one, centering too much on justice and being culturally biased in his definitions; two, being sex biased in his exclusive male sample and defining his stages in "masculine" themes of rights and justice; and three, leaving out "feminine" themes of caring responsibility and love (Blum, 1988; Gilligan, 1982; Kohlberg, Levin, & Hewer, 1983; Nunner-Winkler, 1984).

Gilligan (1982) proposes that in addition to justice, a second universal moral principle exists, the principle of caring. Caring is defined as a sensitivity to the needs of persons and as a morality of responsibility and relationships. Gilligan (1982) views men and women not as being superior or inferior, but preferring different bases for their moral judgment, men, she notes, typically base their moral

reasoning on justice, while women base theirs on caring.

Lifton (1985) notes that while Gilligan correctly views the cognitive-developmental model as favoring justice as opposed to caring as a basis for moral reasoning, she incorrectly concludes that the model favors males over females (biological and physiological sex differences). Instead, the model may favor masculine over feminine persons (psychological and sociological gender differences).

Rest (1979) developed an objective test, the Defining Issues Test (DIT), applicable to Kohlberg's conception of moral judgment. The test is based on Rest's finding that persons understand reasoning of stages lower than their own spontaneous moral level, but less often understand reasoning of higher states. The DIT presents moral dilemmas and asks the subject to choose how to respond in the situation. The subject is then given a list of 12 issues that may have influenced his or her choice and is asked to rate each on how important it was. Then, the subject chooses the four most important issues and ranks them in order of importance. For Rest, moral maturity involves gradually increasing use of principled moral reasoning. Thus, he argues for viewing moral development as fundamentally a continuous variable, as opposed to discrete states which Kohlberg upholds in principle.

In a summary of his findings Rest (1986a) mentions that in many studies on life experiences associated with moral judgment, it appears that specific moral experiences (ie, moral education programs, moral leaders, or living through moral dilemmas) do not foster development. Rather, morality develops as a person

becomes more aware of the social world in general and how one fits into it. Rest asserts that people who develop in moral judgment are those who love to learn, seek new challenges, enjoy intellectually stimulating environments, are reflective, see themselves in the larger social context, and take responsibility for themselves. He also notes that moral education programs which are designed to stimulate moral judgment development do produce small but significant results (Rest, 1986a). This has been particularly found in those programs which emphasize peer discussion of controversial moral dilemmas, and those which foster general personality development (Johnson & Johnson, 1988; Rest, 1986a; Sweers, 1988).

When reviewing the literature on moral development, Rest (1984) believes that most of the studies on morality are divided into behavior, affect and cognition. Within these areas, behaviorists study behavior, cognitive-developmentalists study cognition and psychoanalysts study affect. Rest proposes that the study of morality needs to bring these three areas together and view morality from four major components. These components represent the inner processes regarded as the necessary constituents to behave morally (Rest, 1984). The component of the model are described as follows:

Component I. Interpreting the situation. This involves imagining the courses of action which are possible in a situation and examining the consequences of action as they will affect not just the decision maker, but all parties involved.

Component II. Formulating the ideal moral course of action. This involves determining which course of action best fulfills a moral idea and then identifying one possible line of action of what a person morally ought to do in the situation.

Component III. Deciding what ideally to do. This involves deciding what one actually will intend to do by prioritizing competing values. Research has found that just because a person decides what is morally best, it is not always the course of action that is taken. Other values may motivate a person more than moral values.

Component IV. Executing and implementing a course of action. This involves figuring out the sequence and having the skills and sufficient perseverance to overcome difficulties and frustrations to be able to follow through to the eventual goal.

Rest's four component model and his beliefs that in the past morality has been viewed compartmentally concur with the views of Paul. Paul (1987) suggests that there is an intimate connection between critical thinking and moral integrity, that ethical persons can only do what is right if they know what that is. They cannot do what they feel is morally right if it is confused with their self-interest, or personal desires. This is similar to what is presented in Rest's Components I and II.

Paul also believes that verbal agreement on general moral principles will not accomplish moral ends but rather those principles need to be put into practice; this requires analysis and insight. These ideas are in agreement with Rest's Components III and IV.

To get to the point of having morally responsible persons, Paul believes that people must be educated rather than indoctrinated. This will enable them to cultivate skills, insights, knowledge that will help them think beyond biased representations and perspectives. This can be done by inserting critical thinking

into the heart of ethical teachings. Using critical thinking will help individuals to distinguish between principles, which tell us what we should or should not do, and perspectives, which characterize the world in a way to lead us to an organized way of interpreting it, and facts, which give the specific information or occasion for a particular moral judgment (Paul, 1988).

To help individuals get these skills, educators (whether in academia, politics, business or in the family) need to see how to adapt principles of critical thinking to the domain of ethical judgment and reasoning. To achieve this Paul has outlined some moral reasoning skills. These include: moral affective strategies, cognitive strategies with moral macro-abilities, and cognitive strategies with moral micro-skills (Appendix A). To cultivate this type of moral independence, Paul recommends that educators foster moral humility, courage, integrity, perseverance, empathy and fair-mindedness in students (Appendix A).

In the 1940s there was a move toward "value free" education. Today many school systems are adding to the three R's, the three C's, character, content and choice (Solorzano, 1985). When the question of whose values will be taught is raised, much heated debate has emerged (Bahm, 1982; Paul, 1988; Sproule, 1987). In California, under a 1983 mandate from the State Legislature, the California school system's entire curriculum is being overhauled. As part of the plan, students are reading texts devoted to themes like "courage" and "caring". Science teachers are being asked to work ethical issues into their class discussions and moral literature from Aesop's Fables to the Bible is back on the required reading lists (Dworkin, 1987). Many school systems are finding that there is a common

core of values about which few people will disagree are important (Lickona, 1988; Saterlie, 1988). One school system in Maryland came up with a list of such values. They include:

> compassion, courtesy, critical inquiry, due process, equality of opportunity, freedom of thought and action, honesty, human worth and dignity, integrity, justice, knowledge, loyalty, objectivity, order, patriotism, rational consent, reasoned argument, respect for others' rights, responsible citizenship, rule of law, self-respect, tolerance, and truth (Saterlie, 1988, p. 45).

But how are these values taught? Craig (1983) notes that there are at least three main schools of thought regarding moral education. The first focuses on training the mind to reason logically on moral issues; it assumes that sophisticated reasoning will be based on intellectual understanding and acceptance of high values. Another view is that moral convictions and actions are affectively motivated. This means that they are products of an individual's feelings about values and people and that cultivating caring attitudes or emotional allegiance to the ideals of justice, integrity, love of one's neighbor, will result in ethical behavior. The third view is that self-esteem, acceptance of self, is the psychological foundation for respect and regard for others, which in turn is the motivating force of social morality. Hence, educating for self-concept will motivate the behavior of goodwill toward others.

In 1977, the Hastings Center with the support of the Rockefeller Brothers Fund and the Carnegie Corporation of New York began a systematic study of the state of the teaching of ethics in American higher education. This research project generated conferences, independent studies and various papers. Some of those papers were compiled by Callahan and Bok (1980). Macklin notes in her

chapter "Problems in the Teaching of Ethics" (1980) that the teaching of ethics is a pedagogical activity involving critical skills, analytical tools and techniques of careful reasoning.

Lickona (1980a) gave implications of moral development for the teaching of ethics. He indicated that the pedagogical implications of moral development theory flow from the premise that "the major impetus for movement throughout the moral stages is the person's own activity as a problem solver, as called forth by challenging interactions with the environment" (p. 110). One of the experiences which stimulates the active problem-solving efforts discussed by Kohlberg includes engaging in logical thinking, such as reasoned argument and consideration of alternatives. Kohlberg felt this was important because an individual cannot attain a given stage of moral reasoning before attaining the supporting Piagetian stage of logical reasoning (Lickona, 1980a, p. 111).

Lickona notes that you cannot develop a person's morality or teach ethics just by lecturing about it. Rather, the students need to be encouraged to see things from a variety of viewpoints and systematic, logical examination of arguments and alternatives.

A report by the Hastings Center, *The Teaching of Ethics in Higher Education* (1980), lists five major goals for teaching ethics to individuals. They include: (1) stimulating the moral imagination, (2) recognizing ethical issues, (3) developing analytical skills, (4) eliciting a sense of moral obligation and personal responsibility and (5) tolerating-and resisting-disagreement and ambiguity (Appendix A). These are all skills which can be brought about by teaching critical thinking skills from a

moral perspective.

Critical Thinking

The study of critical thinking is not a new idea. The early Greek philosophers Socrates, Plato and Aristotle, were concerned with this problem. Over 2,400 years ago Socrates was disturbed by what he saw to be the immoral use of critical thinking by the sophists of his day. By using a probing method of questioning, Socrates challenged many of the authorities because they could not justify on rational grounds their confident claims to knowledge (Paul, 1985).

> By asking questions like, How do you know that? What is the evidence? and If this is true, then does it not follow that certain other matters are true? [this questioning] would lead to a recognition of reason as a basically moral force promoting the good" (Glaser, 1985, p. 24).

Aristotle was also concerned that the purpose of thinking be moral. He defined activities of living involving wanting, thinking and doing, and felt that logical reasoning without right wanting would lead to knavery, and that critical thinking was linked to moral development (Glaser, 1985 p. 24).

Throughout the centuries, many other individuals stressed the importance of critical thinking. These included Voltaire, John Henry Newman, and John Stewart Mill. St. Augustine, St. Thomas Aquinas, Rene Descartes and Immanual Kant demonstrated the compatibility of religious belief and critical thinking (Paul, 1985). During the formative years of the United States people such as Thomas Jefferson and George Washington were acutely aware that free political institutions would fail if the state failed to cultivate a degree of social understanding and judgment necessary to think intelligently about public issues (Glaser, 1985).

John Dewey was one of the first persons noted to use the term "critical" in

reference to thinking. Dewey was a philosopher, educator and psychologist. In his book *How we think*, Dewey related his three disciplines to the concept of thinking. Dewey used the term "reflective thinking," defining it as "active, persistent, and careful consideration of a belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends" (Dewey, 1933, pg. 9). Dewey noted that reflective thinking involves a state of doubt, comprising the beginning of the thinking process and the search to resolve the doubt. "Critical" thinking is further discussed by Dewey as he states that "there may, however, be a state of perplexity and also previous experience out of which suggestions emerge, and yet thinking need not be reflective. For the person may not be sufficiently critical about the ideas that occur to him." (1933, p.16).

The role of critical thinking in education was further noted in 1938 when the Educational Policies Commission of the National Education Association indicated that the development of critical judgment was the basic fabric of the educational process.

> Critical judgement is developed . . . by long and continuous practice under the criticism of someone qualified to evaluate the decisions. The child must learn the value of evidence. . . . He must learn to defer judgment, to consider motives, to appraise evidence, to classify it, to array it one side or the other of his question, and to use it in drawing conclusions. This is not the result of a special course of study, or of a particular part of the education procedure; it results from every phase of learning and characterizes every step of thinking (Glaser, 1985, p. 24).

The next major work in the area of critical thinking is by Edward Glaser (VerDerBogert, 1986). Following his research, in 1941 Glaser wrote *An Experiment in the Development of Critical Thinking* and developed with Goodwin Watson, the Watson-Glaser Test to measure critical thinking abilities. Glaser developed

and presented materials and procedures for teachers of elementary through college students. The effectiveness of the materials and procedures were thereafter measured. He also tested critical thinking as it relates to intelligence, home background, sex, and patterns of interests-values, after the students had received specific "study" in critical thinking.

Glaser's study defines critical thinking as a composite of attitudes, knowledge and skills. This composite includes:

> (1) attitude of inquiry that involves an ability to recognize the existence of problems and an acceptance of the general need for evidence in support of what is asserted to be true; (2) knowledge of the nature of valid inferences abstractions, and generalizations in which the weight or accuracy of different kinds of evidence is logically determined; and (3) skills in employing and applying the above attitudes and knowledge (Watson & Glaser, 1980, p. 1).

Glaser found that these three components of critical productive thinking were substantially improved as an outcome of certain types of instruction and guidance (Glaser, 1985). The *Watson-Glaser Critical Thinking Appraisal* (CTA) *Manual* (1980) lists five important abilities related to the concept of critical thinking which the CTA measures. They are: the ability to define a problem; the ability to select pertinent information for the solution of a problem, the ability to recognize stated and unstated assumptions, the ability to formulate and select relevant and promising hypotheses, and the ability to draw valid conclusions and judge the validity of inferences.

Glaser and Dewey defined critical thinking similarly but analyzed it differently. Dewey encouraged teachers to become students of the traits of thinking and seekers of the conditions in which they might encourage the natural tendencies of students to think. Glaser, using a different perspective, encouraged the

teacher to use proper materials to teach specific abilities to the students. Similar to Dewey, Glaser indicates that a number of component abilities are involved in critical thinking, but unlike Dewey he was of the opinion those components could be isolated and tested to determine a person's ability to think critically (VanDerBogert, 1986).

Ennis, during the past 30 years, has also worked extensively in the area of critical thinking. He is the coauthor of the Cornell Critical Thinking Test, levels X and Z and is currently the director of the Illinois Critical thinking project. Ennis credits his first definition of critical thinking, which is "the correct assessment of statements" (Ennis, 1962, p. 83), to B. Orthanel Smith who stated 'Now if we set about to find what . . . [a] statement means and to determine whether to accept or reject it, we would be engaged in thinking which, for lack of a better term we shall call critical thinking' (Ennis, Millman & Tomko, 1985, p. 1).

Ennis originally detailed 12 different aspects of critical thinking (Ennis, 1962) and it is these aspects that distinguished his work from Dewey or Glaser. Over the years, Ennis' definition of critical thinking broadened to include two additional elements. In 1985 Ennis noted that he revised his definition of critical thinking to be broader because he judged the broad definition to be more in accord with popular usage. This broadened definition he termed "rational thinking" and includes rational creative thinking (Ennis, 1985).

In 1981 the Center for Critical thinking and Moral Critique at Sonoma State University in California was established under the direction of Professor Richard Paul. Paul views most problems that require critical thinking as dialectical in

nature, intertwined with other problems that cut across disciplines requiring a 'global' point of view (Glaser, 1985; VanDerBogert, 1986).

Paul (personal communication, December 7, 1989) argues that moral issues are complex and require intellectual insight and understanding to foster moral development. Paul suggests that the best way to judge moral development is qualitatively, as it evolves over time, and is shaped by people. The development of values is rewarded by others as individuals aspire toward them. Paul also notes that for these reasons it is difficult to use short empirical tests to see if one has developed morally from being exposed to a particular teaching style or materials. Similar to literature classes, testing is not usually done with pencil and paper tests, but rather through oral discourse and ability to analyze, organize data, reason and communicate information in written form (R.W. Paul, personal communication, December 7, 1989). The skills Paul is discussing here are aspects of critical thinking skills.

Paul discusses various definitions of critical thinking, and although he mentions that he prefers to retain a host of definitions to maintain insight into the various dimensions of critical thinking, Paul has chosen to define this complex concept in the following way:

> Critical thinking is disciplined, self-directed thinking which exemplifies the perfections of thinking appropriate to a particular mode or domain of thinking. It comes in two forms. If the thinking is disciplined to serve the interests of a particular individual or groups, to the exclusion of other relevant persons or groups. [he] . . . calls it sophistic or weak sense critical thinking. If the thinking is disciplined to take into account the interests of diverse persons or groups . . . [he] . . . calls it fairminded or strong sense critical thinking. (Paul, 1990, p. 33)

Self-Concept

Interest in self-theory became evident early in the history of American psychology, around the turn of the century. It has been noted that it is important to know how people regard themselves, including their abilities, personality attributes, and overall assessment of self, since these have widespread influences on feelings and behavior (Epstein, 1980). Gordon and Gergen (1968), Shaver (1960, 1985) and Wylie (1961, 1974) have reviewed the many uses of the construct "self" in research. Despite the popularity of the self-concept the research has been plagued with ambiguities (Shaver, 1985; Loevinger & Knoll, 1983) and there still does not exist a standard theoretical or operational definition. In reviewing the literature the terms self, self-concept, self-esteem and self-acceptance are often used interchangeably. The term that will be used for this research will be self-concept.

In 1902, Cooley defined the self as everything that an individual designates as his own and refers to with personal pronouns like "I", "me", and "myself". He proposed the concept of the "looking-glass self" and notes that how we view ourselves, which we like to think of as a direct consequence of our own judgments, is actually influenced by our concern over how others regard us (Epstein, 1980).

Mead (1934), suggested that society is an important key in how we view ourselves. Mead believed that selves only exist in relation to other selves; thus, a self-concept can only develop within a social group.

While agreeing that others' influence is extremely important in the development of self-concept, Sullivan (1953) emphasized the role of "significant others" in

one's childhood. The self-concept, in this theory, develops out of a desire of the child to gain approval and avoid disapproval.

Epstein (1980) has divided the variety of views on the nature of the self-concept into three categories: the self as an object of knowledge, as an integrative structure from a phenomenological perspective, and as an integrative structure from a cognitive perspective. The first category includes researchers who view the self as an object of knowledge. They assert that if I am making judgments about myself, then "I" the knower am making judgments about "myself" the object. Two of these researchers include James and Allport. In 1908, James defined self as the sum of a person's physical self, psychological traits, feelings, family, significant others, possessions, avocation and vocation (Frey & Carlock, 1984).

Allport decided that there were so many confusing meanings of the word "self" that he would start over with a new word, that word is "proprium". Proprium, he felt, has seven different attributes: (a) bodily sense, (b) self-identity, or continuity over time, (c) ego-enhancement, (d) ego-extension, (f) rational process, (g) self-image, and (h) propriate striving. Ego-enhancement, individual's striving for self-esteem, is a fundamental need for all humans, and is tied to the need for survival. Rational process refers to the cognitive processes that an individual uses to make sense out of the world and to synthesize inner needs with outer reality (Epstein, 1980).

The second group of researchers are phenomenological psychologists. According to this group, instead of viewing the self as an object of knowledge, the

self is viewed as an integrative structure. The self-system is viewed as a cognitive organization. In this view, once one knows how a person perceives and interprets the world, one can predict that person's behavior. It is assumed that behavior always follows directly from an individual's perceptions. So, while a person may behave strangely from another's point of view, the behavior is always reasonable from the viewpoint of the one doing the behavior, at least while they are doing it. Researchers in this area include Lecky, Snygg and Combs, and Rogers (Epstein, 1980).

The third group includes researchers viewing the self as an integrative structure from a cognitive perspective. This perspective is still developing. This category includes the work of Hilgard and Sarbin. Hilgard suggests that the healthy self is integrative rather than integrated, meaning that it is flexible and capable of adapting to new situations, while the unhealthy self tends to be rigid and unadaptable. Sarbin is interested in the development of the self from childhood through adulthood (Epstein, 1980).

Another researcher who has discussed the self-concept is the psychologist, Abraham Maslow. According to Maslow (1970, 1973) there are five fundamental levels of human need that motivate behavior. At the most basic level in Maslow's hierarchy are physiological needs for food, water, air, a comfortable environment and sexual satisfaction. At the second level are safety and security needs. These include needs for protection from threats and need for order and predictability in the world.

The third level in Maslow's hierarchy marks what is often referred to as the

"higher-level" needs of human beings, areas that go beyond just survival. Belongingness needs are based on the recognition that people need other people to give and receive affection, companionship, loyalty and acceptance. The fourth level is esteem needs. This includes people's needs for self-respect, self-approval or self-worth. Some psychologists believe that persons need to respect themselves before they can respect others (Kozier & Erb, 1979; Staub, 1980). People need to think they are all right, needed and useful in order for them to respect what they have done and can do.

The highest needs in the Maslow hierarchy are self-actualization needs, to develop one's identity and realize his or her potential. This is thought to be a motive behind a person's need for creativeness, curiosity, constructiveness, independence and freedom. Maslow notes that there are various characteristics of self-actualizing people (1970). Three of these characteristics include acceptance of self and others as having worth and focus on problem-centering. Maslow indicates that this type of person has a mission or purpose in life with tasks to fulfill. These tasks are generally nonpersonal or 'unselfish', concerned mainly with the good of mankind in general, or of a nation in general. These people are concerned with basic issues and eternal questions of the type normally considered philosophical or ethical. Though not perfect, Maslow found that people at this level are strongly ethical with definite moral standards (Maslow, 1970, 1973; Lowry, 1973). According to Maslow's theory before one can obtain the level of self-actualization he or she must first obtain the other levels, one of which is self-esteem.

Loevinger and Knoll (1983) note that personality includes one's morality, the self and empathy. Including these three ideas within the field of personality implies that moral stages trace a dimension of individual differences in adult life, which are central to the personality. Moral choices are important indicators of the person as an active agent. People admit that people exercise self-control; this may be by rewarding and punishing themselves. However, people also change their motivations, to higher and lower motives. As the higher level motives overrule the lower motives it is a matter of articulating and confirming one's identity, sense of self, and the kind of person one thinks of oneself as being (Loevinger & Knoll, 1983).

Roid and Fitts (1989) mention that an individual's self-concept has been reported to be very influential in much of his or her behavior and also to be directly related to one's general personality. People who see themselves as undesirable, worthless or 'bad' often act accordingly. People who have deviant self-concepts often behave in deviant ways.

Summary

This section reviewed related literature and research in the areas of critical thinking, moral development, and self-concept. Research findings suggest that these areas are all of interest and worth to the scientific community today and that there is justification to measure these three areas together.

Organization of the Thesis

In this chapter the statement of the problem, purpose and research questions, theoretical background for the study, and a review of the literature have been

presented.

The remaining chapters of this dissertation are organized in the following way. Chapter II presents the basic research design; the instruments and structured questionnaires, including the validity and reliability of each measure; procedure for obtaining the sample; methods of analysis, and anticipated contributions of the study. Chapter III presents a description of the sample and compares it with larger student populations. Chapter IV presents the findings and results of the study. Chapter V discusses the findings and presents conclusions and implications of the study and recommendations for future research and education.

CHAPTER II

RESEARCH DESIGN AND METHODOLOGY

Basic Design and Methods

The basic design for this research project used the survey method with questionnaires. Surveys are particularly useful in describing characteristics of a large population. With a selected probability sample it is possible to make descriptive assertions about the population. Generally, standardized instruments and structured questionnaires have an important strength in regard to measurement especially when dealing with the ambiguous nature of most concepts. But there are some weaknesses to using surveys too (Babbie, 1983, p. 238).

The survey will be binding in that each participant will be asked the exact same questions with the same intent imputed to all respondents giving a particular answer. But this is also a strength of surveys, in that it will allow for standardization. Survey research does not deal with the real context of social life, but some demographic and contextual information will be asked for from the participants. Though the researcher cannot appreciate the total life situation in which the participants are responding, various factors which may influence their measured responses to moral development, critical thinking and self-concept will be available from the demographic questionnaire.

Instruments and Structured Questionnaires

To measure the variables, moral development, critical thinking skills and self-concept, three widely used instruments were employed. Buros (1970) has laid out standards for test users to consider when selecting a measurement test. Each of these three instruments will be discussed, including their reliability and validity, and results of research using the instruments.

The reliability of a test is the extent to which the test can be depended upon to give the same results repeatedly. This calls for a comparison between at least two measurements. The two measurements may be obtained by retesting an individual with the identical test. Another way of estimating reliability is to correlate the odd-numbered items with the even-numbered items and correct for test length. This is called a "split-half" or "odd-even" correlation and may be estimated by the Spearman-Brown formula which assumes that the arbitrarily split halves are equivalent. Another way to estimate the reliability is by using the Kuder-Richardson formula, which give an averages intercorrelation of the items with each other. Using this formula will provide an index of internal consistency, not necessarily the ability to provide the same results repeatedly, unless it is assumed that one is a good indicator of the other (Buros, 1970).

The validity of a test indicates the degree to which the test is capable of actually measuring the desired concepts (American Psychological Association, 1974). The ultimate validity of a measure can never be proven (Babbie, 1983). The three basic approaches to test validity are criterion, content, and construct validity. Criterion validity exists to the extent that the test correlates with a

criterion that for one reason or another is assumed to represent the construct the test is supposed to measure or indicate. This is shown by comparing the test scores with one or more external indicators considered to provide a direct measure of the characteristic or behavior in question. For some concepts there is not any established criterion. Content validity is shown by how well the content of the test represents the situations or subject matter about which conclusions are to be drawn. There are two different judgments made here. The first asks if the body of content is appropriate, the second asks if the test does a fair job of testing for that content (Ennis et al., 1985). Construct validity is evaluated by investigating what qualities a test measures. It depends on the degree to which certain explanatory concepts or constructs account for performance on the test. Procedures for investigating what a test measures include: the rationale upon which the tests are built, simple internal statistical analyses, judgments about the acceptability of the answers, correlations between the test and other variables, (it would be expected that a valid test would correlate more highly with similar tests) results of experimental studies in which the test was used as an indicator of the construct, and factor analyses. These three aspects of validity are only conceptually independent; all of them are very important when examining measurement tests.

Moral Development

To measure moral development Rest's Defining Issues Test (DIT) was administered. This test is an objective measure of moral judgment development. Moral judgment is concerned with how people decide that a type of conduct in a moral dilemma is right or wrong. The DIT is based on the premise that people at

different points of development differ in their interpretations of moral dilemmas, definitions of critical issues in the situations, and in their intuitions about what is right and fair in dilemmas. Although defined a bit differently, the DIT assumes along with Kohlberg that basic moral problem-solving strategies can be characterized in terms of six types or stages. The DIT has the most extensive data base yet collected on any single measure of moral judgment, and no other measure of moral judgment has demonstrated such repeatedly high reliability and validity.

The DIT is a 72 item paper-pencil test consisting of six short stories each followed by 12 related statements or a shorter version of three short stories. The stories present social problems or moral dilemmas, and the statements provide a range of considerations to be taken into account as a person tries to determine what, in a given situation, would be a morally right course of action. Respondents indicate the importance they would place on each consideration by rating each statement on a five-point scale from "none" to "great". Respondents then rank in order of importance the four statements which they consider to be the most important of the 12 statements provided for each story. These data provide scores for stages of moral development, 2, 3, 4, 5A, 5B, and 6, and two other indexes. The first index is a combination of stages 5 and 6, known as the "P" score which reflects the level of a subject's Principled reasoning, and the second is the "D" score, which reflects his or her relative preference for principled reasoning over conventional and preconventional reasoning. The test also includes an internal consistency check, identifying individuals who are randomly checking responses or who do not understand the directions.

Reliability. Over 500 studies have produced meaningful results indicating that the DIT is a useful measure in moral judgment research (Rest, 1986a). Studies by Davison and Robbins (1978) indicate that the test-retest reliability for the P scores (Principled reasoning) and D scores (preference for Principled reasoning) are generally in the high .70s or .80s. Rest (1986b) notes that Cronbach's Alpha was used as a measure of internal consistency, calculated by finding a stage score for each story, then looking at the consistency across all stories on that score. Results were generally in the high .70s. Rest does not recommend splitting the six story form into two three story forms, preferring to use the same stories for repeated testing. Rest (1979) reviews studies in which he indicated three findings. First, the differences in means between testing is nonsignificant for test-retest studies with a short interval of only one to three weeks. Second, the shifts in the short term groups' mean scores are less than shifts in the long term groups' mean scores. This indicates that the change is related to time between the tests rather than to just retaking the test. And third, one study using a Solomon-four-group design did not find any main effects, or any interaction effects of testing. Rest also indicates (1979) that using the shorter version would always reduce the observed correlation perhaps even to the point of nonsignificance, but usually the reduction will be small.

Validity. Taking the test involves making judgments about moral problems. The DIT is concerned both with what responses the subjects favor and also with their reasons behind the selection. Rest (1979, 1986a) has explained the appropriateness of the DIT task for studying moral judgment, the stage characteristics

used, and why some of the stages are regarded as more advanced. To demonstrate criterion group validity, Rest chose a group of Ph.D. students in moral philosophy and political science, college and high school students, and 9th graders to demonstrate that these different groups do measure differently on the moral judgment scale. His results (1979, 1986a, 1986b) are highly statistically significant. In 1979, and again in 1986a, Rest cites longitudinal studies which show significant upward trends. The longitudinal validity of the DIT is demonstrated as these studies indicate that the trends are not attributed to testing effects or sampling bias. Convergent-divergent correlations were performed demonstrating that the variables which are theoretically similar to moral judgment have higher correlations with the DIT than those variables which are not. Studies have shown that with various measures of moral reasoning correlations average around .50. Correlations with other measures of cognitive development and intelligence are moderate, averaging around .36. Correlations with various measures of attitudes, personality, demographic or sociological information are usually non-significant or inconsistent (Rest, 1979, 1986a). The validity of the DIT has also been demonstrated through experimental studies. These studies indicated that the DIT is measuring moral judgment as a distinctive domain of development (Rest, 1979, 1986b). The DIT has also been validated through studies on its internal structure. Rest (1979, 1986b) notes that through multidimensional scaling techniques, when the results are grouped according to their theoretical stages, the empirical values correspond to the theoretical sequence. Therefore, the DIT is seen to be a highly reliable and valid test for measuring moral judgment.

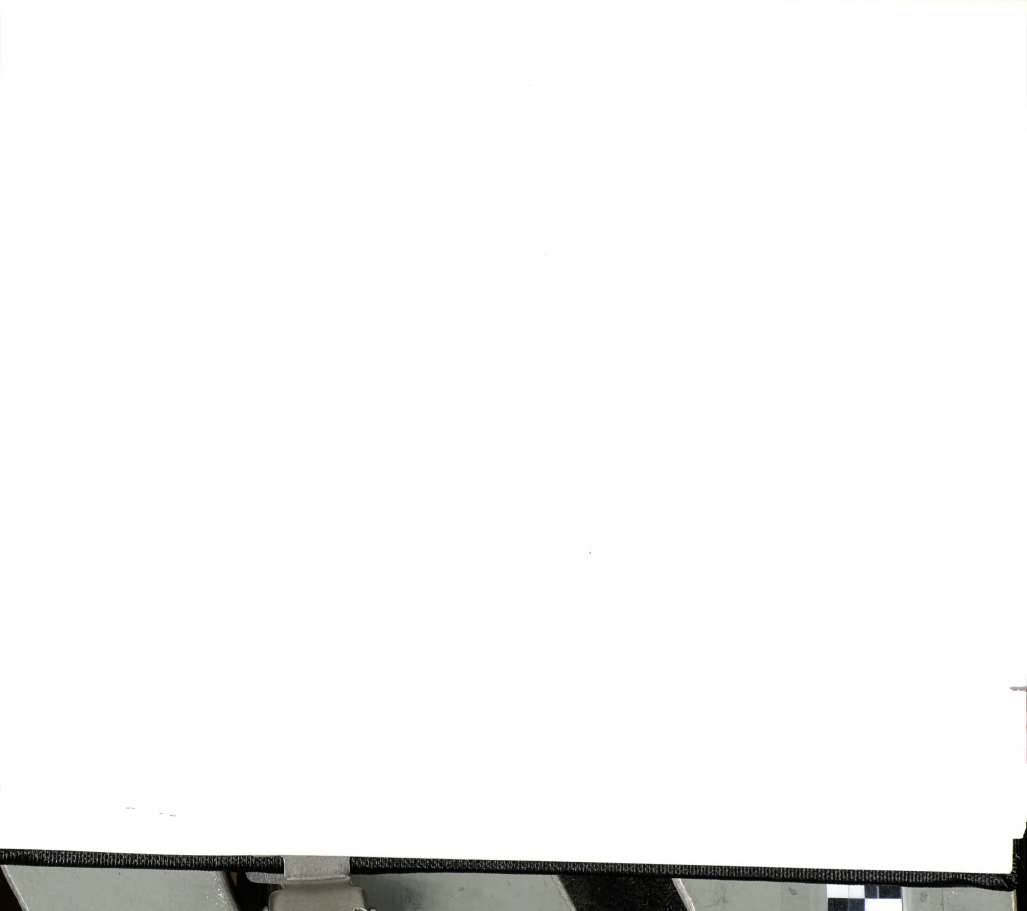
Previous Research. Moral judgment changes with time and formal education as a developmental progression. Two meta-analyses of about 10,000 subjects indicate that age/education accounts for 30-50 percent of the variance in the DIT scores. Longitudinal studies also indicate development in moral judgment. Between the variables of age and years of schooling, education is the stronger correlate with moral judgment development (Rest, 1986a).

Sex differences using the DIT are minimal. Less than one-half of one percent of the variance in the DIT scores is attributable to male/female differences. Where a difference does exist, females score higher on the DIT than males (Rest, 1986a).

Significant differences by type of religion have not been found. When represented in terms of conservative versus liberal ideology, religion is moderately but significantly related to DIT scores, with liberals having higher DIT scores (Rest, 1986a).

Critical Thinking

The second test used in this study is the Watson-Glaser Critical Thinking Appraisal (WGCTA) designed to measure five aspects of critical thinking, including the ability to recognize problems, evaluate evidence, support claims for truth, reason inferentially, and apply the preceding to problems. The purpose of the test is to assess a participant's ability to recognize the validity of arguments, detect implications of statements, note inconsistencies in reasoning, and make valid inferences from data. This test has been widely used in research; for example Tests in Print III (Mitchell, 1983), cites 208 articles in which it was used. This test



was developed by Watson and Glaser and first published in 1942 as the *Watson-Glaser Tests of Critical Thinking.* In 1964 the original test was expanded to include two forms, YM and ZM and given the name Watson-Glaser Critical Thinking Appraisal. The most recent revision was published in 1980 with new forms, (A and B) fewer items (80 instead of 100) and new time limits (40 minutes instead of 60). The test itself contains 80 multiple choice items divided into five 16-item subsets which the *Watson-Glaser Critical Thinking Appraisal Manual* lists as:

1. Inference. Discriminating among degrees of truth or falsity of inferences drawn from given data.

2. Recognition of Assumptions. Recognizing unstated assumptions or presuppositions in given statements or assertions.

3. Deduction. Determining whether certain conclusions necessarily follow from information in given statements or premises.

4. Interpretation. Weighing evidence and deciding if generalizations or conclusions based on the given data are warranted.

5. Evaluation of Arguments. Distinguishing between arguments that are strong and relevant and those that are weak or irrelevant to a particular question at issue (Watson & Glaser, 1980 p. 2).

Each section is preceded by instructions and two to five examples. The WGCTA calls for responses to two different kinds of item content. Items having "neutral" content deal with the weather, scientific facts or experiments, and other subject matter about which people do not have strong feelings or prejudices. Items having "controversial" content, are approximately parallel in logical structure to neutral items, but refer to political, economic, and social issues that frequently provoke very strong feelings. Watson and Glaser note (1980) that past research

indicates that strong attitudes, opinions, and biases affect the ability of some people to think critically.

In the absence of a suitably large and representative sample that can be used to develop local norms for the WGCTA, norms are given in the test's manual. The norms for high school students are based on a sample from 24 high school districts in 17 states, with attention given to geographic region, size and socioeconomic status of communities, sex, and ethnic minority group representation. College norms are presented by type of institution, program of study, and level of academic standing. Normative data are also available for business and civil service employees and applicants. The raw scores are translated into percentile ranks in tables for easy comparisons.

Reliability. The authors of the WGCTA assessed the appraisal's reliability in several ways. First, estimates were made of the test's internal consistency, which was measured by calculating split-half reliability coefficients. The coefficients range from .69 to .85. Second, the stability of the test scores over time was examined. This was assessed by administering the test twice to a group of college students with an interval of three months between testing periods. The test-retest results correlation coefficient was .73 with means and standard deviations "virtually identical" across time. And third, the correlation between scores on alternative forms was examined. This was calculated by correlating responses of subjects who took both Forms A and B of the WGCTA. The correlation of responses to Form A and those to Form B was .75. The authors indicate that they do not encourage using the part-scores on the test to evaluate individual attainment in the subskills,

since the part-scores are based upon a relatively small number of items and lack sufficient reliability for this purpose.

Validity. Berger (1985) noted in his appraisal of the WGCTA that when the validity of the WGCTA is examined, one must remember that the test appraises critical thinking through reading. He notes that it is not discussed if people taking a similar test of critical thinking through listening would obtain a score comparable to the one obtained through reading the test. Berger also noted that he is not referring to the readability of the test, rather the mode of obtaining the information.

The validity of a test is not an attribute that can be obtained from one study or isolated correlation coefficient. For this reason the authors of the WGCTA discuss the settings in which the test might be used and note that in each, a different type of validity would be necessary. In examining the test's content validity, it is noted that there is not general agreement on the definition of critical thinking (Watson & Glaser, 1980). However, when teachers attempt to develop or improve the critical thinking abilities of their students, there is a contextual frame of reference in which the teachers work. One indication of the test's content validity is the extent to which it measures a sample of the specified objectives of the instructional programs. Instructional settings have also been useful in helping to establish the construct validity of the WGCTA. Sorenson (1966) and Agne and Blick (1979) studied the construct validity of the WGCTA with respect to experimental programs designed to foster critical thinking. Fogg and Calia (1967) and Burns (1974) found higher levels of critical thinking in

students at higher educational levels. The WGCTA manual also gives correlational results of 14 studies in which critical thinking was compared with tests of achievement, intelligence, scholastic aptitude, and with students' English composition and overall grade-point averages. The previous information supports the claim that the Watson-Glaser Critical Thinking Appraisal is both a reliable and valid test. Modjeski and Michael (1983) found the WGCTA to meet more of the criteria for a psychological test than did its only competitor, the Cornell Critical Thinking Test (Ennis, Millman & Tomko, 1985). The WGCTA was rated as superior to the Cornell in terms of the test criteria described as "essential" in the *Standards for Educational and Psychological Tests* by the American Psychological Association (Woehlke, 1985).

Previous Research. Separate norms have not been calculated by ethnic groups using the WGCTA. However, differences between sexes were examined and no consistent differences were found between males and females (Ennis, Millman & Tomko, 1985; Landis & Michael, 1981; Watson & Glaser, 1980).

As previously stated the WGCTA has been shown to relate to various measures of academic achievement, overall grade point average, and individual course grades (Watson & Glaser, 1980).

Self-concept

The third test which was administered was the Tennessee Self-Concept Scale (TSCS), developed by Fitts. This is noted to be one of the most ambitiously and comprehensively conceived scales of self-concept that exists (Robinson & Shaver, 1985). The original version of the TSCS was published in 1956; it was

revised in 1965 and the latest revision was published in 1989.

In the original development of the TSCS, Fitts began with a pool of items larger than he expected to use. Drawing from previously developed self-concept measures, Fitts put together a schema of internal and external dimensions with equal numbers of positively and negatively worded items for each of the 15 facets. Without having prior knowledge of the initial item classification, seven clinical psychologists, were asked to place each item into the dimensional schema and to judge whether the item was positive or negative in content. For each facet, six items on which there was perfect agreement by the judges, were retained. The TSCS consists of 100 self-descriptive items in which the student portrays what he or she is, does, likes, and feels. The scale is intended to summarize an individual's feeling of self-worth, the degree to which the self-image is realistic, and whether or not that self-image is a deviant one. The TSCS will also measure external and internal aspects of self-concept. The five external aspects include moral-ethical, social, personal, physical, and family. The three internal aspects include identity, behavior, and self-satisfaction. The primary norm group for the TSCS was a sample of 626 people who varied in age from 12 to 68 years of age. The group was composed of approximately equal numbers of men and women and ranged over a variety of educational, social, racial, geographical and economic levels.

Reliability. Roid and Fitts (1989) noted that a number of studies have provided evidence of the reliability of the TSCS scores. Congdon (1958) obtained a reliability coefficient of .88 for the Total Score using the shortened version of the TSCS. In regard to internal consistency, Nunnelly (1968) reported a split-half

reliability of .91 for the Total Score on the TSCS. It is also noted that "the responses to TSCS items show an approximate consistency in the shape of their item characteristic curves in relation to a theoretical trait of general self-concept" (Roid & Fitts, 1989, p. 65). A study of the internal consistency of the TSCS profile scales was conducted for the TSCS Manual. Results indicated that from a sample of 472 respondents, mainly single, educated adults, the majority of the coefficients are in the range of .70 to .87 with the Total Score having the highest values at .94. The test-retest reliability of the scale is in the high .80s sufficiently large to warrant confidence in individual difference measurement (Bentler, 1972).

Validity. The TSCS is one of the most widely used measures of self-concept. Tests in Print III (Mitchell, 1983) lists 702 references using this test. Roid and Fitts (1989) have noted that current theories of self-concept can be divided into three different types. These are: the general factor, the hierarchical, and the multiple factor. The TSCS has empirically based connections with each of these recognized models. Evidence of convergent validity was demonstrated in a summary of studies in which the measures correlate statistically significantly with the TSCS Total score. Some of these measures include: The *Rokeach Dogmatism Scale*, the *Taylor Manifest Anxiety Scale*, the *State-Trait Anxiety Scale*, the *Piers-Harris Children's Self-Concept Scale*, the *Coopersmith Self Esteem Inventory*, the *Minnesota Teacher Attitude Inventory* and the *Rotter Internal-External Locus of Control.* Van Tuinen and Ramanaiah (1979) also demonstrate convergent and divergent evidence for the validity of the TSCS Total Scores as a measure of global self-esteem with a comprehensive multitrait-multimethod study. In

addition, a large number of diverse studies report an empirical link between aspects of self-concept, as measured by the TSCS, and a variety of other behaviors, traits, and lifestyles. Some of these variables include occupational burnout, manic versus depressive cycles of mental dysfunction, acceptance of physical disabilities, religious maturity and vocational interest (Roid & Fitts, 1989). Wylie (1961, 1974) gives a more negative view of this scale largely because of the non-independence of the subscores which can lead to overinterpretation of profiles. Roid and Fitts address this issue in a recent edition of their manual. They discuss the global construct of self-concept, and how only recent confirmatory analyses completed since 1981 have truly shown the inherent structure of the TSCS as originally hypothesized by Fitts in 1965.

Thus, like the tests for moral development, and critical thinking, described in this paper, the test for self-concept is also highly reliable and valid.

Previous Research. From the original developmental data for the TSCS, Fitts concluded that the variables of age, sex, education, intelligence and race apparently exerted no systematic effect upon the self-concept (Thompson, 1972). More recent research re-examined the question of individual differences in self-concept.

There appears to be a high degree of consistence of self-concept scores across samples within various sampled age groups. Comparisons indicate that self-concept increases with age, especially during the teens up to age 20; and again after age 60. There are no great differences within the 20 to 60 year age span (Roid & Fitts, 1989; Thompson, 1972).

Another area which has been investigated is the self-concept of economically disadvantaged individuals. Characteristics of the economically disadvantaged include limited family income, low-value and low-standard housing, high density of population per dwelling, and limited educational background of parents. Research shows that disadvantagment will ultimately affect self-concept and this effect increases as the disadvantaged person grows older. Results from studies with college students indicate that the self-concepts of disadvantaged college students are much better than those of other age groups of disadvantaged samples. Attending college may result in an increase in a disadvantaged individual's feelings of self-worth (Roid & Fitts, 1989; Thompson, 1972).

Thompson (1972) reported a pattern of differences between Black and White samples on several self-concept scores, but cautioned that research may have been inadequate in controlling for socio-economic level, intelligence, and verbal ability. Some subsequent studies have shown no significant differences between Black and comparison samples (Roid & Fitts, 1989).

Sample

For purposes of this research, a college student sample was used. Two schools were selected from which to obtain the research participants, Michigan State University (MSU) and Aquinas College (AQ). These institutions were chosen because the researcher formerly taught at MSU in the Communication Department and presently is a faculty member in the Communication Department at AQ.

MSU is a large state university in East Lansing, Michigan with over 44,000

students. Most of the students in the undergraduate program at MSU are traditional age college students. AQ, is a small private Catholic-Christian liberal arts college in Grand Rapids, Michigan, with approximately 2,600 students. AQ has a large nontraditional age population in their undergraduate program. The nontraditional continuing education program, originally called the Encore Program was set up to meet the needs of women (many displaced homemakers) wanting to go back to school. Today the continuing education program is almost half of the student population and reaches both men and women.

Communication faculty who were teaching 100 and 200 level courses at the two schools agreed to cooperate in this research. Faculty informed the students that a research opportunity for extra credit was available to them outside of classtime, listing various dates, times, and locations in which they could participate.

The process of giving extra credit for research had been approved by Aquinas College and by the Communication Department at Michigan State University, where it is specifically addressed in the course syllabus. The sample was obtained from students in the same level courses in similar disciplines at college and university settings to minimize the variable of education. Students from various majors throughout AQ and MSU are enrolled in 100 and 200 level communication courses. Approval by the University Committee on Research Involving Human Subjects (UCRIHS) at Michigan State University was obtained prior to the beginning of the research (Appendix B).

Tests were administered by the researcher at each of the schools in designated rooms which held at least 150 students. At the testing each participant

was requested by the researcher to sign a consent form (Appendix C) which briefly explained the purpose of the study, indicated that their participation was of their own volition, and that they could withdraw at anytime. Along with the consent form each student filled out an information sheet which asked for information regarding their age, sex, race, martial status and grade point average. They were also asked questions regarding the type of family and community type in which they grew up, their parents' education and income level, and a group of questions regarding their religious beliefs.

The total testing process took approximately one and one-half hours. The first two questionnaires, The Watson-Glaser Critical Thinking Appraisal and the Tennessee Self-Concept Scale, were taken together as a group (taking approximately 45 minutes). The third questionnaire, the Defining Issues Test, was taken home and returned to a designated area on a specified date. Taking the exam home was suggested by Rest (personal conversation, April, 1990) when he commented that this procedure has been used before and if clear directions are given it did not seem to affect the results. When students turned in their DIT booklets, they received a memo debriefing them (Appendix C).

Five hundred twenty students originally volunteered to participate in the research. Four hundred forty three students completed all parts of the research on time including the take home part. Data from students who completed all three parts were used in the analysis of the research. In each of the analyses, cases were dropped if data were missing for the variables in the analysis. The number of cases for the analyses ranged between 437-443.

It was assumed that by offering all students enrolled in the designated courses and opportunity to participate, and by running the study outside of class time, a variety of students would volunteer. It is recognized that by using volunteers the sample is not a random sample of college students. However, the main purpose of this study is not to generalize to the population of college students, but rather the purpose is theoretical, to see what the relationships are between the considered variables. Glaser & Strauss (1967) note that a statistical random sample population is not necessary to discover theoretical relationships. However, as will be described in Chapter 3, the sample was similar in some respects to the student bodies at MSU and AQ and other colleges in Michigan.

Methods of Analysis

The methods of analysis which were used for this research are described for each of the research questions.

Research question 1: What are the levels of moral development, critical thinking and self-concept in a sample of contemporary American college students? This information was directly reported from the structured questionnaires which were used to measure these three variables. Means and standard deviations were calculated see if there was a normal distribution.

Research question 2: Is there a significant relationship between levels of moral development, critical thinking skills and self concept? This information was analyzed using Pearson Correlations between each of the three variables and their subcategories.

Research question 3: Are there significant relationships and/or differences

between levels of moral development, critical thinking, and self-concept and each of the demographic and contextual variables a) age, b) sex, c) type of school, d) GPA, e) family structure type, f) community type, g) parents' education, h) family socioeconomic status, i) racial/ethic background and j) marital status? The statistical methods to analyze this information include Pearson Correlations and eta^2. T-Tests were calculated for differences between sex and race (Black and White), and between sexes by school. One way analysis of variance was used to examine differences with the following variables: age, community type, parents' income level, students' race/ethnicity, and sexes by school.

Research question 4: When controlling for the variables presented, what are the relationships between the levels of moral development, critical thinking, and self-concept? This was examined using partial correlations.

Research question 5: Are there significant relationships and/or differences between levels of each of the following: moral development, critical thinking and self-concept and the participant's perception of the influence his or her religious beliefs have had on his or her life and how liberal/conservative these beliefs are? These variables were measured using Likert scales and relationships and/or differences were analyzed using Pearson Correlations, T-Tests, and analysis of variance.

Limitations of the Study

This study is concerned with moral development, critical thinking and self-concept. Because the study is descriptive in nature, causes cannot be derived for relationships found in the study.

As a self-report study, the measuring instruments carry a risk that respondents may not take the time to answer the questions thoughtfully; they may strive to present a particular picture of themselves. The students were asked to answer in terms of how they think they would respond in situations, but their answers do not report actual behavior. Students were also asked to take home the Defining Issues Test and return it at a later date. As this part of the testing was not monitored it is possible that students were distracted while completing this test, or that they did not do this test themselves. Taking the test home was suggested by Rest, and is also mentioned in his manual for the DIT. At the testing session, students were reminded that there were no right or wrong answers, and were asked to complete the test by themselves without distractions.

It is acknowledged and recognized that this investigation is also limited by the sensitivity of the measuring instruments used; for instance, the scenerios of readability of the instruments may have a cultural bias, though all instruments have high reliability and validity. There also may be limitations regarding the characteristics of the sample obtained, and the abilities of the researcher to devise and implement the research procedures. Students were told they would received extra course credit for participating in this study. This may encourage students who are not doing as well academically in that specific course to participate. Though it can be seen in chapter three that the students who did participate tended to report high grade point averages.

Anticipated Contributions of the Study

Benefits of this study are anticipated for education, research, theory, and application in practice both for the participants and others.

Research and Theory

It is hoped that this study will provide conceptual advances in the areas of moral development, critical thinking and self-concept. Furthermore, this research may add new theoretical perspectives and proposals for future research strategies in these areas.

Students

The participating students will learn about the process of research. The participants will also gain a better understanding of the variables being studied as they are explained in the testing process and the debriefing.

Faculty

Specific faculty members at both Aquinas College and Michigan State University were approached regarding using members of their classes as participants in the study. These faculty members will have available to them the final results if they desire.

MSU, AQ and other Educational Institutions

In addition to the students and faculty who participate in this research study, it is anticipated that the results will be helpful to other educators who will be able to apply the results to their own teaching, encouraging them to help students develop in moral development, critical thinking and self-concept. Aquinas college will also benefit as the material will be used in the researcher's

classes.

Others

The results of this study should also provide recommendations for other groups such as families, business, political and religious organizations. If a positive relationship is found between moral development, critical thinking and self-concept, parents, educators, business administrators, and others can use and develop tools to raise levels of moral development, critical thinking skills and self-concept.

Summary

This chapter presented the research design and methodology. It also included a description of the instruments and structured questionnaires, the sample population, methods of analysis and anticipated contributions of this study. The following chapter will further describe the sample population.

CHAPTER III

DESCRIPTION OF THE SAMPLE

From a human ecological perspective, personal and environmental characteristics of the participants are important to better understand the results of research involving those individuals. This chapter will describe the sample used for this research and then compare this sample with larger student populations in relation to selected characteristics.

Descriptive Data

This section describes the sample by demographic, personal, and family and contextual variables. In each of the analyses, cases were dropped if data were missing for the variables in the analysis. Cross tabulations of the variables by school are presented in Appendix D. Results of other cross tabulations and correlations between the variables are presented in Appendix E. In the study, 290 (66.4%) students were from MSU and 147 (33.2%) students from AQ. Six students did not report the school attending.

Demographic Variables

The frequency distribution of demographic variables for the sample are presented in Table 3.1.

Sex. Of the 438 respondents, approximately two-thirds were females, and one-third males. Five student did not report their sex. The sample from AQ was 81% female and 19% male; the MSU sample was 57% female and 43% male

(Table 3.1; See also Appendix D, Table D.1).

Age. Approximately 45% of the students were 18 or 19 year olds and 44% were 20 to 22 years old. Thus, nearly 90% of the sample consisted of traditional age college students. About 10% of the students were between 23 and 35 years old, and 4% were between 36 and 61 years old. For analytical purposes, ages were collapsed into the following six age categories: 18-19, 20-22, 23-26, 27-35, 36-45 and 46-60 (Table 3.1).

Of those from MSU, approximately 96% were traditional aged students. No one in the group from MSU was over 45 years old. From AQ, 75% of the students were of traditional age, with 12% over 36 years old (Appendix D, Table D.2).

Table 3.1

Frequency Distribution of Demographic Variables

	Total Sample		AQ	MSU
	N	%	%	%
SEX				
Male	154	35.2	19.0	43.4
Female	284	64.8	81.0	56.6
AGE				
18-19	194	44.9	30.8	52.1
20-22	191	44.2	44.5	44.1
23-26	13	3.0	4.8	2.1
27-35	14	3.2	7.5	1.0
36-45	14	3.2	8.2	.7
45-60	6	1.4	4.1	.0
RACE/ETHNICITY				
White	377	86.7	91.8	84.0
Black	36	8.3	4.1	10.4
Am. In.	1	.2	.7	.0
Asian	7	1.6	1.4	1.7
Hispanic	11	2.5	2.0	2.8
MARITAL STATUS				
Single	397	90.6	78.9	96.9
Married	28	6.4	14.3	2.1
Divorced	10	2.3	5.4	.7
Widowed	1	.2	.7	.0

Race/ethnicity. About 87% of the sample were White; 8% Black or African American, 3% Hispanic, 2% Asians and .2% American Indian (Table 3.1). From both MSU and AQ, the majority of the students were White. MSU had a greater percentage of Black and Hispanic students than AQ and about the same percentage of Asian students as AQ. AQ had the only representation of American Indians (Appendix D, Table D.3).

Martial Status. The majority of the respondents were single (Table 3.1). A larger percentage of MSU students than AQ students were single. More of the AQ students were married or divorced (Appendix D, Table D.4).

Personal Variables

Personal variables include the student's grade point average, religion, religious influence religious beliefs and living situation (Table 3.2).

Grade point average. Students were asked to indicate their current GPA. Forty-eight percent of all the students reported a GPA of 3.0 or better and 81.2% had a 2.5 grade point average or better. Students from AQ had an overall higher GPA than those from MSU; 64% from AQ had a 3.0 or higher GPA compared to 40% from MSU in the same category (Table 3.2; Appendix D, Table D.5).

Religion. Forty-eight percent of the students were Catholic, 39% Protestant, 3% Jewish, 2% marked "other", and 8% indicated none. Of those who marked Protestant, the four denominations most frequently listed were Methodist, Lutheran, Baptist/Bible, and Presbyterian. Of those who were Protestant, 79% were from MSU and 21% from AQ. Of the Catholic students, 51% were from MSU and 49% from AQ. In the MSU student group, 46% were Protestant; 37%

were Catholic; 4.2% were Jewish; and 10% claimed no religious affiliation. In the AQ group, 23.8% were Protestant, 70.1% were Catholic, .7% Jewish, and 4.8% did not claim any religious affiliation (Table 3.2; Appendix D, Table D.6).

Table 3.2

Frequency Distribution of Personal Variables

	Total Sample N	Total Sample %	AQ %	MSU %
GPA				
4.0	1	.2	.7	.0
3.5-3.99	53	12.2	25.2	5.5
3.0-3.49	156	35.8	38.1	34.6
2.5-2.99	144	33.0	29.3	34.9
2.0-2.49	73	16.7	6.1	22.1
1.5-1.99	8	1.8	.7	2.4
1.0-1.49	1	.2	.0	.3
RELIGION				
Protestant	169	38.7	23.8	46.0
Catholic	210	48.1	70.1	37.0
Jewish	13	3.0	.7	4.2
None	36	8.2	4.8	10.0
RELIGIOUS INFLUENCE				
Little	88	20.2	6.8	27.1
Moderate	210	48.3	47.3	48.6
Great	137	31.5	45.9	24.3
RELIGIOUS BELIEFS				
Conservative	73	16.9	10.3	20.3
Moderate	247	57.0	58.2	56.3
Liberal	113	26.1	31.5	23.4
LIVING SITUATION				
Dorm	297	68.1	45.6	79.6
Apartment	54	12.4	16.3	10.4
Rent a home	25	5.7	7.5	4.8
Own a home	25	5.7	15.6	.7
With parents	27	6.2	13.6	2.4
Other	8	1.8	.5	1.4

Religious influence. Students were asked how influential they felt their religion was in their lives. Twenty percent indicated little influence, 48% moderate influence and 32% great influence. Almost 50% of the students at each school said they were moderately influenced by their religion. At MSU about one quarter said their religion had little influence on their lives, compared to 7% at

AQ. About one quarter at MSU said religion had a great influence on their lives, while almost half said the same at AQ. This may be related to the fact that AQ is a religious school (Table 3.2; Appendix D, Table D.7).

Religious beliefs. Participants were asked if they perceived their religious beliefs as conservative, moderate or liberal. Seventeen percent indicated they were conservative, over half moderate and 26% indicated liberal. In comparing the students' religious beliefs by the school they were attending, at both schools around 57% said they were moderate. Twenty percent of the MSU students indicated they were conservative compared to 10% of the AQ students; and 23% of the MSU students indicated they were liberal, compared to 32% of the AQ students. Thus, a higher percentage of AQ students indicated that their religion was very influential in their lives, and a higher percentage of AQ students also saw themselves as liberal in their religious beliefs (Table 3.2; Appendix D, Table D.8).

Living situation. Over half of the respondents lived on campus in dorms, about 6% lived with their parents, 12% in apartments, and 12% rented or owned a house. A higher percentage of the students from MSU lived in dorms than students from AQ. A higher percentage of the students from AQ rented or owned a home, or lived with their parents, than the students from MSU (Table 3.2; Appendix D, Table D.9).

Family & Contextual Variables

Family and contextual variables include the family structure and community type in both elementary and high school years, parents' income and education level (Table 3.3).

Table 3.3

Frequency Distribution of Family & Contextual Variables

	Total Sample N	Total Sample %	AQ %	MSU %
FAMILY STRUCTURE				
Elementary School				
2-parent	386	88.3	91.8	86.6
Step parent	7	1.6	2.0	1.4
Single-female	39	8.9	5.4	10.7
Single-male	4	.9	.0	1.4
Other	6	.2	.7	.0
High School				
2-parent	352	80.5	88.4	76.6
Step parent	21	4.8	2.0	6.2
Single-female	49	11.2	8.2	12.8
Single-male	10	2.3	.7	3.1
Other	5	1.1	.7	1.4
COMMUNITY TYPE				
Elementary School				
Large city	50	11.4	12.9	10.7
Suburban	130	29.7	19.7	34.8
Med. city	78	17.8	21.8	15.9
Small city	74	16.9	15.0	17.9
Town	74	16.9	22.4	14.1
Farm	16	3.7	4.1	3.4
Country	15	3.4	4.1	3.1
High School				
Large city	48	11.0	11.6	10.7
Suburban	135	30.9	21.8	35.5
Med. city	77	17.6	20.4	16.2
Small city	74	16.7	17.0	16.9
Town	73	16.7	21.1	14.5
Farm	14	3.2	4.1	2.8
Country	16	3.7	4.1	3.4
PARENTS' INCOME				
below 9,999	12	2.9	3.6	2.5
10,000-14,999	15	3.6	3.6	3.5
15,000-19,999	10	2.4	3.6	1.8
20,000-24,999	15	3.6	3.6	3.5
25,000-29,999	17	4.1	2.9	4.6
30,000-34,999	28	6.7	9.5	5.3
35,000-39,999	28	6.7	11.7	4.3
40,000-44,999	24	5.7	8.8	4.3
45,000-49,999	23	5.5	6.6	5.0
50,000-59,999	52	12.4	13.9	11.7
60,000-74,999	63	15.0	11.7	16.7
75,000-99,999	63	15.0	10.2	17.4
100,000-125,000	35	8.4	4.4	10.3
150,000-over	34	8.1	5.8	9.2
MOTHERS' EDUCATION				
Below H.S.	19	4.3	7.5	2.8
High school	177	40.5	41.5	40.0
Jr. College	58	13.3	12.9	13.4
Bachelors	110	25.2	23.8	25.9
Masters	46	10.5	6.8	12.4
Doctorate	3	.7	.7	.7
Professional	5	1.1	1.4	1.0
Other	19	4.3	1.8	2.5

Table 3.3 (cont'd).

	Total Sample	AQ	MSU	
	N	%	%	%
FATHERS' EDUCATION				
Below H.S.	27	6.2	6.8	5.5
High school	121	27.6	34.0	24.5
Jr. College	36	8.2	8.2	8.3
Bachelors	123	28.1	31.3	26.6
Masters	76	17.4	10.2	21.0
Doctorate	12	2.7	.7	3.8
Professional	32	7.3	6.1	7.9
Other	11	2.5	.9	1.6

Family structure. The students were asked to indicate the type of family in which they grew up, both in their elementary school years, and their high school years. In elementary school years, a little over 88% of the students lived in two parent families, about 9% were in a female single parent family, between one and two percent were in step families, and under one percent in a male single parent family. These statistics changed slightly in the students' high school years. Just over 80% lived in a two parent family, about 11% in female single parent families, near 5% lived with step families, and about 2% in male single parent families. Table 3.3 shows that most students from MSU lived in two parent families in their elementary school years. A few lived in step and single male headed families, and a larger percentage in single female headed families. Compared to MSU, more students from AQ indicated that during this time period they lived in two parent families; about the same percentage lived in step families and fewer in single parent female headed families. In high school years there was about a 10% drop by MSU students who said in two parent families, and a 3% drop in AQ two parent families. The number of AQ step families stayed the same, while MSU students had a 4% increase in step families. Students from both schools indicated

an increase in single parent headed families during this time period. See Table 3.3; Appendix D, Tables D.10 & D.11.

Community type. There was not much difference in the type of community in which students lived during elementary school years and high school years (Table 3.3). When examining MSU and AQ students regarding the type of community in which they grew up, there were about the same percentages from cities at each school. A larger percentage of students from MSU grew up in suburban areas, while a larger percentage of students from AQ grew up in small towns under 10,000 (Appendix D, Tables D.12 & D.13).

Income. Eighty-nine percent of the students reported they depend on their parents for income. The 1989 annual parental income of 59% of the students was over $50,000; 32% was between $20-50,000, and 9% under $20,000. If they had their own household the participants were asked to report their income for 1989. This applied to 11% of the students. Of the 55 students who have their own households, 41% made under $15,000 in 1989 and 60% made under $30,000. The parental income level of about one-fifth of MSU students and one-fourth of AQ students was below $35,000. Over half of the students from AQ and 42% of the students from MSU reported parental income between $35,000 and $75,000. One fifth of the students from AQ and 37% from MSU reported parental income over $75,000. It is sometimes assumed that parents of students who go to private institutions make more money than those that go to public schools. In this sample, 20% from MSU while 10% from AQ, reported parental income of more than $100,000 (Table 3.3; Appendix D, Table D.14).

Parent's Education Level. Fifty-five percent of the students surveyed indicated that their mothers had more than a high school education. Approximately 5% of the mothers had less than a high school education; 4% had technical or nursing degrees and 12% had completed graduate work. Sixty-six percent of fathers had more than a high school education; 6% were not high school graduates, and 27% had completed graduate work. Fifty-seven percent of the MSU students' mothers had more than a high school education, compared to 51.0% of the AQ students' mothers. Almost twice as many MSU students' mothers had masters degrees than AQ students' mothers. Seventy percent of the MSU students' fathers had more than a high school education compared to 59.2% from AQ. Twice as many MSU students' fathers had masters degrees compared to AQ students' fathers (Table 3.3; Appendix D, Table D.15 & D.16).

Summary of Descriptive Data

This section summarizes the descriptive data. Relevant information about the correlation analyses reported in Appendix E is also included.

Most of the sample consisted of single, traditional age college students, with a larger percentage of females. Two-thirds of the sample were from MSU. The majority of the students were White. Overall, the older students reported higher GPAs than the younger students. Most of the students grew up during both elementary and high school in two parent families and in a city of some type (as opposed to a small town, rural area or farm). A large percentage of the Black students were from single parent female headed households.

Most of the students still relied on their parents' income. A greater

percentage of students from MSU indicated that their parents income in 1989 was above $75,000 than those from AQ. The higher the education level of the parents, the more income the parents had in 1989. It is also noted that many of the Black students were from homes where a high percentage of the mothers had received graduate degrees. A greater percentage of White respondents' mothers and fathers had more than a high school education compared to other races. A higher percentage of Black, Asian and Hispanic respondents' mothers had graduate degrees compared to White respondents' mothers. A greater percentage of White respondents' fathers had graduate degrees compared to other races. A higher percentage of MSU students' parents had graduate degrees compared to AQ students' parents.

Most of the students lived in the dorms; those who owned their own homes generally were the older students who were from AQ. The older students were usually female, Catholics and many were either married or divorced.

Almost half of the sample was Catholic, and almost half viewed religion as having a moderate influence on their lives. A greater percentage of women perceived religion to be more influential in their lives than the men did. A greater percentage of Blacks saw religion as more influential in their lives than other races did. A greater percentage of students from AQ viewed their religious beliefs as more liberal than students from MSU. A greater percentage of women and Blacks indicated their religion was very influential on their lives and both groups also saw their religion as more liberal.

Comparisons of Sample to Student Populations

This section will compare the AQ sample with 1989 student populations at Aquinas College and other independent colleges in Michigan. The MSU sample will then be compared with the 1989 student populations at Michigan State University and other public colleges and universities in Michigan. The total sample will be compared with the total 1989 student population attending Michigan Colleges and Universities and the total college population in the United States.

Aquinas College Sample

Sex. In 1989 AQ reported an enrollment of 2,252 undergraduate students. Of that number, 35.2% were men and 64.8% were women. In other independent 4 year colleges and universities in Michigan 39.8% were males and 60.2% were females. The sample from AQ had 81% females and 19% males. The AQ sample is similar to the AQ total sample and independent college populations in Michigan in having more females than males. The sample included a higher percentage of female students than the student body at AQ or other independent colleges and universities in Michigan (Table 3.4).

Race/ethnicity. The percentage of AQ sample that was Black was very similar to the percentage of Blacks in the AQ student population. The sample from AQ had a greater percentage of Whites compared to the student population from AQ. The other racial/ethnic groups were comparable in percentages between the three comparison groups, but the number is too small to make comparisons (Table 3.4).

Table 3.4

Comparison of AQ Sample with Student Populations at AQ and Other Michigan Independent Colleges & Universities

Variable	AQ Total(1)	MI Independent(1,2)	AQ Sample
Sex			
Male	35.2	39.8	19.0
Female	64.5	60.2	81.0
Race/Ethnicity*			
White	80.2	78.0	91.8
Black	3.9	13.2	4.1
American Indian	.3	.4	.7
Asian	.7	1.6	1.4
Hispanic	1.1	1.6	2.0
Other **	13.8	5.2	---
Age			
Under 25	52.9	N/A	78.0
25-35	27.4	N/A	9.6
over 35	19.7	N/A	12.3

Note. *=data for race of total student populations includes graduate students. **=legal aliens and/or race unknown. (1) Source: State of Michigan, Dept. of Education Report on the Post secondary enrollment for fall 1989. (2) Total enrollment of all Independent Colleges & Universities in Michigan.

Age. Of the total AQ population, just over half were under 25 years of age, (40% males, 60% females). Just over a quarter were between the ages of 25-35 (33.9% males, 66.1% females). About one fifth were over the age of 35 (24.1% males, 75.9% females). In comparison to the total AQ student population the sample from AQ had a larger percentage in the under 25 year old group, and had a lower percentage in the 25-35 and over 35 year old group (Table 3.4).

Michigan State University Sample

Sex. In 1989, MSU reported 34,951 undergraduate students. Of that number, 47.8% were males and 52.2% females. At Michigan public 4 year universities 47.4% were males and 52.6% females. The sample from MSU had a total of 43.4% male and 56.6% female. This is comparable to the percentages of the MSU student body and the public 4 year universities (Table 3.5).

Table 3.5

Comparison of MSU Sample with Student Populations at MSU & Other Public MI Colleges & Universities

Variable	MSU Total(1)	MI Public(1,2)	MSU Sample
Sex			
Male	47.8	47.4	43.4
Female	52.2	52.6	56.5
Race/Ethnicity*			
White	84.4	83.9	84.0
Black	6.5	7.3	10.4
American Indian	.3	.5	.0
Asian	1.9	2.2	1.7
Hispanic	1.5	1.4	2.8
Other**	5.4	4.7	1.1
Age			
Under 25	93.1	N/A	97.9
25-35	5.4	N/A	1.4
Over 35	1.5	N/A	.7

Note. *=data for race of total student populations includes graduate students. **=legal aliens and/or race unknown. (1) Source: State of Michigan, Dept. of Education Report on the Post secondary enrollment for fall 1989. (2) Total Enrollment of all Public Colleges & Universities in Michigan.

Race/ethnicity. The sample from MSU had about the same percentage of Whites, a greater percentage of Blacks and a lesser percentage of Asians and Hispanics compared to both the total undergraduate student population at MSU and the population of other public 4 year colleges and universities in Michigan (Table 3.5).

Age. Of the total undergraduates at MSU, 93% were under 25 years of age (47.5% males, 52.5% females). Around 5% of the students were between the ages of 25-35 (55% males 45% females). Between one and two percent of the students were over 35 years of age (36.5% males, 63.5% females). The sample from MSU had a slightly larger percent of students in the under 25 year old group, and fewer in the 25-35 and over 35 year old groups compared to the total undergraduate student population from MSU (Table 3.5).

Total Sample

Sex. The total sample is like other student populations in both Michigan and the United States with a greater percentage of females than males. The sample has about ten percent more females than the other two comparison groups.

Race/ethnicity. The sample total is comparable to the total college student population from Michigan in the distribution of Whites, American Indians and Hispanics. The sample total had fewer Blacks and more Hispanics than the total Michigan population. Compared to the USA college student population, the sample total had about the same percentage of Black and American Indian students, more Whites, and fewer Asians and Hispanics (Table 3.6).

Table 3.6

Comparison of Total Sample with Total Student Populations at Colleges & Universities in Michigan and the USA

Variable	Total MI(1)	USA(2)	Sample Total
Sex			
Male	45.4	46.0	35.2
Female	54.6	54.0	64.8
Race			
White	84.4	78.8	86.7
Black	9.5	8.7	8.3
American Indian	.6	.7	.2
Asian	1.6	3.8	1.6
Hispanic	1.4	5.2	2.5
Other*	2.5	2.8	.7

Note. *=legal alien and/or race unknown. (1) Total enrollment of all colleges and universities in Michigan, fall 1988, The Chronicle of Higher Education, April 11, 1990, p A37. (2) Total enrollment of all colleges and universities in the United States, fall, 1988, The Chronicle of Higher Education, April 11, 1990, p A37.

Comparison Summary

Sex. The sample obtained at each of the schools is quite representative of the student population at each school. There is a greater number of females than

males at each institution. The percentage of females and males was very similar for the MSU sample, the total student population at MSU, and enrollment in Michigan public colleges and universities. The AQ sample had a greater percentage of females than the total student population at AQ and enrolled in independent colleges and universities.

Race/ethnicity. The racial/ethnic background of the sample obtained at each of the schools is quite representative of the total student population at each school and of the population of students enrolled in colleges and universities in Michigan. Each of the samples obtained had a majority of White students followed in number by Blacks, Hispanics and Asians. The AQ sample had a greater percentage of Whites than the MSU sample or other representative comparison groups.

Age. Most of the students in the samples from both schools were under 25 years of age. This is representative of the student populations at both institutions. The student population at AQ has a larger population over 25 years of age, which includes the continuing education students, many of whom take classes at night. All research data were obtained during day times at both institutions which excluded night students. Many continuing education students also are returning to college to finish a degree and may not be as likely to be in a 100 or 200 level courses. These may be reasons why the AQ sample has fewer students over 25 years of age compared to the total AQ student populations.

Chapter Summary

Throughout this chapter the demographic, personal, family and contextual variables of the sample population have been presented and analyzed. Comparisons were made between the AQ sample, the total student population at AQ and other private four year institutions in Michigan. Comparisons were then made between the MSU sample, the total student population at MSU and other public four year institutions in Michigan. Lastly, comparisons were made between the total sample population, the total student population in all Michigan colleges and universities, and in all U.S. colleges and universities.

Although the sample was not randomly drawn the samples from each institution were quite representative in some respects of the student populations at each institution. The sample was also representative of college students in Michigan in terms of proportions of males and females; racial/ethnic backgrounds; and age distributions. The sample was also representative of college students in the United States in terms of proportions of males and females and racial/ethnic backgrounds. The next chapter will present the findings of the study.

CHAPTER IV

ANALYSIS AND RESULTS

This chapter presents the analysis and results of the study. The major purpose of the study was to see if there were relationships between moral development, critical thinking and self-concept among college students. Data were obtained from 443 students from Michigan State University and Aquinas College. Each of the research questions will be addressed and, when available, the data will be compared with results from comparable groups in the United States. The research questions were as follows:

Question one: What are the levels of moral development, critical thinking and self-concept in a sample of contemporary American college students?

Question two: Is there a significant relationship between levels of moral development, critical thinking skills and self-concept?

Question three: Are there any significant relationships and/or differences between the levels of moral development, critical thinking, and self-concept and each of the following demographic and contextual variables: a) age, b) sex, c) type of undergraduate school attending, d) current grade point average, e) family structure, f) community type, g) level of education of parents, h) socio-economic status, i) race/ethnic background, j) marital status?

Question four: When controlling for the variables presented, what are the

relationships between the levels of moral development, critical thinking, and self-concept?

Question five: Are there significant relationships and/or differences between levels of each of the following: moral development, critical thinking, and self-concept and the participant's religion, perception of the influence his or her religious beliefs have on his or her life, and how liberal/conservative these beliefs are?

Research Question One

Question one asked: What are the levels of moral development, critical thinking and self-concept in a sample of contemporary American college students? Tables 4.1, 4.5, and 4.8 give the means and standard deviations for moral development, critical thinking and self-concept respectively. Each will be discussed in turn. In presenting the results for the question the scores for the study sample will be compared with representative groups. Means between groups in the sample will be presented in question three.

Table 4.1

Descriptive Statistics for Moral Development of the Total Sample Group

Variable	Mean	Standard Deviation
Moral development DITP (P Score)	28.8775	12.0792

Note. Results with consistent DITP scores located in Appendix G, Table G.1.

Moral Development

The Defining Issues Test (DIT) was the tool used to measure each participant's moral judgment. The P score (DITP) is a percentage and the most impor-

tant score for the DIT. The P score is the number generally reported in DIT research, and on which most analyses are based. It is interpreted as the relative importance that subjects give to Principled Moral Considerations (to stage 5 and 6 items).

As part of the Defining Issues Test, there is a consistency check to indicate the usability of the subject's questionnaire. If there is too much inconsistency between a subject's ratings and ranking of an item, or if there is too little discrimination in the ratings it is questioned whether the subject was taking the test seriously or misunderstood the instructions (Rest, 1986b). Some studies noted by Rest (1986a) indicated that removing the scores in question made a difference in the outcome results. All the data in this project have been analyzed both ways, first, with all the data included and, second, with the DIT scores which were inconsistent, as indicated by the consistency check, removed. All cases without the questionable DIT scores are recorded in tables in Appendix G. It can be seen by comparing tables in Appendix F with Appendix G, that removing the inconsistent DIT scores did not make any significant difference on the statistical results.

Table 4.2

Level of Moral Development for Sample by School & Sex

		AQ		MSU	
P Score	Sample Total	Males	Females	Males	Females
Mean	28.774	26.605	31.340	27.036	28.498
SD	12.563	15.697	13.588	12.002	11.527
N Cases	301	19	81	76	125

Note. Results based on data with consistent DIT P scores.

Table 4.2 shows that when the P score is analyzed by sex and school the

females from both schools had a higher moral judgment level then the males.

Comparison to normative samples. Results were compared with data summarized by Rest (1987) from studies conducted throughout the United States (Table 4.3). T-tests were calculated for the P score differences between the sample and norm groups (Table 4.4).

Table 4.3

Age/Education Norms for P Score by Age/Education Groups

	AGE/EDUCATION GROUPS				
	Jr. High	High School	College	Grad School	Adults
1979 Secondary Analysis					
Mean	21.9	31.8	42.3	53.3	40.0
SD	8.5	13.5	13.2	10.9	16.7
n	1,322	581	2,479	183	1,149
1986 Secondary Analysis (males)					
Mean	19.1	28.7	44.1	61.0	42.8
SD	6.3	11.8	12.2	14.0	11.8
n	528	424	449	52	90
1986 Secondary Analysis (females)					
Mean	19.8	30.4	45.9	63.0	46.0
SD	6.3	10.9	12.2	10.9	12.9
n	519	436	436	42	183

Note. This table is read as follows: In the 1979 secondary analysis, the mean P score (percent) of a group of 1,322 Junior high school students was 21.9, the standard deviation was 8.5. Source: Rest, J. (1987). Guide for the Defining Issues Test p. 3.12. Minneapolis: University of Minnesota.

For the most part, the P scores of junior high school students average in the 20s; senior high school students average in the 30s; college students in the 40s; graduate students in the 50s. Results of the t-test (Table 4.4) indicate that the P scores of each of the subgroups of the sample, the AQ males and females and the MSU males and females, are significantly higher than the P Scores of junior high school students, but lower than the P scores of college, graduate and philosophy/seminary students. Scores for the sample subgroups indicate that AQ

students' scores are similar to senior high school students. The scores of MSU males were significantly lower than senior high school students and MSU female scores approached significance. The mean P score for the sample in this research was lower than the norm represented in the past by college students and was more similar to the P scores of junior high school and senior high school students.

Table 4.4

T-Tests on the P Score Differences Between Study Sample (and Sub-groups) and Norm Groups

Sample Group	Statistic	Normative Groups Junior	Senior	College	Grads	Phil/Sem
AQ Males	t-test	2.901	-1.330	-4.849	-5.090	-10.551
	df	287	287	287	287	57
	prob	0.004	0.181	0.000	0.000	0.000
AQ Females	t-test	7.057	0.179	6.798	-7.649	-14.139
	df	349	349	349	349	119
	prob	0.000	0.654	0.000	0.000	0.000
MSU Males	t-test	4.745	-2.472	-9.914	-10.771	-16.507
	df	344	344	344	344	114
	prob	0.000	0.013	0.000	0.000	0.000
MSU Females	T-test	7.272	-1.898	-10.883	-11.853	-17.283
	df	393	393	393	393	163
	prob	0.000	0.055	0.000	0.000	0.000

Note. Junior=junior high school students, Senior=senior high school students. * Norm groups are cited in Rest, 1987 GUIDE, Section 3. Probability estimates are two-tailed. Source: Rest, Data Analysis Service.

The DIT scores in Table 4.2 are given only in terms of the P score. Since the other scores (Stage 2, 3 and so forth) are not usually reported in studies, these are not available for use in secondary analyses. Appendix F, Table F.1 reports descriptive statistics of all the DIT scores for the sample, subsamples and norm groups. In some early studies by Mark Davison, a large group (1,080 students) was tested with the Defining Issues Test. The results from his work will be used

as a standardized sample (Rest, 1979). The purpose of this comparison is to examine the sample to see if it is relatively high or low in the various stages compared to past research (Rest, 1986). The higher the stage number, the higher the level of moral judgement, thus as mean scores on higher stages get larger, the overall score is larger. (Note that the stages start at stage 2, the Defining Issues Test does not have a stage 1). Brief characterizations of the scores listed in Appendix F, Table F.1 follow:

> Stage 2 represents considerations that focus on the direct advantages to the actor and on the fairness of simple exchanges of favor for favor.
>
> Stage 3 represents considerations that focus on the good or evil intentions of the parties, on the party's concern for maintaining friendships and good relationships, and being approved of.
>
> Stage 4 represents considerations that focus on maintaining the existing social-legal system, maintaining existing roles and formal organizational structure.
>
> Stage 5A represents considerations that focus on organizing a society by appealing to consensus-producing procedures (such as abiding by the will of the people), insisting on due process (giving everyone his day in court), and safeguarding minimal basic rights.
>
> Stage 5B represents considerations that focus on organizing social arrangements and relationships in terms of intuitively appealing ideals (but which may lack a rationale for gaining general support).
>
> Stage 6 represents considerations that focus on organizing a society and human relationships in terms of ideals that appeal to a rationale for eliminating arbitrary factors and that are designed to optimize mutual human welfare (Rest, 1987, p. 2.6).

The mean score for stage two for the study sample was slightly higher ($x=4.27$) compared to other college students ($x=3.05$). The Stage 3 mean score was also higher in this sample ($x=13.72$) compared to other college students ($x=8.60$). The Stage 4 mean score was about 2 points higher for this sample, and

stage 5A about 4 points lower. The results indicate that the study sample was at a lower stage of moral development than the comparison group. Though it is not recommended that the samples are analyzed by their stage scores, it is useful to see where the groups differ (Rest, 1986b).

Critical Thinking

The Watson-Glaser Critical Thinking Appraisal (WGCTA) was the tool used to measure critical thinking in this research. The Watson-Glaser Total Raw Score (WGTRS) is the total score for critical thinking, with a maximum raw score of 80. The WGTRS is made up of five subcategories each of which has a raw score maximum of 16. These include: inference, recognition of arguments, deductions, interpretations, and evaluation of arguments. These are defined as follows:

> Inference (WGINF). Discriminating among degrees of truth or falsity of inferences drawn from given data.
>
> Recognition of Assumption (WGREC). Recognizing unstated assumptions or presuppositions in given statements or assertions.
>
> Deduction (WGDED). Determining whether certain conclusions necessarily follow from information in given statements or premises.
>
> Interpretation (WGINT). Weighing evidence and deciding if generalizations or conclusions based on the given data are warranted.
>
> Evaluation of Arguments (WGEVAL). Distinguishing between arguments that are strong and relevant and those that are weak or irrelevant to a particular question at issue (Watson & Glaser, 1980 p.2).

Descriptive statistics for the total raw score (WGTRS) and each of the subscores of the Watson-Glaser test are provided in Table 4.5. Note that the mean scores for the categories of recognition, interpretation and evaluation are all

similar while deduction is 1 point lower and inference is 3 points lower than the other scores.

Table 4.5

Descriptive Statistics for Critical Thinking of the Sample Group

Categories		Mean	SD
Inference	(WGINF)	8.3115	2.6581
Recognition	(WGREC)	11.0293	3.2867
Deduction	(WGDED)	10.2867	2.4414
Interpretation	(WGINT)	11.1806	2.4978
Evaluation	(WGEVAL)	11.3508	2.3359
Total raw score	(WGTRS)	52.1230	8.5546

Comparison to normative samples. Scores of the study sample were compared with representative norms available through the Watson-Glaser Manual (1980). Table 4.6 indicates norms for high school students based on a sample of school districts systematically selected with regard to geographic region and the size and socioeconomic status of the communities (based on median family income) served by the school districts. These data are from 24 high school districts in 17 states pooled and presented by grade. This information represents students of which approximately 11% were members of ethnic minority groups and half were males and half were females.

Compared to these norms, the study sample, with a mean total raw score of 52.12, surpasses 85% of the 9th graders, 75% of the 10th graders, 65% of the 11th and 12th graders. Table 4.7 presents norms for college students. The raw score of 52.12 is at the 20th percentile of students at a small college in the northeast, 50th percentile of students in junior and community colleges, 45th percentile of freshmen in four-year colleges and 25th percentile of upper division students in four-year colleges. These tables (4.6 and 4.7) were included in Watson-Glaser's

Manual printed in 1980, but no indication is made as to when these data were obtained.

Table 4.6

Norms for Raw Scores of the WGCTA Corresponding to Designated Percentiles for High School Students

%ile	Grade 9	Grade 10	Grade 11	Grade 12	%ile
99	65-80	70-80	71-80	71-80	99
97	61-64	65-69	68-70	69-70	97
95	57-60	61-64	64-67	65-68	95
90	54-56	58-60	60-63	61-64	90
85	51-53	55-57	58-59	58-60	85
80	49-50	53-54	56-57	56-57	80
75	48	52	54-55	55	75
70	46-47	50-51	53	53-54	70
65	45	49	51-52	51-52	65
60	43-44	47-48	50	50	60
55	42	46	48-49	48-49	55
50	41	45	47	47	50
45	40	43-44	45-46	46	45
40	39	42	44	44-45	40
35	38	41	43	43	35
30	37	40	41-42	42	30
25	36	38-39	40	40-41	25
20	35	37	39	39	20
15	34	35-36	37-38	37-38	15
10	32-33	33-34	35-36	35-36	10
5	30-31	30-32	32-34	33-34	5
3	28-29	28-29	30-31	31-32	3
1	0-27	0-27	0-29	0-30	1
n	1676	1950	1844	1636	n
Mean	42.6	45.8	48.1	48.5	Mean
SD	8.7	9.7	9.9	9.9	SD

Note. Interpreting test scores in terms of percentile bands instead of exact percentile point helps compensate for the error component in scores, due to less than perfect reliability. Percentile band associated with values between the 10th and 90th percentiles includes are each five percentile points wide, with the designated value as the midpoint of the band. At the extremes of the distribution, the percentiles represented by each values are banded as follows: Percentile Values 1, 3, 5, 95, 97 & 99 go with the Percentile Band 1, 2-3, 4-7, 93-96, 97-98 and 99 respectively.
Source: Watson-Glaser Critical Thinking Appraisal Manual, 1980 p.4.

Table 4.7

Norms for Raw Scores of the WGCTA Corresponding to Designated Percentiles for College Students

%ile	Students at a small college in the NE geared toward early entry	Students in junior & comm. colleges	Freshmen in 4-yr colleges	Upper division students in 4-yr colleges	%ile
99	75-80	71-80	71-80	75-80	99
97	71-74	69-70	69-70	73-74	97
95	69-70	66-68	67-68	71-72	95
90	67-68	64-65	65-66	69-70	90
85	66	62-63	63-64	68	85
80	65	60-61	62	66-67	80
75	64	59	60-61	65	75
70	63	57-58	59	64	70
65	62	55-56	57-58	63	65
60	60-61	54	56	62	60
55	59	53	55	61	55
50	58	52	54	59-60	50
45	--	51	52-53	58	45
40	57	49-50	51	57	40
35	55-56	47-48	50	56	35
30	54	45-46	48-49	54-55	30
25	53	43-44	47	52-53	25
20	52	42	45-46	51	20
15	49-51	40-41	43-44	49-50	15
10	47-48	38-39	40-42	47-48	10
5	45-46	35-37	36-39	44-46	5
3	43-44	33-34	34-35	40-43	3
1	0-42	0-32	0-33	0-39	1
n	175	388	824	417	n
Mean	58.6	51.9	53.8	59.2	Mean
SD	7.8	9.6	9.2	8.4	SD

NOTE. Source: Watson-Glaser Critical Thinking Appraisal Manual, 1980. p. 5.

When comparing means, the sample for this project had a mean score higher than the norm scores reported for high school students and was similar to the scores for students in junior and community colleges. It was slightly below the norm reported for freshmen in other four-year colleges.

Self-Concept

Self-concept scores are presented in Table 4.8.

Table 4.8

Descriptive Statistics for Self-Concept of the Sample Group

Category	Mean	SD
Physical	66.7007	8.0756
Moral/ethical	67.6281	7.8145
Personal	65.9524	7.4468
Family	69.5170	8.2258
Social	69.0136	7.4982
Identity	125.3991	9.9724
Self-satisfaction	104.7823	13.6860
Behavioral	108.8934	12.2054
Total positive score	338.0748	31.2594

As explained in the manual to the Tennessee Self-concept Scale (TSCS) (Roid & Fitts, 1989), the TTPSCORE is the Tennessee Self-concept Scale's Total Positive Score with a maximum raw score of 450. This score reflects the overall level of self-esteem. An individual with a high Total Score tends to like him or herself, feels that he or she is a person of value and worth, has self-confidence, and acts accordingly. An individual with a low Total Score is doubtful about his or her own worth, sees himself or herself as undesirable, often feels anxious, depressed, and unhappy, and has little self-confidence. Extremely high or low scores are highly deviant and are typically found only in disturbed groups such as paranoid schizophrenic.

The Tennessee Self-concept Sub-scales. The Total Positive Score is made up of eight subscales. These scores are derived directly from the 3 x 5 scheme of rows and columns found on the participants' score sheet used for scoring the TSCS test. From the original analysis of the item pool, statements were classified

by their three primary messages: (1) This is what I am (2) This is how satisfied I am with myself, and (3) This is what I do. From these three statements, three horizontal categories were formed. The row scores thus make up three subscores which when added, constitute the Total Score. Within each of these rows, or subscales, the statements varied widely in content. In row one, the "What I am" category, the statement refers to how the individual sees him or herself physically, morally, socially, and so on. Thus, the same pool of items was sorted again according to these new vertical categories, which represent the five column scores on the score sheet used by the participants. This explains how the entire set of 100 items is divided two ways, vertically into five columns (representing the external frame of reference, each column with a maximum raw score possible of 90); and horizontally into three rows (representing the internal frame of reference, each row with a maximum raw score possible of 150). Each item and each cell contributes to two different scores for a total possible score of 450 (Roid & Fitts, 1989).

The five columns include the physical self, moral-ethical self, personal self, family self and social self (Roid & Fitts, 1989). The Physical Self Score (TPHYS) represents the individual's view of his or her body, state of health, physical appearance, skills, and sexuality (worth 90).

The Moral-Ethical Self Score (TMORE) describes the self from a moral-ethical framework, examining moral worth, relationship to God, feelings of being a "good" or "bad" person, and satisfaction with one's religion or lack of it (worth 90).

The Personal Self Score (TPER) represents the person's sense of personal

worth, feeling of adequacy as a person, and self-evaluation of the personality apart from their body or relationship to others (worth 90).

Family Self Score (TFAM) reflects the individual's feelings of adequacy, worth, and value as a family member. It refers to the individual's perception of self in relation to his or her immediate circle of associates (worth 90).

The Social Self Score (TSOC) is another "self as perceived in relation to others" category but it defines "others" in a more general way by reflecting the person's sense of adequacy and worth in social interaction with other people in general (worth 90). The three rows include the Identity, Self-Satisfaction and Behavior scores (Roid & Fitts, 1989). The Identity Score (TIDEN) allows the individual to describe "what I am" as self-perceived (worth 150).

The Self-Satisfaction Score (TSELFSAT) is derived from items in which the individual describes how satisfied he or she feels with their perceived self-image. Basically this score reflects the level of self-acceptance (worth 150).

The Behavior Score (TBEHAV) is derived from those items that express "what I do" or "the way I act". This measures the individual's perception of his or her own behavior or the way he or she functions (worth 150).

Comparison to Normative Samples. Self-concept scores of the study sample were compared to the means and standard deviations of normative samples. The normative group is the original standardization group which included 626 participants from various parts of the United States, with ages ranging from 12-68. This group was composed of an approximate balance of males and females and represented several ethnic groups, all social, economic and

intellectual levels, and educational levels from sixth grade through the doctoral level. However, the norm group does not reflect the ethnic composition of the population as a whole, and college students, white respondents and persons in the 12- to 30-year age bracket are over represented (Roid & Fitts, 1989). Roid & Fitts (1989) also acknowledge research with college students and other adults which showed the robustness and general representativeness of the TSCS normative sample for United States adults in the age range of 19 to 64.

As compared with the original TSCS normative sample, the most adequately documented differences in scores were obtained by adolescents. Composite means were calculated for junior and senior high samples. A normative adolescent sample was then calculated. The normative sample means are generally within two-tenths of a standard deviation from the composites produced from geographically and demographically diverse samples (Roid & Fitts, 1989). Table 4.9 contains the original normative sample, the normative adolescent sample, and the sample for this project.

Table 4.9

Descriptive Statistics for the TSCS for 2 Normative Groups and the Research Sample

	Original Norm Group		Adolescents		Research Sample	
Score	Means	St. Dev	Means	St. Dev	Means	St. Dev
Physical	71.78	7.67	68.8	7.3	66.7	8.1
Moral/ethical	70.33	8.70	65.7	9.9	67.6	7.8
Personal	64.55	7.41	66.8	8.5	65.9	7.4
Family	70.83	8.43	67.7	9.2	69.5	8.2
Social	68.14	7.86	67.6	8.3	69.0	7.4
Identity	127.10	9.96	125.2	10.3	125.4	9.9
Self-sat.	103.67	13.79	104.5	14.1	104.8	13.7
Behavioral	115.01	11.22	107.0	12.9	108.9	12.3
Total Positive Score	345.57	30.70	336.6	32.5	338.1	31.3

Note. Source: Roid & Fitts, 1989. Tennessee Self-Concept Scale Manual, pp. 57 & 67.

When comparing the 3 sample sets it is noted that means of the sample in the study are a little lower than the means of the original normative sample but, overall, are slightly higher than the normative adolescent group.

Research Question Two

Research Question 2 asked: Is there a significant relationship between levels of moral development, critical thinking skills and self-concept?

A statistically significant relationship was found between levels of moral development and critical thinking, although it was relatively low. The relationship of the total self-concept score with either of the other variables was not statistically significant (Table 4.10).

Table 4.10

Correlations of Overall Total Scores for Moral Development, Critical Thinking and Self-Concept

Variables	Corr. Coefficient	Significance
Moral Development/Critical Thinking	.2289	.000**
Self-Concept/Moral Development	-.0299	.274
Critical Thinking/Self-Concept	.0307	.261

NOTE. All three scales are using total score. **=p<.001

Table 4.11 lists all the statistically significant correlations including the relationships between subscores for the three variables. Appendix F, Tables F.2 and F.3 lists the results for all data and Appendix G, Tables G.2 and G.3 lists the results with just the consistent DIT data.

Table 4.11

Significant Correlations between levels of Moral Development, Critical Thinking and Self-Concept

Variables	Corr. Coefficient	Significance
Moral Development		
DITP		
Critical Thinking		
Inference	.1913	.001**
Recognition	.0963	.026**
Deduction	.1772	.000**
Interpretation	.1594	.001**
Evaluation	.1281	.005**
Total Raw Score	.2289	.000**
Self-Concept		
Physical	-.1104	.013**
Moral-ethical	.1021	.020**
Critical Thinking		
Inference		
Self-Concept		
Behavioral	.1108	.010**
Deduction		
Physical	-.0946	.024**
Moral-ethical	.1244	.004**
Interpretation		
Personal	.0959	.022**
Evaluation		
Moral-ethical	.1404	.002**
Behavioral	.0899	.030**
Total Raw Score		
Moral-ethical	.1305	.003**
Personal	.0805	.046**

Note. Results include all data. N ranged from 408 to 441. **<.001. Correlations of all data are included Appendix F, Table F.3; and Appendix G, Table G.3.

Moral Development and Critical Thinking

When the relationship between moral development and critical thinking was examined, it was found that each subcategory as well as the total score for critical thinking was positively correlated with the moral development score. The correlations of all the subcategories and the total score of critical thinking with moral development were statistically significant, all correlations were low.

Moral Development and Self-Concept

Moral development statistically significantly correlated with two subcategories of self-concept, physical self and moral-ethical self. But moral development and self-concept did not correlate statistically significantly with other subcategories or the total score.

Critical Thinking and Self-Concept

Four of the five subcategories of critical thinking were statistically significantly correlated with some of the subcategories of self-concept, but not with the total score for self-concept. Statistically significant results were obtained for the following subcategories: Inference with behavior; deductions with physical self and moral-ethical self; interpretations with personal self; evaluation of arguments with moral-ethical self and behavior; and the total raw score for critical thinking with moral-ethical self and personal self. However the correlations were low.

Research Question Three

Research Question 3 asked: Are there significant relationships and/or differences between the levels of moral development, critical thinking, and self-concept, and each of the following demographic and contextual variables: a) age, b) sex, c) type of undergraduate school attending, d) current self-reported grade point average, e) family structure, f) community type, g) level of education of mother, h) level of education of father, i) socio-economic status, j) race/ethnic background, k) marital status?

Results of Correlation Analysis

Table 4.12 (Appendix F, Table F.4; Appendix G, Table G.4) presents the results of Pearson correlation analyses. Though none of the variables are strongly correlated, five of the demographic and contextual variables do statistically significantly correlate with either moral development, critical thinking and/or self-concept. Though low correlations are noted, the following two paragraphs summarize possible relationships based on the Pearson correlations. Eta^2 was also used to analyze data with interval and nominal/ordinal level of measurement. These results are reported in Appendix H, Table H.1. Values of eta^2 were low.

Age is slightly correlated positively with critical thinking and self-concept, it may be that as age increases levels of critical thinking and self-concept increase. Females tended to have slightly higher moral development scores than males. Students from Aquinas College tended to have slightly higher scores in moral development and critical thinking than students from Michigan State University.

Grade point average was statistically significantly correlated with all three variables, moral development, critical thinking and self-concept. The higher the students' self-reported grade point average, the more likely they had higher scores on moral development, critical thinking and self-concept (each of the correlations were low except for GPA and critical thinking). Students who lived in rural areas during elementary school years tended to do better in critical thinking. Students who lived in more highly populated communities during high school tended to have higher self-concepts.

Table 4.12

Correlations between Levels of Moral Development, Critical Thinking, and Self-Concept with Demographic and Contextual Variables

Variable	Corr. Coefficient	Significance
AGE		
Moral Development	.0049	.461
Critical Thinking	.1160	.008 **
Self-Concept	.1342	.003 **
SEX		
Moral Development	.0919	.032 *
Critical Thinking	-.0067	.445
Self-Concept	.0425	.188
SCHOOL		
Moral Development	.0959	.027 *
Critical Thinking	.0890	.032 *
Self-Concept	-.0143	.383
GPA		
Moral Development	.2133	.000 **
Critical Thinking	.4078	.000 **
Self-Concept	.1354	.002 **
FAMILY STRUCTURE		
Elementary school		
Moral Development	-.0013	.490
Critical Thinking	-.0390	.209
Self-Concept	-.0206	.334
High school		
Moral Development	.0190	.352
Critical Thinking	-.0488	.155
Self-Concept	-.0565	.119
COMMUNITY TYPE		
Elementary school		
Moral Development	-.0572	.126
Critical Thinking	-.0969	.022 *
Self-Concept	.0542	.129
High school		
Moral Development	-.0258	.303
Critical Thinking	-.0695	.074
Self-Concept	.1036	.015 *
MOTHER'S EDUCATION		
Moral Development	.0252	.306
Critical Thinking	.0232	.315
Self-Concept	-.0114	.406
FATHER'S EDUCATION		
Moral Development	-.0013	.490
Critical Thinking	.0203	.337
Self-Concept	.0055	.454
SOCIO-ECONOMIC STATUS		
Parent's income		
Moral Development	-.0519	.155
Critical Thinking	-.0511	.149
Self-Concept	-.0046	.463

Table 4.12 (cont'd).

Variable	Corr. Coefficient	Significance	
Own Income			
Moral Development	.0573	.346	n=50
Critical Thinking	.0010	.497	n=54
Self-Concept	.0957	.243	n=55
RACE/ETHNIC			
Moral Development	-.0452	.183	
Critical Thinking	-.0762	.057	
Self-Concept	-.0730	.064	
MARITAL STATUS			
Moral Development	.0410	.205	
Critical Thinking	.0355	.334	
Self-Concept	.1355	.002*	

NOTE. Results include all data. *=p<.05, **=p<.01.

Results of the T-Tests

T-Tests were calculated to see if there were differences in the variables of moral development, critical thinking and self-control by sex and racial groups (Black and White) (Table 4.13). No significant relationships were found between males and females for moral development, critical thinking and self-concept. Significant differences were found between Whites and Blacks in levels of moral development and critical thinking. Whites had higher mean scores.

Table 4.13

T-Tests of differences by sex and race on Moral Development, Critical Thinking and Self-Concept

Variable	Statistic	Moral Development	Critical Thinking	Self-Concept
SEX	t-test	-1.87	.13	-.85
	df	286.84	280.90	313.43
	prob	.06	.89	.38
	f-test	1.06	1.28	1.01
	prob	.73	.08	.95
RACE	t-test	2.78	4.04	.17
	df	46.18	46.13	41.62
	prob	.01 **	.00 **	.87
	f-test	3.12	1.81	1.05
	prob	.00 **	.04 *	.78

Note. T-test is for separate variance rather than pooled variance. *=p<.05, **=p<.01.

A t-test was also calculated for the P score differences (moral development) between the sub-groups of the sample by sex and school (Table 4.14; Appendix F, Table F.5; Appendix G, Table G.5). Aquinas females had statistically significantly higher P scores than Michigan State University males. No significant differences were found between any of the other subgroups. ANOVA was also calculated for critical thinking, moral development and self-concept by sex and school; results are in Appendix H, Table H.2. Significant differences were not found.

Table 4.14

T-tests of Differences Between Subgroups for Moral Development P Score

Group	Statistic	AQ male	AQ female	MSU male	MSU female
AQ Male	t-test		-1.327	-0.131	-0.634
	df		98.	93.	142.
	prob		0.185	0.610	0.534
AQ Female	t-test	1.327		2.106	1.554
	df	98.		155.	204.
	prob	0.185		0.035 *	0.118
MSU Male	t-test	0.131	-2.106		-0.851
	df	93.	155.		199.
	prob	0.610	0.035 *		0.401
MSU Female	t-test	0.634	-1.554	0.851	
	df	142.	204.	199.	
	prob	0.534	0.118	0.401	

Note. * = p < .05, Source: Rest, Statistical Analysis Service.

Results of ANOVA

One way analysis of variance was used to examine differences between contextual and demographic groups for moral development, critical thinking and self-concept (Table 4.15; Appendix F, Table F.6; Appendix G, Table G.6). Groups differentiated by the following variables were examined: age, community

type in elementary school, community type in high school, parents' income level and the student's race/ethnicity. Scheffe's test was used to see if there were differences between groups. Scheffe is a conservative test, only indicating significance when there is a large enough difference between the mean scores. Student Newman Kuel's and Duncan tests were also used. Results indicated many more differences between the variables, but Scheffe will be the only one discussed. the The other tests are reported in Appendix H, Table H.3.

A significant F-score was found for age with self-concept. However, no significance was found between age groups using the Scheffe test.

A significant F-score was found for community type in elementary school with moral development and critical thinking. Using the Scheffe test, a significant difference was found between community type in elementary school and critical thinking. Students who lived in large cities (over 250,000) in elementary school had lower critical thinking ability than those who lived in medium size cities (50,000-250,000) during elementary school. No other significant differences were found for this variable.

A significant F-score was found for community type in high school and critical thinking. Using the Scheffe test, no significant difference was found between groups.

A significant F-score was found for race/ethnicity and critical thinking. Using the Scheffe procedure, a significant difference was found. White students scored higher in critical thinking than Black students.

Table 4.15

One Way Analysis of Variance of Contextual and Demographic Variables with Moral Development, Critical Thinking and Self-Concept

	Between Groups			Within Groups			Total		F	F
	df	SS	MS	df	SS	MS	df	SS	Ratio	Prob.
Age										
MD	5	1310.88	262.18	393	56707.19	144.29	398	58018.07	1.81	.10
CT	5	750.83	150.17	423	30971.49	73.22	428	31722.33	2.05	.07
SC	5	11316.81	2263.36	425	414424.92	975.12	430	425741.73	2.32	.04 *
Community Elementary										
MD	6	1954.61	325.77	397	57111.37	143.85	403	59065.98	2.26	.04 *
CT	6	1468.06	244.67	427	30417.45	71.23	433	31885.51	3.43	.002**
SC	6	5266.82	877.80	429	422540.06	984.94	435	427806.89	.89	.50
Community High										
MD	6	617.02	102.84	397	58448.96	147.23	403	59065.98	.70	.65
CT	6	931.09	155.18	427	30954.42	72.49	433	31885.51	2.14	.045*
SC	6	9562.56	1593.76	429	418244.32	974.93	435	427806.89	1.63	.14
Parent's Income										
MD	13	2044.93	157.30	372	65001.55	147.85	385	57046.48	1.06	.39
CT	13	1166.55	89.73	402	29220.95	72.69	415	30387.50	1.23	.25
SC	13	17507.00	1346.69	404	387652.52	959.53	417	405159.52	1.4	.15
Race/ethnicity										
MD	4	428.18	120.55	395	58440.14	147.94	399	58922.32	.81	.51
CT	4	780.59	195.15	424	30423.29	71.75	428	31203.89	2.72	.03 *
SC	4	3631.03	907.76	426	418014.05	981.25	430	421645.08	.93	.45

Note. MD=DIT P Score of Moral Development, CT=WGTRS Total Raw Score of Critical Thinking, SC=TTPSCORE Total Positive Score of Self-concept.
*=p<.05, **=p<.01.

Research Question 4

Research Question 4 asked: When controlling for the variables presented, what happens to the original relationships between the levels of moral development, critical thinking, and self-concept? To examine these relationships, partial correlations were performed while adjusting for the effects of the contextual and demographic variables. The results (Table 4.16) indicate that for each variable controlled, with the exception of student's own income, moral development and critical thinking, are still positively correlated at a statistically significant level of less than .01. The original correlations between moral development, critical

thinking and self-concept were as follows: moral development and critical thinking .23; moral development and self-concept -.03; and critical thinking and self-concept .03. None of the correlations changed in size more than .1. The data with just the consistent moral development P scores are presented in Appendix G, Table G.7.

Table 4.16

Partial Correlations of Moral Development, Critical Thinking and Self-Concept, Controlling for Contextual and Demographic Variables

Controlling for	Corr. Coefficient	Significance
Age		
Moral Development		
Critical Thinking	.2299	.00 **
Self-Concept	-.0309	.54
Critical Thinking		
Self-Concept	.0154	.75
Sex		
Moral Development		
Critical Thinking	.2305	.00 **
Self-Concept	-.0340	.50
Critical Thinking		
Self-Concept	.0310	.52
School		
Moral Development		
Critical Thinking	.2223	.00 **
Self-Concept	-.0287	.57
Critical Thinking		
Self-Concept	.0321	.51
GPA		
Moral Development		
Critical Thinking	.1591	.001 **
Self-Concept	-.0299	.55
Critical Thinking		
Self-Concept	.0299	.53
Family type Elementary school		
Moral Development		
Critical Thinking	.2290	.00 **
Self-Concept	-.0299	.55
Critical Thinking		
Self-Concept	.0295	.53
Family type High School		
Moral Development		
Critical Thinking	.2248	.00 **
Self-Concept	-.0269	.60
Critical Thinking		
Self-Concept	.0362	.45

Table 4.16 (cont'd).

Controlling for:	Corr. Coefficient	Significance
Community type		
Elementary school		
Moral Development		
Critical Thinking	.2248	.00 **
Self-Concept	-.0269	.59
Critical Thinking		
Self-Concept	.0362	.45
High school		
Moral Development		
Critical Thinking	.2277	.00 **
Self-Concept	-.0274	.58
Critical-Thinking		
Self-Concept	.0382	.43
Mother's education		
Moral Development		
Critical Thinking	.2284	.00 **
Self-Concept	-.0296	.55
Critical Thinking		
Self-Concept	.0310	.52
Religion		
Moral Development		
Critical Thinking	.2290	.00 **
Self-Concept	-.0312	.53
Critical Thinking		
Self-Concept	.0307	.53
Religious Influence		
Moral Development		
Critical Thinking	.2293	.00 **
Self-Concept	-.0316	.53
Critical Thinking		
Self-Concept	.0302	.51
Religious: Conservative or Liberal		
Moral Development		
Critical Thinking	.2288	.00 **
Self-Concept	-.0297	.55
Critical Thinking		
Self-Concept	.0324	.50
Marital Status		
Moral Development		
Critical Thinking	.2278	.00 **
Self-Concept	-.0358	.47
Critical Thinking		
Self-Concept	.0262	.59
Parent's Income		
Moral Development		
Critical Thinking	.2268	.00 **
Self-Concept	-.0302	.56
Critical Thinking		
Self-Concept	.0305	.54
Own Income		
Moral Development		
Critical Thinking	.2292	.11
Self-Concept	-.0356	.81
Critical Thinking		
Self-Concept	.0308	.83

Table 4.16 (cont'd).

Controlling for:	Corr. Coefficient	Significance
Reside		
Moral Development		
Critical Thinking	.2324	.00 **
Self-Concept	-.0285	.57
Critical Thinking		
Self-Concept	.0140	.77
Racial		
Moral Development		
Critical Thinking	.2263	.00 **
Self-Concept	-.0333	.51
Critical Thinking		
Self-Concept	.0253	.60

Note. Table should be read, controlling for age, moral development with critical thinking gives a correlation coefficient of .2299 with a significance level of .00. **=p<.001.

Research Question 5

Research Question 5 asked: Are there significant relationships and/or differences between levels of each of the following: moral development, critical thinking, self-concept and the participant's religion, perception of the influence his or her religious beliefs have on his or her life, and how liberal/conservative these beliefs are?

Results of Correlation Analysis

Results of Pearson correlation analyses are presented in Table 4.17 (Appendix F, Table F.8; Appendix G, Table G.8). All correlations were less than .16. None of the correlations between the person's religion, and the levels of moral development, critical thinking or self-concept were significant. Eta^2 results are located in Appendix H, Table H.1. Values of eta^2 were low.

How much a person perceives the amount of influence their religion has had on their lives did not correlate significantly with moral development or critical thinking, but it was statistically significantly correlated with self-concept, although the relationship was weak. It may be that the higher the degree of religious

the relationship was weak. It may be that the higher the degree of religious influence the higher the self-concept.

Whether a person sees him or herself as conservative or liberal in their religious views did not correlate significantly with moral development or self-concept, but did correlate statistically significantly with critical thinking. Possibly the more liberal the religious beliefs, the higher the level of critical thinking. However, again the correlation was small.

Table 4.17

Correlation of Moral Development, Critical Thinking and Self-Concept with Religion Variables

Variable	Corr. Coefficient	Significance
Religious Preference		
Moral Development	.0363	.233
Critical Thinking	.0023	.481
Self-Concept	.0345	.236
Religious Influence		
Moral Development	.0186	.355
Critical Thinking	-.0163	.368
Self-Concept	.0836	.041 *
Religious Beliefs		
Conservative or liberal		
Moral Development	.0331	.255
Critical Thinking	.1558	.001 **
Self-Concept	-.0362	.227

Note. Results include all data. *=p<.05, **=p<.01.

Results of the T-Test

Results of the t-test for religion showed a statistically significant difference between Protestants and Catholics in levels of moral development (Table 4.18; Appendix F, Table F.9; Appendix G, Table G.9). Catholics had a slightly higher mean score. Catholics and Protestants did not differ on critical thinking or self-concept.

Table 4.18

T-tests of Religion with Moral Development, Critical Thinking, and Self-Concept

Variable	Statistic	Moral Development	Critical Thinking	Self-Concept
RELIGION	t-test	-.57	.57	-.29
Prot.	df	349.43	368.16	340.97
Cath.	prob	.57	.57	.78
	f-test	1.49	1.24	1.22
	prob	.01 **	.16	.18

Note. Separate variance is used for t-test. **=p<.01.

Results of ANOVA

No significant differences were found using the one-way analysis of variance for religious influence with moral development, critical thinking or self-concept (Table 4.19; Appendix F, Table F.10; Appendix G, Table G.10). There were also no differences for conservative, moderate, or liberal beliefs and moral development or self-concept. However, a significant difference was found for religious beliefs and critical thinking. Using the Scheffe test, a significant difference was found between those who consider their religious beliefs moderate and those who consider their beliefs liberal. Liberals had a higher level of critical thinking than moderates.

Table 4.19

One Way Analysis of Variance of Religion Variables

	Between Groups			Within Groups			Total		F	F
	df	SS	MS	df	SS	MS	df	SS	Ratio	Prob
Influence										
MD	2	108.88	54.44	400	59068.89	147.67	402	59177.77	.37	.69
CT	2	8.56	4.28	428	31719.41	74.11	430	31727.97	.06	.94
SC	2	3576.70	1788.35	431	421076.56	976.98	433	424653.27	1.83	.16
Con/Liberal										
MD	2	92.26	46.13	398	58147.06	146.10	400	58239.33	.32	.73
CT	2	769.48	384.74	426	30814.37	72.33	428	31583.85	5.32	.005*
SC	2	1016.85	508.42	429	422176.97	984.10	431	423193.81	.52	.59

Note. Where MD=DIT P Score of moral development; CT=WGTRS, total raw score of critical thinking; SC=TTPSCORE, Total positive Score of self-concept.

Summary of Analysis and Results

This chapter has presented the findings for each of the research questions. Findings indicate differences were found between students from different environmental contexts. The following is a list of the statistically significant findings.

1. Moral development mean scores for the sample were lower than the norm represented in the past by college students and were more similar to the scores of junior and senior high school students.
2. Critical thinking mean scores for the sample were higher than the norm scores reported for high school students and were similar to the scores for students in junior and community colleges but below the norm reported for freshman in four year colleges.
3. Self-concept mean scores were similar to mean scores of normative groups (ages 12-68) and higher than adolescent groups.
4. Significant relationships were found between levels of moral development and critical thinking. Moral development significantly correlated with two subcategories of self-concept, physical self and moral-ethical self. Four of the five subcategories of critical thinking were significantly correlated with some subcategories of self-concept: inference with behavior, deduction with physical self and moral-ethical self, interpretations with personal self, evaluation of arguments with moral-ethical self and behavior, and the total score for critical thinking with moral-ethical self and personal self.
5. As age increased levels of critical thinking and self-concept increased.
6. Females tended to have higher moral development scores than males.

7. AQ females had higher moral development scores than MSU males.
8. The higher the students self-reported GPA, the more likely they had higher scores on moral development, critical thinking and self-concept.
9. Students who lived in more rural areas during elementary school tended to do better in critical thinking than students who lived in more populated communities. Students who lived in large cities (over 250,000) in elementary school had lower critical thinking scores than those who grew up in medium size cities (50,000-250,000). Students who lived in more populated communities during high school tended to have higher self-concepts than students who lived in less populated communities.
10. White students had tended to have higher moral development and critical thinking mean scores than Black students.
11. Catholics tended to have higher moral development mean scores than protestants.
12. The higher the degree of religious influence, the higher the self-concept.
13. The more liberal the religious beliefs, the higher the level of critical thinking.

The last chapter will summarize and discuss the findings and results, and present conclusions and implications of the study with recommendations for future research and education.

CHAPTER V

SUMMARY, DISCUSSION, CONCLUSIONS and IMPLICATIONS

Background, Purpose and Methodology of the Study

Standards of ethics, values and morality have been widely questioned in government, business, academia and in families. The central focus of this study was on moral development. The major purpose was to determine if there were relationships between a person's level of moral development, critical thinking skills and self-concept.

To measure each of the variables, three instruments were used: for moral development, the Defining Issues Test (DIT); for critical thinking, the Watson-Glaser Critical Thinking Appraisal (WGCTA); and for self-concept, the Tennessee Self-Concept Scale (TSCS).

The sample was composed of 290 students from Michigan State University (MSU), in East Lansing, Michigan and 147 students from Aquinas College (AQ), in Grand Rapids, Michigan. The data were analyzed utilizing descriptive statistics, correlations, T-tests, and analysis of variance (ANOVA) tests.

Summary and Discussion of the Study Findings

Question one

What are the levels of moral development, critical thinking and self-concept in a sample of contemporary American college students?

Moral development. One of the most important scores from the Defining Issues Test is the P score. This score is interpreted as the relative importance that subjects give to Principled Moral Considerations (Stages 5 and 6 items).
In the past, the P scores of junior high school students averaged in the 20s; senior high school students in the 30s; college students in the 40s; graduate students in the 50s. Results of t-tests indicate that the P scores for college students in this study from MSU and AQ are significantly higher than the P scores of junior high students, but lower than the P scores of college students. These results indicated that the study sample was at a lower stage of moral development than comparison groups. AQ females had higher means than AQ males, MSU males and females. These findings reflect resent research findings and observations.

Bronfenbrenner (1990) in his recent address at MSU, raised the question of the moral character of young people today. He noted instability especially among males. Thornton (1989) examines three decades of changing norms and values concerning family life in the United States, from the late 1950s through the middle 1980s. His research documents the weakening of many norms. His findings link trends in family attitudes and behavior to a number of social trends. A shift from a decreased emphasis upon conforming to a set of behavioral standards to an increased emphasis on individual freedom was found consistent with value shifts in other areas of life, including socialization values, religion, abortion, civil liberties and political allegiance.

Other researchers such as Etzioni suggests that one of the reasons there is a decline in values in the United States is because of excessive individualism (U.S.

Needs a 'Moral & Social Recovery, 1984), and Blankenhorn, executive director of the Institute for American Values stresses that one of the most critical factors in this decline in values is because of the 'me-generation' thinking of the sixties and seventies (LaFarge, 1988).

Bellah and his associates (Bellah, Madsen, Sullivan, Swidler & Tipton, 1985) noted a diminished sense of shared moral beliefs and a privatization of religion. This was a result of the removal of faith and morals from the realm of the community to the domain of the individual. After restudying the famous "Middletown" data, Alwin (1990; Remley, 1988) reported that in the 1920s the three top traits that mothers emphasized in rearing their children were loyalty to the church, strict obedience and good manners (which showed a strong preference for traits linked to conformity). Fifty four years later mothers chose traits linked to autonomy such as independence and tolerance while the former traits were selected by fewer than a fourth of the respondents. Some fear that the move toward teaching autonomy may go too far. Carried to excess, individualism can lead to isolation and alienation.

Critical thinking. Compared to norms for critical thinking, the study sample had a mean score higher than high school students, was similar to junior and community college students and lower than students at four year colleges. The mean scores were slightly below the norm reported for freshmen in other 4-year colleges. Due to the fact that the research was offered in 100 and 200 level college courses, it is assumed that the sample was made up of mainly freshmen and sophomores, which may be one reason why they responded more like junior

and community college students. Ruggirero (1988) notes that the average college freshman today has only sixth grade reasoning skills. He attributes this lack in reasoning skills as a defect in the American education system which fails to develop students' creative and critical thinking skills and fails to teach them how to apply those skills in school and in every day life.

It should also be noted that while the sample size for the high school norms is quite large (n=approximately 1700 students), for the college norms the sample size is quite small for a normative sample (Northeast college n=175; Jr. College n=388; Freshman n=824; Upper division n=417). In this research, the sample size number of 439 is more than half the number of freshmen sampled and more than each of the other 3 samples. It is difficult to say which sample is actually "normative". Woehlke (1985) in her review of the WGCTA noted that while the WGCTA is recommended as the best available instrument for measuring critical thinking ability, the test still suffers from inadequate norms.

Berger (1985) in his review of the Watson-Glaser Critical Thinking Appraisal comments that there needs to be a caution made as the critical thinking score is based on test items of which the scope and content are somewhat narrow, and does not relate very much to areas such as the humanities.

The sample mean scores for each subcategory were very similar (10 or 11) except for the category of inference where the mean score was lower (8.3). This may mean a lack of ability in this area or it may be a reliability problem as noted by Helmstadter (1985). Helmstadter indicates that a reliability problem may result from the fact that four of the five subtests are composed of items with only two

alternatives, or as he comments:

> it seems more likely that it arises from the rather large judgmental component in the 'inference' subtest. Unfortunately, in many items of this subtest the judgment component would seem to depend more on a personality response set related to how much evidence is required before one is convinced of an argument than on an ability to ascertain whether an inference is a valid one (Helmstadter, 1985, p. 1693-94).

If this opinion is correct, it may be that the students in this sample did desire more evidence before being convinced that the inference was an argument, thus lowering their score in the subcategory inference, and their overall total raw score (WGTRS).

Self-concept. Results from the self-concept analysis indicated that, overall, the study sample was very similar to other norm populations. Self-concept was not lower than comparison groups as was the case for mean scores for moral development and critical thinking. The results of this study indicate that self-concept scores have not changed over time. Loevinger and Knoll (1983) report research which indicates that self-concept, at least for college students, appears to depend on immediate past and present experiences, making self concept a social construction, not an enduring disposition.

Question Two

Are there significant relationships between levels of moral development, critical thinking skills and self-concept?

Moral development and critical thinking were significantly positively correlated, the higher the level of moral development, the higher the critical thinking. This relationship has been theoretically supported by Craig (1983), Karrby (1973) and Paul (1985, 1987, 1988, 1990). They suggest that teaching

ethics through the use of critical thinking be at the center of the curriculum.

Self-concept as a whole was not significantly correlated with either moral development or critical thinking, but many sub-categories of self-concept were correlated with both. Moral development significantly correlated with the subcategories of self-concept, physical self and moral ethical self. Landfried (1988) comments that as young people are taught moral issues the teacher will be able to see the self-esteem of the student "blossom". Loevinger and Knoll (1983) note research which indicates that moral choices are crucial indicators of the person as an active agent. Decisions made are not just a matter of radical choice without reason or motive. But rather, "it is a matter of articulating and confirming one's identity, one's sense of self, the kind of person one thinks of oneself as being" (p. 210). These comments imply that self-concept is a reflection of a person's moral development or as moral development increases so would a person's self-concept.

Some of the critical thinking subscores significantly correlated with subscores of self-concept: inference with behavior; deduction with physical self and moral-ethical self; interpretations with personal self; evaluation of arguments with moral-ethical self and behavior; and the total score for critical thinking with moral-ethical self and personal self. It is valid to examine the subscales of the self-concept test (Roid & Fitts, 1989). But the authors of the critical thinking test (WGCTA) do not encourage efforts to utilize part-scores on the test to evaluate individual attainment in the subcategories, since the part-scores are based on a small number of items and lack sufficient reliability for this purpose. They do

note that it is feasible to use the part-scores to analyze the critical thinking abilities of a group as a whole to determine the types of critical thinking training most needed (Watson & Glaser, 1980).

Questions Three and Four

Are there any significant relationships and/or differences between the levels of moral development, critical thinking, and self-concept with each of the following demographic and contextual variables a) age, b) sex, c) type of undergraduate school attending, d) current grade point average, e) family structure, f) community type, g) level of education of mother, h) level of education of father, i) socio-economic status, j) race/ethnic background k)marital status? When controlling for the variables presented, what are the relationships between the levels of moral development, critical thinking and self-concept?

Moral development was statistically significantly correlated with sex, school and GPA. T-test results were significant between races in moral development. Critical thinking was significantly correlated with age, school, GPA, community type in elementary school. T-test results were significant between races in the area of critical thinking. Self-concept was significantly correlated with age, GPA, and community type in high school.

When controlling for the variables (with the exception of student's own income), moral development and critical thinking were still positively correlated at a significance level of less than .01.

Though none of the variables are strongly correlated, five of the demographic and contextual variables do significantly correlate with either moral

development, critical thinking and/or self concept. Each of these are discussed in turn.

Age. Though low, age is correlated positively with critical thinking and self-concept. As age increases levels of critical thinking and self-concept increase. Though the older students do not have a higher education level, they do possess more life experience with more opportunities for decision making which may be why they have higher levels of critical thinking. Older students may feel more confidence in themselves, while the younger students may have less self confidence, lowering their self-concept. Past research found that self-concept increases with age, especially during the teens up to age 20, and again after age 60 (Roid & Fitts, 1989; Thompson, 1972).

Sex. Sex is statistically significantly correlated with moral development. Females tended to have higher scores than males. Gilligan (1982) claimed that Kohlberg's theory and research on moral development, which is based on the principle of justice, has an inherent male bias. This study uses the DIT which is a test based on Kohlberg's research. Past research using the DIT also found low significant correlation between sex and moral development. Any difference that was found favors females over males. No significant correlations were noted between sex and critical thinking or self-concept. This supports past research on these two variables (Roid & Fitts, 1989; Thompson, 1972; Watson & Glaser, 1980).

School. The type of school the students attended is statistically positively correlated with moral development and critical thinking. Students from AQ

tended to have higher scores than students from MSU. AQ is a small Christian-Catholic liberal arts college. It may be that this type of atmosphere attracts students with higher moral development, and higher critical thinking skills or that certain aspects of this school, (ie. small, more personal, religious) might result in the students having higher levels of moral development and critical thinking skills. There is a greater percentage of females at AQ and the AQ females had significantly higher levels of moral development than MSU males. Most of these females were older and reported that their religion was liberal and very influential in their lives.

Grade point average. Grade point average was statistically significantly correlated with all three variables, moral development, critical thinking and self-concept. The higher the student's grade point average, the more likely they had higher scores on moral development, critical thinking and self-concept. This may be an indication that students who have higher moral development and critical thinking do better in academic classes or that students who do better academically have higher levels of moral development and critical thinking. It has been found that a person's IQ and education level are positively correlated with moral development (Rest, 1986a) and that education level and grade point average are positively correlated with critical thinking (Watson & Glaser, 1980). Students who are better students as far as GPA is concerned, may feel better about themselves and have a higher self-concept, or when students have high self-concepts may they tend to do better in their courses resulting in higher GPAs.

Community type. Assumptions are often made about people, their schooling, activities, and opportunities depending on their type of community in which they grew up. The type of community in which students lived during elementary school was significantly negatively correlated with critical thinking. Students who lived in less populated areas during elementary school years tended to do better in critical thinking. ANOVA tests indicated that students who lived in large cities (over 250,000) in elementary school had lower critical thinking ability than those who came from medium size cities (50,000-250,000). These results may be related to the type of education these students had available to them which fostered more critical thinking or, it may reflect other variables in their life experience.

The type of community in which students lived during high school was statistically significantly correlated with self-concept. Students who lived in more highly populated communities tended to have higher self-concept. Both schools from which the sample was drawn are in highly populated cities. It may be that students who lived in similar populated environments while in high school feel more confident and have a higher self-concept than students whose living environment has drastically changed.

Race/ethnicity. Significant differences were found between Whites and Blacks in levels of moral development and critical thinking. T-test results showed that Whites had higher levels of moral development and critical thinking. These results may be related to the environment in which the Black students grew up or the opportunities that were available to them. A greater percentage of the Black

students were from single female headed families and lived in the city. The city schools and environment may not have given these students as many opportunities as other students. It also may be that the research design and instruments may have been inadequate in controlling for socio-economic level, intelligence and verbal ability.

Question Five

Are there significant relationships and/or differences between levels of each of the following: moral development, critical thinking, and self-concept with the participant's religion, perception of the influence his or her religious beliefs have on his or her life and how liberal/conservative these beliefs are?

There were no significant correlations between religion and levels of moral development, critical thinking or self-concept. Results of T-test analysis showed Catholics to have higher moral development scores than Protestants. These results may be because more of the Catholics were from AQ, where the population had a greater percentage of older women who scored higher in moral development.

How much people perceived the amount of influence their religion has had on their lives did not correlate significantly with moral development or critical thinking, but it was statistically significantly correlated with self-concept. The higher the degree of religious influence the higher the self-concept. Recent research (D'Antonio & Aldous, 1983; D'Antonio, Newman & Wright 1982) suggests that religion provides a belief system that produces a moral base, supports family life through norms that encourage love, family solidarity, and

marital satisfaction. Satir (1972) has argued that high self-esteem is the foundation for all positive communication and interaction in the family. Schumm, Bollman & Jurich (1982) note that people who were more highly involved in religious activities also reported that their marriages were generally more satisfying then did people not involved in religious institutions. Research data suggest that if spouses have the security of a healthy self concept, then they are more likely to have a satisfying marital relationship (Small, 1988; Stinnett & Walters, 1977). Thomas & Cornwall (1990) attempt to explain variation in adult well-being according to the multiple influences of home and religion variables. The religion and family variables account for 57% of the variance in adult well-being operationalized as satisfaction with life and lack of depression. They also note with respect to understanding adult well-being, 'personal spiritual devotion' is the single most important variable in their model. Not only does it have a strong and consistent direct effect upon adult well-being, but it also has an impact upon both marital and parental satisfaction which in turn influence adult well-being. In terms of an individual's well-being and development, the positive consequences of high self-concept have been well documented (Small, 1988). Analysis of case study data has shown close parallels between self-esteem and self-assessment ratings and correlation with quality of life and well-being (Sontag, Bubolz, Clifford, & Abler, in progress).

Whether a person sees him or herself as conservative or liberal in religious views did not correlate significantly with moral development or self-concept, but did correlate with critical thinking. The more liberal that persons perceived their

religious beliefs, the higher the level of critical thinking. One problem with these data is that the definition of liberal and conservative are not explicit so it is left up to the respondents of how to interpret these words.

Alwin (1990) and Thornton (1989) both note a substantial decline in the emphasis Americans put upon obedience, loyalty to church, and conformity, while the values of autonomy, tolerance, and thinking for one's self have gained support. Bellah and his associates (1985) comment that religion has become more voluntaristic with less emphasis placed on obedience. The result is an increased emphasis on the freedom of the individual to choose and the necessity of those who disagree with those decisions to be tolerant and not censoring. These characteristics might be viewed by some as a more "liberal" way of thinking, by others as a more "critical" way of thinking.

Conclusions

Although none of the correlations were strong, statistically significant correlations were noted in this study between moral development and critical thinking. There are also statistically significant correlations between aspects of self-concept and moral development and aspects of self-concept and aspects of critical thinking. Noting the low correlations, the following statments may be true but will need further research to verify.

Older students were higher in critical thinking skills and self-concept than younger students. Females were higher in moral development than males. Students from AQ had higher levels of moral development and critical thinking than those from MSU. Students with higher GPAs had higher levels of moral

development, critical thinking and self-concepts. Students who grew up in less populated areas during their elementary school years had higher levels of critical thinking; and those students who grew up in more populated areas during high school had higher levels of self-concept. White students had higher levels of moral development and critical thinking than Black students. Catholics had higher levels of moral development than Protestants. Students who perceived their religion as liberal had higher levels of critical thinking. And students who felt their religion had a great influence on their lives had a higher level of self-concept.

From a human ecological perspective, these findings indicate students from various environmental contexts are different in some respects in their levels of moral development, critical thinking and self-concept. These findings support Bronfenbrenner's theory of the ecology of human development (1979, 1986). Bronfenbrenner uses the word ecology to refer to the interaction of the person and his or her social and physical setting. He notes that the ecological environment may be thought of as a nested arrangement of structures, each contained within the next. The ecological environment is composed of four structural levels, the microsystem, mesosystem, exosystem and macrosystem. The microsystem involves the interaction between the developing person in an immediate setting or context. For example, the relationship between a student and teachers in the school and the relationship between an adolescent and his or her employer in a work setting. The mesosystem involves the relationship among the various settings or contexts (microsystems) in which the person regularly finds him or herself. The exosystem includes the primary social structures that influence

the person, although the person may not actively participate in these systems. These social structures represent the actions of major institutions operating on the local level and include the neighborhood and community organizations, political/governmental structures, communities, and workplaces. The macrosystem is the overarching institutional patterns of a culture such as religious, political, economic, and educational systems. The macrosystem consists of the most general values, beliefs, or ideologies that influence the ways in which institutions are organized and the way in which human development occurs. Human development is a result of the interaction of the individual with all of these systems.

Implications and Recommendations

This study has implications for educators and leaders whether they are in academia, business, professions, the political arena, or families.

In a world that is growing more and more complicated because of technical and social changes, moral development must be considered as one of the most important educational goals (Karrby, 1973). But it must not stop in the schools; high levels of moral development should be a goal starting in families and following through to the business and professional world.

Moral development correlates positively with critical thinking. Critical thinking skills can be taught in a relationship in which one person emphasizes development of a fair-minded rationale for taking action, encourages the other person to make decisions, discusses timely issues, encourages the other person to test other people's thinking, and as the person him or herself models critical

thinking (Ruggiero, 1988). Courses and seminars can be offered specifically in critical thinking, or it can be taught across disciplines (Paul, Binker, Charbonneau, 1986; Reimer, Paolitto, Hush, 1983; Rest, 1985; Stiggins, Rubel, Quellmalz, 1988). Most educators do not know how to teach critical thinking skills; rather, they need training in this area (Paul, 1988, 1990; Pierce, Lemke, Smith, 1988).

Teaching critical thinking skills alone will not always lead a person to a moral decision (Paul, 1990). Society has shifted from one of obedience and authority to one of independence and autonomy where everyone "thinks for themselves" which may have weakened the social bonds (Alwin, 1990, Bellah et al., 1985).

We need to move to seeing society as a system, where the individuals are interdependent, not independent (Bellah et al., 1985; Bubolz, 1988; Roberts, 1990). An interdependent society consists of a group of people who:

> participate together in discussion and decision making and share certain commitments and practices which both define the community and are nurtured by it. The web of moral understanding and commitments that ties people together in community is called moral or social ecology (Bubolz, 1988, p. 5)

Society needs transformation of consciousness and action from individuals to groups and organizations (Bellah et al., 1985; Bubolz, 1988).

This transformation and action can occur through higher moral development of the individual within a society. A person's moral development can be profoundly influenced (Likona, 1980b) by an environment that facilitates moral development. Moral development is enhanced when democratic decision-making strategies and inductive reasoning are used and when the environment is safe for a

person to explore possibilities and risk failure while being assured of remaining accepted (Peterson, Peterson, Hey, 1980).

To raise a person's moral development level, a person needs to have basic moral values communicated to them. These values should be both taught and modeled for others to see (Callahan & Bok, 1980; Collins, 1983; Craig, 1983; Gandz & Hayes, 1988; Karrby, 1973; Lickona, 1980b, 1985, 1988; Paul, 1988; Rest, 1985; Ruggiero, 1988; Simon, 1976). The role model could be a parent, teacher or CEO of a corporation. Some of the moral values Ruggiero (1988) and Saterlie (1988) agree people need include: respect for others, fairness, justice, compassion, caring, golden rule, self-control, sense of responsibility, honesty, respect for legitimate authority, loyalty, human worth and dignity, integrity .

If people are expected to demonstrate moral values to others, they need to have their basic needs met and they need to care about themselves (Kozier & Erb, 1979; Staub, 1980). People need to perceive that they are needed and useful in order for them to respect what they do and can do in the future. Maslow (1970) claimed that the identification of one's potential is self-actualization, the highest level in the Maslow hierarchy of needs. Maslow notes that people at this level have an acceptance of self and others as having worth, and they have a mission or purpose in life with tasks to fulfill. Maslow found that though these people are not perfect, they have higher moral standards than people not having reached this level (Lowry, 1973; Maslow, 1970, 1973). According to Maslow's theory, before people can obtain the level of self-actualization, they must first meet their other needs which include: physical, safety and security, social and

esteem (Maslow, 1970, 1973).

Self-concept is very difficult to measure, the greatest difficulty results from the fact that each person's self-concept is private, personal and not directly observable (Radford, Thompson & Fitts, 1971). The results of this research showed that various parts of self-concept correlated with moral development and aspects of critical thinking. Though not all moral persons have high self-concepts, nor do all persons with high self-concepts always act morally, there is reason to believe, based on past research and data in this study, that a person's self-concept is important. Social agencies and religious organizations can let individuals know their importance and worth as they strive to meet people's housing and food needs. Many schools have started teaching self-esteem in specific courses, letting children know that they are someone special. The Lions-Quest program, developed by the Lions Clubs of America, has been set up to teach positive values, good judgment and responsibility to children kindergarten through eight grade. Three of the units which are taught in this program include: building self-confidence through better communication, strengthening family relationships and developing critical thinking skills for decision making (*Skills for Adolescence*, 1990). Roid and Fitts (1989) report that people who see themselves as undesirable, worthless or 'bad' often act accordingly. In this regard, perhaps if people see themselves as having worth, as being 'good', they too will act accordingly.

Suggestions for Research

This study has examined a group of students in terms of their levels of moral development, critical thinking skills and self-concept. One of the most important questions to which future research should be directed concerns the relationship between knowledge about morals and moral behavior and action.

Different methodologies and research designs could be used to measure subjects' moral development, critical thinking skills and self-concept. Methodologies could included ethnographic research with case studies, interviews or observations. Research designs could include cohort studies with participants representing cross sections of various populations and variables, or longitudinal studies following the same group over time. Experimental treatments over time could be implemented to see if teaching critical thinking skills will affect a person's moral development, critical thinking or self-concept.

Various populations and variables could be used with any of the different research designs and methodologies. Some of these could include using populations of various ages or education levels, using student's major as a variable to see if majors or enrollment in courses such as philosophy, or theology, affect a person's moral development, or if courses on decision making affect critical thinking skills. Studies could be conducted to see if teaching critical thinking across the curriculum over time increases a person's moral development. Further research can be conducted on moral development, comparing the variables of sex (biological & physiological differences between males and females); gender (psychological and sociological distinctions between masculine and feminine); and

personality from both Kohlberg's theory of justice (1978) and Gilligan's theory of caring (1982). This would examine sex, gender or personality differences among the respondents, using the two theories of moral development. The data could then be correlated with data on critical thinking skills.

Concluding Note

This introductory study focused on relationships between moral development, critical thinking and self-concept. The literature suggests that moral decision making involves processes which can be learned. Doing so requires time and the appropriate methods. It is this researcher's conclusion that everyone should strive to be an "excellent student" of lifelong learning. Lifelong learning involves growing in moral development as well as intellectual and professional development. The National Commission on Excellence recommends to students and educators that "excellence in education cannot be achieved without intellectual and moral integrity, compiled with hard work and commitment." (National Commission of Excellence in Education, 1983, p. 9). Through lifelong learning we find out who we are and our purpose in life.

APPENDIX A

SUPPLEMENTARY BACKGROUND MATERIAL

KOHLBERG'S STAGES OF MORAL DEVELOPMENT

I. Pre-Conventional Morality.

At this level, the child is responsive to cultural rules and labels of good and bad, right or wrong, but interprets these labels either in terms of the physical or the hedonistic consequences of action (punishment, reward, exchange of favors) or in terms of the physical power of those who enunciate the rules and labels. The level is divided into the following two stages:

Stage 1

Punishment and obedience orientations. The physical consequences of action determine its goodness or badness, regardless of the human meaning or value of these consequences. Avoidance of punishment and unquestioning deference to power are valued in their own right, not in terms of respect for an underlying moral order supported by punishment and authority (the latter being Stage 4).

Stage 2

Instrumental-relativist orientation. Right action consists of that which instrumentally satisfies one's own needs and occasionally the needs of others. Human relations are reviewed in terms like those of the marketplace. Elements of fairness, of reciprocity, and of equal sharing are present, but they are always interpreted in a physical, pragmatic way. Reciprocity is a matter of "you scratch my back and I'll scratch yours," not of loyalty, gratitude or justice.

II. Conventional Morality

At this level, maintaining the expectations of the individual's family, group, or nation is perceived as valuable in its own right, regardless of immediate and obvious consequences. The attitude is not only one of conformity to personal expectations and social order, but of loyalty to it, of actively maintaining, supporting and justifying the order, and of identifying with the persons or group involved in it. At this level, there are the following two stages:

Stage 3

The interpersonal concordance or good boy-good girl orientation. Good behavior is that which pleases or helps others and is approved by them. There is much conformity to stereotypical images of what is majority or "natural" behavior. Behavior is frequently judged by intention - "he means well" becomes important for the first time. One earns approval by being "nice".

Stage 4

Authority or "law and order" orientation. There is orientation toward authority, fixed rules and the maintenance of the social order. Right behavior consists of doing one's duty, showing respect for authority and maintaining the given social order for its own sake.

III. Post-conventional Morality

Stage 5

Social-contract or legalistic orientation. Right action tends to be defined in terms of general individual rights and standards which have been critically examined and agreed upon by the whole society. There is a clear awareness of the relativism of personal values and opinions and a corresponding emphasis upon procedural rules for reaching consensus. Aside from what is constitutionally and democratically agreed upon, the right is a matter of personal "values" and "opinion". The result is an emphasis upon the "legal point of view", but with an emphasis upon the possibility of changing law in terms of rational considerations of social utility (rather than freezing it in terms of Stage 4 "law and order"). Outside the legal realm, free agreement and contract is the binding element of obligation. This is the "official" morality of the American government and constitution.

Stage 6

The universal-ethical principle orientation. Right is defined by the decision of conscience in accord with self-chosen ethical principles appealing to logical comprehensiveness, universality and consistency. These principles are abstract and ethical; they are not concrete moral rules like the Ten Commandments. At heart, these are universal principles of justice, of the reciprocity and equality of human rights, and of respect for the dignity of human beings as individual persons.

Adapted from Kohlberg, L. & Hersh, R. (1977). Moral development: A review of the theory. *Theory Into Practice, 2*, 1977, 53-59.

MORAL REASONING SKILLS

A. Moral Affective Strategies
   1. Exercising independent moral thought and judgment.
   2. Developing insight into moral egocentrism and sociocentrism
   3. Exercising moral reciprocity
   4. Exploring thought underlying moral reactions
   5. Suspending moral judgment

B. Cognitive Strategies: Moral Macro-Abilities
   6. Avoiding oversimplification of moral issues
   7. Developing one's moral perspective
   8. Clarifying moral issues and claims
   9. Clarifying moral ideas
   10. Developing criteria for moral evaluation
   11. Evaluating moral authorities
   12. Raising and pursuing root moral questions
   13. Evaluating moral arguments
   14. Generating and assessing solutions to moral problems
   15. Identifying and clarifying moral points of view
   16. Engaging in Socratic discussion on moral issues
   17. Practicing dialogical thinking on moral issues
   18. Practicing dialectical thinking on moral issues

C. Cognitive Strategies: Moral Micro-Skills
   19. Distinguishing facts from moral principles, values, and ideals
   20. Using critical vocabulary in discussing moral issues
   21. Distinguishing moral principles or ideas
   22. Examining moral assumptions
   23. Distinguishing morally relevant from morally irrelevant facts
   24. Making plausible moral inferences
   25. Supplying evidence for a moral conclusion
   26. Recognizing moral contradictions
   27. Exploring moral implications and consequences
   28. Refining moral generalizations.

Adapted from Paul, R.W. (1988). Ethics without indoctrination. *Educational Leadership.* 10-19.

ESSENTIAL MORAL VIRTUES

1. Moral humility: Awareness of the limits of one's moral knowledge, including sensitivity to circumstances in which one's native egocentrism is likely to function self-deceptively; sensitivity to bias and prejudice in, and limitations of, one's viewpoint. Moral humility is based on the recognition that one should not claim more than one actually knows. It does not imply spinelessness or submissiveness. It implies the lack of moral pretentiousness, boastfulness, or conceit, combined with insight into the strengths and weaknesses of the logical foundations of one's beliefs.
2. Moral Courage: The willingness to face and fairly assess moral ideas, beliefs, or viewpoints to which we have not given serious hearing, regardless of our strong negative reaction to them. This courage arises from the recognition that ideas considered dangerous or absurd are sometimes rationally justified (in whole or in part), and that moral conclusions or beliefs espoused by those around us or innoculcated in us are sometimes false or misleading.
3. Moral Empathy: Having a consciousness of the need to put oneself imaginatively in the place of others in order to genuinely understand them. We must recognize our egocentric tendency to identify truth with our immediate perceptions or long-standing beliefs. This trait correlates with the ability to reconstruct accurately the moral viewpoints and reasoning of others and to reason from moral premises, assumptions, and ideas other than our own. This trait also requires that we remember occasions when we were morally wrong, despite an intense conviction that we were right, as well as consider whether we might be similarly deceived in a case at hand.
4. Moral Integrity: Recognition of the need to be true to one's own moral thinking, to be consistent in the moral standards one applies, to hold one's self to the same rigorous standards of evidence and proof to which one holds one's antagonists, to practice what one morally advocates for others, and to honestly admit discrepancies and moral inconsistencies in one's own thought and action.
5. Moral Perseverance: Willingness and consciousness of the need to pursue moral insights and truths despite difficulties, obstacles, and frustration; firm adherence to moral principles despite irrational oppositions of others; a sense of the need to struggle with confusion and unsettled questions over an extended period of time, to achieve deeper moral understanding or insight.
6. Moral Fair-Mindedness: Willingness and consciousness of the need to entertain all moral viewpoints sympathetically and to assess them with the same intellectual standards, without reference to one's own feelings or vested interests, or the feelings or vested interested of one's friends, community, or nation; implies adherence to moral standards without reference to one's own advantage or the advantage of one's group.

Adapted from Paul, R.W. (1988). Ethics without indoctrination. *Educational Leadership.* 10-19.

HASTING CENTER'S GOALS ON TEACHING ETHICS

1. Stimulating the moral imagination.
   The first goal of ethics teaching is to help students recognize that each moral choice has repercussions for others. Without preparation for meeting moral challenges, applied ethics teachers say the human consequences of their acts often take young professionals by surprise, and they may discuss moral concerns as "unprofessional." They must be led to understand that every human action can be seen from a moral point of view and that no decision is "strictly professional."

2. Recognizing ethical issues.
   Students should learn to appraise their immediate responses, to identify their hidden assumptions and tacit premises, and to ask whether a visceral response alone is reasonable ground for making a moral judgment. They should be taught to distinguish ethical from political and economic questions in any given situation.

3. Developing analytical skills.
   Students should learn to examine and make distinctions among large concepts such as justice, dignity, privacy, virtue, right and good and ethical principles and moral rules. They should be challenged to show that these concepts can be applied consistently and coherently in similar cases and to understand the logical and practical consequences of these applications and the extent to which such consequences are worth considering. They should learn what sorts of arguments and justifications are necessary to support their moral assumptions.

4. Eliciting a sense of moral responsibility.
   Students should consider what it means to take ethics seriously. Do individuals have freedom to make moral choices? What is the connection between thinking about ethics and personal conduct?

5. Tolerating and resisting disagreement and ambiguity.
   Students should learn that even if ethical certainty is often impossible, ethical reasoning about choices can be precise. They should learn to tolerate differences of choice and to refrain from labeling opposite choices as immoral. At the same time, students should learn to seek exact point of difference, attempting to solve disagreements as much as possible by resisting false distinctions and evasions.

The five goals are summarized by J.A. Jaksa as explained in "Applied ethics: A strategy to fostering professional responsibility" (*Carnegie Quarterly*, Spring/Summer, 1980). In the Michigan Association of Speech Communication Bulletin, Fall 1989, 2-4.

APPENDIX B

HUMAN SUBJECTS APPROVAL

MICHIGAN STATE UNIVERSITY

UNIVERSITY COMMITTEE ON RESEARCH INVOLVING
HUMAN SUBJECTS (UCRIHS)
206 BERKEY HALL
(517) 353-9738

EAST LANSING • MICHIGAN • 48824-1111

May 4, 1990 **IRB# 90-171**

Becky L. Stewart
2120 Ontario NE
Grand Rapids, MI 49505

Dear Ms. Stewart:

RE: "COMPARISON OF LEVELS OF MORAL DEVELOPMENT, CRITICAL THINKING AND SELF-CONCEPT IN COLLEGE STUDENTS **IRB# 90-171"**

The above project is exempt from full UCRIHS review. I have reviewed the proposed research protocol and find that the rights and welfare of human subjects appear to be protected. You have approval to conduct the research.

You are reminded that UCRIHS approval is valid for one calendar year. If you plan to continue this project beyond one year, please make provisions for obtaining appropriate UCRIHS approval one month prior to May 4, 1991.

Any changes in procedures involving human subjects must be reviewed by UCRIHS prior to initiation of the change. UCRIHS must also be notified promptly of any problems (unexpected side effects, complaints, etc.) involving human subjects during the course of the work.

Thank you for bringing this project to our attention. If we can be of any future help, please do not hesitate to let us know.

Sincerely,

John K. Hudzik, Ph.D.
Chair, UCRIHS

JKH/sar

cc: M. Bubolz

APPENDIX C

STUDENT CONSENT FORM, COVER SHEET AND MEMORANDUM

RESEARCH CONSENT FORM

The purpose of this study is to learn about college students' values and attitudes. You will be asked to take three tests, two during our meeting, and one to complete at home and return to the specified location. Total time will be no more than one hour and a half. There will be instructions with each test. Please READ EACH SET OF INSTRUCTIONS CAREFULLY. Thank you for your participation.

With regard to my participation in this research:

1. I understand that when I sign up for this study I am indicating my sincere intent to participate in this study. I agree to sign up for this study ONLY WHEN I FULLY INTEND TO PARTICIPATE.

2. I understand that, apart from my participation in this study, my actual performance in this study will in no way affect my evaluation in a given course.

3. I understand that my participation in this study does not guarantee any beneficial results to me other than extra course credit for participation.

4. I understand that I have the right not to participate at all, or to withdraw from this study at any time, or not answer certain questions without penalty.

5. I understand that I have the right to have this study in which I participate explained to me to my satisfaction after I have participated.

6. I understand that the results of this study will be treated in strict confidence with regard to the data on any given participant. Names will not be used on any forms other than this consent form, which will be kept solely by the researcher. No one else will be able to associate responses or other data with individual participants. Within this restriction, I understand that the group results will be made available to me at my request.

7. I understand that the data I provide a researcher as a result of my participation in a given study may be used by other scientists for secondary analysis, but given them without identifiers linked to me. Again data will be treated with the strictest confidence.

8. I understand that should I have any question, problems, complaints, or if I desire further information, I have the right to contact the researcher, Becky Stewart, Aquinas College, Grand Rapids, MI 49506 (616) 459-8281.

Given these understandings, I have freely consented to participate in this research being conducted.

Signed_____

Date_____

Name (print)_____

Student Number_____Test #_____

School_____Course #_____Section #_____

COVER SHEET

1. Student's test number. (See your consent form)

2. Please Give your Current Age

3. Sex:
   ( ) Male ( ) Female

4. School attending:
   ( ) Michigan State University ( ) Aquinas College

5. Current Grade Point Average
   ( ) 4.0
   ( ) 3.5 - 3.99
   ( ) 3.0 - 3.49
   ( ) 2.5 - 2.99
   ( ) 2.0 - 2.49
   ( ) 1.5 - 1.99
   ( ) 1.0 - 1.49
   ( ) below 1.00

6. Family type most of your elementary school years:
   ( ) Birth/adoptive 2 parent family
   ( ) Step family
   ( ) Single parent female headed family
   ( ) Single parent male headed family
   ( ) Other, please specify

7. Family type most of your high school years:
   ( ) Birth/adoptive 2 parent family
   ( ) Step family
   ( ) Single parent female headed family
   ( ) Single parent male headed family
   ( ) Other, please specify

8. Community type in which you grew up during most of your elementary school years:
   ( ) Large city (over 250,000)
   ( ) Suburban area near a large city
   ( ) Medium-size city (50,000 - 250,000)
   ( ) Small city (10,000 - 50,000)
   ( ) Town (under 10,000)
   ( ) Farm or ranch
   ( ) Open country, but not on a farm or ranch

9. Community type in which you grew up during most of your high school years:
( ) Large city (over 250,000)
( ) Suburban area near a large city
( ) Medium-size city (50,000 - 250,000)
( ) Small city (10,000 - 50,000)
( ) Town (under 10,000)
( ) Farm or ranch
( ) Open country, but not on a farm or ranch

10. What is the highest level of education your mother received?
( ) less than high school
( ) High school diploma (or equivalency)
( ) Junior college degree
( ) Bachelor's degree
( ) Master's degree
( ) Doctorate
( ) Professional (such as MD, JD, DDS)
( ) Other, Please specify

11. What is the highest level of education your father received?
( ) less than high school
( ) High school diploma (or equivalency)
( ) Junior college degree
( ) Bachelor's degree
( ) Master's degree
( ) Doctorate
( ) Professional (such as MD,JD, DDS)
( ) Other, Please specify

12. What is your religion, if any?
( ) Protestant (see 12b)
( ) Catholic
( ) Jewish
( ) None
( ) Other, Please specify

12.b If Protestant:
What denomination is that, if any?
( ) Baptist or Bible Church
( ) Christian Reformed or Reformed
( ) Methodist
( ) Lutheran
( ) Presbyterian
( ) Episcopalian
( ) Other, Please specify

13. How influential has your religion been in your life? (please check one)

not at all----|----|----|----|----|----|---- very
influential 1 2 3 4 5 6 7 influential

14. Do you consider your religious beliefs conservative or liberal?

conservative----|----|----|----|----|----|---- liberal
1 2 3 4 5 6 7

15. Your current marital status is:
( ) single, never married
( ) married
( ) divorced
( ) widow/widower
( ) other, please specify

16. Which group best describes the annual income of your parental family for 1989?

1.( ) Under $9,999
2.( ) $10,000 - $14,999
3.( ) $15,000 - $19,999
4.( ) $20,000 - $24,999
5.( ) $25,000 - $29,999
6.( ) $30,000 - $34,999
7.( ) $35,000 - $39,999
8.( ) $40,000 -$44,999
9.( ) $45,000 - $49,999
10.( ) $50,000 - $59,999
11.( ) $60,000 - $74,999
12.( ) $75,000 - $99,999
13.( ) $100,000 - $149,999
14.( ) $150,000 & over

17. If you have your own household, what was your family income in 1989? (If you live with your parents, please leave blank and proceed to question 18).

1.( ) Under $9,999
2.( ) $10,000 - $14,999
3.( ) $15,000 - $19,999
4.( ) $20,000 - $24,999
5.( ) $25,000 - $29,999
6.( ) $30,000 - $34,999
7.( ) $35,000 - $39,999
8.( ) $40,000 - $44,999
9.( ) $45,000 - $49,999
10.( ) $50,000 - $59,999
11.( ) $60,000 - $74,999
12.( ) $75,000 - $99,999
13.( ) $100,000 - $149,999
14.( ) $140,000 & over

18. Where do you currently reside?
( ) Dorm
( ) Apartment
( ) Rent a home
( ) Own a home
( ) With parents
( ) other, please specify

19. To which racial/ethnic group do you belong?
( ) White or Caucasian
( ) Black or African American
( ) American Indian
( ) Asian & Islander
( ) Hispanic
( ) Other, Please specify

To: All the students who participated in my research study
From: Becky Stewart

I would like to thank each of you very much for participating in my research study. This research information will be used to complete my dissertation for my Ph.D. from the Department of Family and Child Ecology, College of Human Ecology at Michigan State University. To give you some background, I am very interested in ethics and moral development, especially with regards to the family. You have completed 3 questionnaires which are instruments measuring different variables. The first test you took, the Watson-Glaser, measured your critical thinking skills. The Tennessee Self-Concept, measured your self-concept, in other words, how you view yourself. And the questionnaire you took home, the Defining Issues Test, measured your orientation towards values. Remember, there were no right or wrong answers to these questions. You were also asked to fill out some demographic, contextual and religious information regarding your formative and current years. All of this information will be analyzed and compiled. I am then from this information going to look at the following research questions:

1. What are the levels of moral development, critical thinking and self-concept in a sample of contemporary American college students?
2. Is there a significant relationship between levels of moral development, critical thinking skills and self-concept?
3. Are there significant relationships between levels of each of the following: moral development, critical thinking, self-concept with the following demographic and contextual variables?
   a. age
   b. sex
   c. type of undergraduate school attending (large public university versus small private religious college, MSU vs. Aquinas College)
   d. current grade point average
   e. family structure
   f. community type and size
   g. level of education of mother
   h. level of education of father
   i. Socio-economic status of parents or themselves
   j. race/ethnic background
   k. marital status
4. When controlling for the variables presented above; what are the relationships between the levels of moral development, critical thinking, and self-concept?
5. Are there significant relationships between levels of each of the following: moral development, critical thinking, self-concept with the participant's religion, perception of the influence his or her religious beliefs have had on his or her life and how liberal/conservative these beliefs are?

If you have any questions please feel free to contact me at Aquinas College. Thank you again for your time and help.

APPENDIX D

CROSS-TABULATIONS OF SAMPLE VARIABLES BY SCHOOL

Table D.1

School Attending by Sex of Respondent

SCHOOL	Count / Exp Val / Row Pct / Col Pct / Tot Pct	MALE (1)	FEMALE (2)	Row Total
1 MICHIGAN STATE U		126	164	290
		102.2	187.8	66.4%
		43.4%	56.6%	
		81.8%	58.0%	
		28.8%	37.5%	
2 AQUINAS COLLEGE		28	119	147
		51.8	95.2	33.6%
		19.0%	81.0%	
		18.2%	42.0%	
		6.4%	27.2%	
Column Total		154	283	437
		35.2%	64.8%	100.0%

Number of Missing Observations: 6

Table D.2

Age by School Attending

AGEC	Count / Exp Val / Row Pct / Col Pct / Tot Pct	MICHIGAN STATE U 1	AQUINAS COLLEGE 2	Row Total
17 THRU 19	1.00	149	45	194
		128.4	65.6	44.9%
		76.8%	23.2%	
		52.1%	30.8%	
		34.5%	10.4%	
20 THRU 22	2.00	126	65	191
		126.4	64.6	44.2%
		66.0%	34.0%	
		44.1%	44.5%	
		29.2%	15.0%	
23 THRU 26	3.00	6	7	13
		8.6	4.4	3.0%
		46.2%	53.8%	
		2.1%	4.8%	
		1.4%	1.6%	
27 THRU 35	4.00	3	11	14
		9.3	4.7	3.2%
		21.4%	78.6%	
		1.0%	7.5%	
		.7%	2.5%	
36 THRU 45	5.00	2	12	14
		9.3	4.7	3.2%
		14.3%	85.7%	
		.7%	8.2%	
		.5%	2.8%	
46 THRU 70	6.00	0	6	6
		4.0	2.0	1.4%
		.0%	100.0%	
		.0%	4.1%	
		.0%	1.4%	
	Column Total	286 66.2%	146 33.8%	432 100.0%

Number of Missing Observations: 11

Table D.3

Racial/ethnic Group by School

RACIAL		MICHIGAN STATE U 1	AQUINAS COLLEGE 2	Row Total
WHITE	1	242 249.6 64.2% 84.0% 55.6%	135 127.4 35.8% 91.8% 31.0%	377 86.7%
BLACK	2	30 23.8 83.3% 10.4% 6.9%	6 12.2 16.7% 4.1% 1.4%	36 8.3%
AMER INDIAN	3	0 .7 .0% .0% .0%	1 .3 100.0% .7% .2%	1 .2%
ASIAN	4	5 4.6 71.4% 1.7% 1.1%	2 2.4 28.6% 1.4% .5%	7 1.6%
HISPANIC	5	8 7.3 72.7% 2.8% 1.8%	3 3.7 27.3% 2.0% .7%	11 2.5%
OTHER	6	3 2.0 100.0% 1.0% .7%	0 1.0 .0% .0% .0%	3 .7%
Column Total		288 66.2%	147 33.8%	435 100.0%

Table D.4

Student's Marital Status by School

MARITAL	Count / Exp Val / Row Pct / Col Pct / Tot Pct	MICHIGAN STATE U 1	AQUINAS COLLEGE 2	Row Total
1 SINGLE		281	116	397
		263.5	133.5	90.8%
		70.8%	29.2%	
		96.9%	78.9%	
		64.3%	26.5%	
2 MARRIED		6	21	27
		17.9	9.1	6.2%
		22.2%	77.8%	
		2.1%	14.3%	
		1.4%	4.8%	
3 DIVORCED		2	8	10
		6.6	3.4	2.3%
		20.0%	80.0%	
		.7%	5.4%	
		.5%	1.8%	
4 WIDOW/WIDOWER		0	1	1
		.7	.3	.2%
		.0%	100.0%	
		.0%	.7%	
		.0%	.2%	
5 OTHER		1	1	2
		1.3	.7	.5%
		50.0%	50.0%	
		.3%	.7%	
		.2%	.2%	
Column Total		290 66.4%	147 33.6%	437 100.0%

Number of Missing Observations: 6

Table D.5

Current Grade Point Average by School

GPA	Count / Exp Val / Row Pct / Col Pct / Tot Pct	MICHIGAN STATE U 1	AQUINAS COLLEGE 2	Row Total
1.0-1.49	2	1	0	1
		.7	.3	.2%
		100.0%	.0%	
		.3%	.0%	
		.2%	.0%	
1.5-1.99	3	7	1	8
		5.3	2.7	1.8%
		87.5%	12.5%	
		2.4%	.7%	
		1.6%	.2%	
2.0-2.49	4	64	9	73
		48.4	24.6	16.7%
		87.7%	12.3%	
		22.1%	6.1%	
		14.7%	2.1%	
2.5-2.99	5	101	43	144
		95.4	48.6	33.0%
		70.1%	29.9%	
		34.9%	29.3%	
		23.2%	9.9%	
3.0-3.49	6	100	56	156
		103.4	52.6	35.8%
		64.1%	35.9%	
		34.6%	38.1%	
		22.9%	12.8%	
3.5-3.99	7	16	37	53
		35.1	17.9	12.2%
		30.2%	69.8%	
		5.5%	25.2%	
		3.7%	8.5%	
4.0	8	0	1	1
		.7	.3	.2%
		.0%	100.0%	
		.0%	.7%	
		.0%	.2%	
	Column Total	289 66.3%	147 33.7%	436 100.0%

Table D.6

Student's Religion by School

RELIGION		MICHIGAN STATE U 1	AQUINAS COLLEGE 2	Row Total
PROTESTANT	1	133	35	168
		111.4	56.6	38.5%
		79.2%	20.8%	
		46.0%	23.8%	
		30.5%	8.0%	
CATHOLIC	2	107	103	210
		139.2	70.8	48.2%
		51.0%	49.0%	
		37.0%	70.1%	
		24.5%	23.6%	
JEWISH	3	12	1	13
		8.6	4.4	3.0%
		92.3%	7.7%	
		4.2%	.7%	
		2.8%	.2%	
NONE	4	29	7	36
		23.9	12.1	8.3%
		80.6%	19.4%	
		10.0%	4.8%	
		6.7%	1.6%	
OTHER	5	8	1	9
		6.0	3.0	2.1%
		88.9%	11.1%	
		2.8%	.7%	
		1.8%	.2%	
Column Total		289 66.3%	147 33.7%	436 100.0%

Number of Missing Observations: 7

Table D.7

Religious influence by School

RELINFLC		MICHIGAN STATE U 1	AQUINAS COLLEGE 2	Row Total
1.00	Count	78	10	88
NO INFLU	Exp Val	58.4	29.6	20.3%
	Row Pct	88.6%	11.4%	
	Col Pct	27.1%	6.8%	
	Tot Pct	18.0%	2.3%	
2.00	Count	140	69	209
MOD INFLU	Exp Val	138.7	70.3	48.2%
	Row Pct	67.0%	33.0%	
	Col Pct	48.6%	47.3%	
	Tot Pct	32.3%	15.9%	
3.00	Count	70	67	137
GREAT INFLU	Exp Val	90.9	46.1	31.6%
	Row Pct	51.1%	48.9%	
	Col Pct	24.3%	45.9%	
	Tot Pct	16.1%	15.4%	
Column Total		288 66.4%	146 33.6%	434 100.0%

Number of Missing Observations: 9

Table D.8

Religious Beliefs by School

CONLIBC	Count / Exp Val / Row Pct / Col Pct / Tot Pct	MICHIGAN STATE U 1	AQUINAS COLLEGE 2	Row Total
1.00 CONSERVATIVE		58	15	73
		48.3	24.7	16.9%
		79.5%	20.5%	
		20.3%	10.3%	
		13.4%	3.5%	
2.00 MODERATE		161	85	246
		162.9	83.1	56.9%
		65.4%	34.6%	
		56.3%	58.2%	
		37.3%	19.7%	
3.00 LIBERAL		67	46	113
		74.8	38.2	26.2%
		59.3%	40.7%	
		23.4%	31.5%	
		15.5%	10.6%	
Column Total		286 66.2%	146 33.8%	432 100.0%

Number of Missing Observations: 11

Table D.9

Current Residence by School

RESIDE	Count / Exp Val / Row Pct / Col Pct / Tot Pct	SCHOOL: MICHIGAN STATE U (1)	AQUINAS COLLEGE (2)	Row Total
DORM	1	230	67	297
		196.9	100.1	68.1%
		77.4%	22.6%	
		79.6%	45.6%	
		52.8%	15.4%	
APARTMENT	2	30	24	54
		35.8	18.2	12.4%
		55.6%	44.4%	
		10.4%	16.3%	
		6.9%	5.5%	
RENT A HOME	3	14	11	25
		16.6	8.4	5.7%
		56.0%	44.0%	
		4.8%	7.5%	
		3.2%	2.5%	
OWN A HOME	4	2	23	25
		16.6	8.4	5.7%
		8.0%	92.0%	
		.7%	15.6%	
		.5%	5.3%	
WITH PARENTS	5	7	20	27
		17.9	9.1	6.2%
		25.9%	74.1%	
		2.4%	13.6%	
		1.6%	4.6%	
OTHER	6	6	2	8
		5.3	2.7	1.8%
		75.0%	25.0%	
		2.1%	1.4%	
		1.4%	.5%	
	Column Total	289 66.3%	147 33.7%	436 100.0%

Table D.10

Family Type Elementary School Years by School

	Count / Exp Val / Row Pct / Col Pct / Tot Pct	MICHIGAN STATE U 1	AQUINAS COLLEGE 2	Row Total
FAMELE				
1		251	135	386
2 PARENT FAMILY		256.2	129.8	88.3%
		65.0%	35.0%	
		86.6%	91.8%	
		57.4%	30.9%	
2		4	3	7
STEP FAMILY		4.6	2.4	1.6%
		57.1%	42.9%	
		1.4%	2.0%	
		.9%	.7%	
3		31	8	39
SINGLE PARENT FE		25.9	13.1	8.9%
		79.5%	20.5%	
		10.7%	5.4%	
		7.1%	1.8%	
4		4	0	4
SINGLE PARENT MA		2.7	1.3	.9%
		100.0%	.0%	
		1.4%	.0%	
		.9%	.0%	
5		0	1	1
OTHER		.7	.3	.2%
		.0%	100.0%	
		.0%	.7%	
		.0%	.2%	
Column Total		290 66.4%	147 33.6%	437 100.0%

Number of Missing Observations: 6

Table D.11

Family Type High School Years by School

		MICHIGAN STATE U 1	AQUINAS COLLEGE 2	Row Total
FAMHIGH				
2 PARENT FAMILY	1	222	130	352
	Exp Val	233.6	118.4	80.5%
	Row Pct	63.1%	36.9%	
	Col Pct	76.6%	88.4%	
	Tot Pct	50.8%	29.7%	
STEP FAMILY	2	18	3	21
	Exp Val	13.9	7.1	4.8%
	Row Pct	85.7%	14.3%	
	Col Pct	6.2%	2.0%	
	Tot Pct	4.1%	.7%	
SINGLE PARENT FE	3	37	12	49
	Exp Val	32.5	16.5	11.2%
	Row Pct	75.5%	24.5%	
	Col Pct	12.8%	8.2%	
	Tot Pct	8.5%	2.7%	
SINGLE PARENT MA	4	9	1	10
	Exp Val	6.6	3.4	2.3%
	Row Pct	90.0%	10.0%	
	Col Pct	3.1%	.7%	
	Tot Pct	2.1%	.2%	
OTHER	5	4	1	5
	Exp Val	3.3	1.7	1.1%
	Row Pct	80.0%	20.0%	
	Col Pct	1.4%	.7%	
	Tot Pct	.9%	.2%	
	Column Total	290 66.4%	147 33.6%	437 100.0%

Number of Missing Observations: 6

Table D.12

Community Type Elementary School Years by School

COMELE		MICHIGAN STATE U 1	AQUINAS COLLEGE 2	Row Total
OPEN COUNTRY	1	9	6	15
		10.0	5.0	3.4%
		60.0%	40.0%	
		3.1%	4.1%	
		2.1%	1.4%	
FARM OR RANCH	2	10	6	16
		10.6	5.4	3.7%
		62.5%	37.5%	
		3.4%	4.1%	
		2.3%	1.4%	
TOWN UNDER 10K	3	41	33	74
		49.1	24.9	16.9%
		55.4%	44.6%	
		14.1%	22.4%	
		9.4%	7.6%	
SMALL 10K-50K	4	52	22	74
		49.1	24.9	16.9%
		70.3%	29.7%	
		17.9%	15.0%	
		11.9%	5.0%	
MEDIUM 50K-250K	5	46	32	78
		51.8	26.2	17.8%
		59.0%	41.0%	
		15.9%	21.8%	
		10.5%	7.3%	
SUBURBAN AREA	6	101	29	130
		86.3	43.7	29.7%
		77.7%	22.3%	
		34.8%	19.7%	
		23.1%	6.6%	
LARGE CITY OVER	7	31	19	50
		33.2	16.8	11.4%
		62.0%	38.0%	
		10.7%	12.9%	
		7.1%	4.3%	
Column Total		290 66.4%	147 33.6%	437 100.0%

Table D.13

Community Type High School Years by School

COMHIGH		MICHIGAN STATE U (1)	AQUINAS COLLEGE (2)	Row Total
OPEN COUNTRY	1	10	6	16
		10.6	5.4	3.7%
		62.5%	37.5%	
		3.4%	4.1%	
		2.3%	1.4%	
FARM OR RANCH	2	8	6	14
		9.3	4.7	3.2%
		57.1%	42.9%	
		2.8%	4.1%	
		1.8%	1.4%	
TOWN UNDER 10K	3	42	31	73
		48.4	24.6	16.7%
		57.5%	42.5%	
		14.5%	21.1%	
		9.6%	7.1%	
SMALL 10K-50K	4	49	25	74
		49.1	24.9	16.9%
		66.2%	33.8%	
		16.9%	17.0%	
		11.2%	5.7%	
MEDIUM 50K-250K	5	47	30	77
		51.1	25.9	17.6%
		61.0%	39.0%	
		16.2%	20.4%	
		10.8%	6.9%	
SUBURBAN AREA	6	103	32	135
		89.6	45.4	30.9%
		76.3%	23.7%	
		35.5%	21.8%	
		23.6%	7.3%	
LARGE CITY OVER	7	31	17	48
		31.9	16.1	11.0%
		64.6%	35.4%	
		10.7%	11.6%	
		7.1%	3.9%	
Column Total		290 66.4%	147 33.6%	437 100.0%

Number of Missing Observations: 6

Table D.14

1989 Annual Income of Parental Family by School

PINCOME	Count / Exp Val / Row Pct / Col Pct / Tot Pct	MICHIGAN STATE U 1	AQUINAS COLLEGE 2	Row Total
1		7	5	12
UNDER $9,999		8.1	3.9	2.9%
		58.3%	41.7%	
		2.5%	3.6%	
		1.7%	1.2%	
2		10	5	15
$10,000-14,999		10.1	4.9	3.6%
		66.7%	33.3%	
		3.5%	3.6%	
		2.4%	1.2%	
3		5	5	10
$15,000-19,999		6.7	3.3	2.4%
		50.0%	50.0%	
		1.8%	3.6%	
		1.2%	1.2%	
4		10	5	15
$20,000-24,999		10.1	4.9	3.6%
		66.7%	33.3%	
		3.5%	3.6%	
		2.4%	1.2%	
5		13	4	17
$25,000-29,999		11.4	5.6	4.1%
		76.5%	23.5%	
		4.6%	2.9%	
		3.1%	1.0%	
6		15	13	28
$30,000-34,999		18.8	9.2	6.7%
		53.6%	46.4%	
		5.3%	9.5%	
		3.6%	3.1%	
7		12	16	28
$35,000-39,999		18.8	9.2	6.7%
		42.9%	57.1%	
		4.3%	11.7%	
		2.9%	3.8%	
Column Total		282	137	419
		67.3%	32.7%	100.0%

(Continued)

Table D.14 (Con't).

PINCOME	Count / Exp Val / Row Pct / Col Pct / Tot Pct	MICHIGAN STATE U 1	AQUINAS COLLEGE 2	Row Total
8		12	12	24
$40,000-44,999		16.2	7.8	5.7%
		50.0%	50.0%	
		4.3%	8.8%	
		2.9%	2.9%	
9		14	9	23
$45,000-49,999		15.5	7.5	5.5%
		60.9%	39.1%	
		5.0%	6.6%	
		3.3%	2.1%	
10		33	19	52
$50,000-59,999		35.0	17.0	12.4%
		63.5%	36.5%	
		11.7%	13.9%	
		7.9%	4.5%	
11		47	16	63
$60,000-74,999		42.4	20.6	15.0%
		74.6%	25.4%	
		16.7%	11.7%	
		11.2%	3.8%	
12		49	14	63
$75,000-99,999		42.4	20.6	15.0%
		77.8%	22.2%	
		17.4%	10.2%	
		11.7%	3.3%	
13		29	6	35
$100,000-149,999		23.6	11.4	8.4%
		82.9%	17.1%	
		10.3%	4.4%	
		6.9%	1.4%	
14		26	8	34
$150,000 & OVER		22.9	11.1	8.1%
		76.5%	23.5%	
		9.2%	5.8%	
		6.2%	1.9%	
Column Total		282 67.3%	137 32.7%	419 100.0%

Table D.15

Student's Mother's Education by School

Count / Exp Val / Row Pct / Col Pct / Tot Pct	MICHIGAN STATE U 1	AQUINAS COLLEGE 2	Row Total
MOTHERED			
1 LESS HIGH SCHOOL	8	11	19
	12.6	6.4	4.3%
	42.1%	57.9%	
	2.8%	7.5%	
	1.8%	2.5%	
2 HIGH SCHOOL	116	61	177
	117.5	59.5	40.5%
	65.5%	34.5%	
	40.0%	41.5%	
	26.5%	14.0%	
3 JR COLLEGE DEGRE	39	19	58
	38.5	19.5	13.3%
	67.2%	32.8%	
	13.4%	12.9%	
	8.9%	4.3%	
4 BACHELORS DEGREE	75	35	110
	73.0	37.0	25.2%
	68.2%	31.8%	
	25.9%	23.8%	
	17.2%	8.0%	
5 MASTERS DEGREE	36	10	46
	30.5	15.5	10.5%
	78.3%	21.7%	
	12.4%	6.8%	
	8.2%	2.3%	
6 DOCTORATE	2	1	3
	2.0	1.0	.7%
	66.7%	33.3%	
	.7%	.7%	
	.5%	.2%	
7 PROFESSIONAL MD	3	2	5
	3.3	1.7	1.1%
	60.0%	40.0%	
	1.0%	1.4%	
	.7%	.5%	
Column Total	290 66.4%	147 33.6%	437 100.0%

Table D.15 (con't).

	Count / Exp Val / Row Pct / Col Pct / Tot Pct	MICHIGAN STATE U 1	AQUINAS COLLEGE 2	Row Total
MOTHERED				
	8	11	8	19
OTHER		12.6	6.4	4.3%
		57.9%	42.1%	
		3.8%	5.4%	
		2.5%	1.8%	
	Column Total	290 66.4%	147 33.6%	437 100.0%

Table D.16

Student's Father's Education by School

	SCHOOL		
Count / Exp Val / Row Pct / Col Pct / Tot Pct	MICHIGAN STATE U 1	AQUINAS COLLEGE 2	Row Total
1 LESS HIGH SCHOOL	16 17.3 61.5% 5.5% 3.7%	10 8.7 38.5% 6.8% 2.3%	26 5.9%
2 HIGH SCHOOL	71 80.3 58.7% 24.5% 16.2%	50 40.7 41.3% 34.0% 11.4%	121 27.7%
3 JR COLLEGE DEGRE	24 23.9 66.7% 8.3% 5.5%	12 12.1 33.3% 8.2% 2.7%	36 8.2%
4 BACHELORS DEGREE	77 81.6 62.6% 26.6% 17.6%	46 41.4 37.4% 31.3% 10.5%	123 28.1%
5 MASTERS DEGREE	61 50.4 80.3% 21.0% 14.0%	15 25.6 19.7% 10.2% 3.4%	76 17.4%
6 DOCTORATE	11 8.0 91.7% 3.8% 2.5%	1 4.0 8.3% .7% .2%	12 2.7%
7 PROFESSIONAL MD	23 21.2 71.9% 7.9% 5.3%	9 10.8 28.1% 6.1% 2.1%	32 7.3%
Column Total	290 66.4%	147 33.6%	437 100.0%

Table D.16 (con't).

	SCHOOL		
Count / Exp Val / Row Pct / Col Pct / Tot Pct	MICHIGAN STATE U 1	AQUINAS COLLEGE 2	Row Total
FATHERED			
8	7	4	11
OTHER	7.3	3.7	2.5%
	63.6%	36.4%	
	2.4%	2.7%	
	1.6%	.9%	
Column Total	290 66.4%	147 33.6%	437 100.0%

APPENDIX E

RESULTS OF CROSS-TABULATIONS & CORRELATIONS BETWEEN THE SAMPLE VARIABLES

APPENDIX E

Results of Cross-tabulations & Correlations Between the Sample Variables

The following information is the results of cross tabulations and correlations between the variables. Statistically significant results of the correlation analyses is incorporated; all of the correlation results are in Appendix E, Table 14.

Age

Sex. Around 93% of the males represented were under 23 years old; 97% were under 27 years old; and 2% were between 27 and 45 years old. Approximately 87% of the females represented were under 23 years old; 89% were under 27 years old, and 9% were between 27 and 45 years old (Table E.1).

Table E.1

Age of Respondents by Sex

AGE	Total	Male	Female
18-19	194	58	136
20-22	191	82	109
23-26	13	7	6
27-35	14	2	12
36-45	14	1	13
46-60	6	1	5
	432	151	281

Note. Numbers indicate actual frequency.

Race/ethnicity. Over 80% of the students in each of the categories of race/ethnic backgrounds, were under 23 years of age. In each of the racial categories, there were also more females than males represented (Table E.2).

Table E.2

Age of Respondents by Sex and Race

	White		Black		Hispanic		Asian		Am. Indian	
Total %	87%		8%		3%		2%		.2%	
AGE										
18-22	89%		92%		82%		86%		100 %	
23-35	6%		8%		9%		14%		0 %	
36-61	5%		0%		9%		0%		0 %	
SEX	M	F	M	F	M	F	M	F	M	F
	35%	65%	25%	75%	46%	55%	71%	29%	0%	100%

Note. Table should be read, of the White respondents, 89% were between the ages of 17-22.

Results of Correlation Analysis. Results of the correlation analyses are in Table E.14. School is significantly correlated with sex, indicating that there was a greater percentage of females from Aquinas College. There is a negative significant correlation between school and race. MSU was more likely than AQ to have Asians and Hispanics.

Marital Status

Sex. Most of the males were single none were divorced, 3% were married and 1% were widowers. Most of the females were single; 9% were married; none were widows and 4% were divorced (Table E.3).

Age. Approximately 97% of the single students were under 23 years of age. Of the married students, 19% were between 20 and 26 years old and 78% were over 27 years old. Eighty percent of the divorced respondents were 27-45

years old and all of the widow/er group were over 46 years old.

Table E.3

Marital Status of Respondents by Sex

	Total	Male	Female
Single	90.6	96.8	87.3
Married	6.4	2.6	8.5
Divorced	2.3	.0	3.5
Widowed	.2	.6	.0

Note. Numbers indicate percentages. Table should be read, of the male respondents, 96.8% were single.

Results of Correlation Analysis. A significant correlation was found between age and marital status. Younger students were more likely to be single. A significant relationship was also found between marital status and sex, males were more likely to be single. When GPA was correlated with GPA, students of marital status other than single were likely to have higher GPA's. Students of marital status other than single were more likely to be from AQ (Table E.14).

Grade Point Average

Sex. Of the males, 35% indicated their GPA was 3.0 or better, 24% indicated theirs was below a 2.5. Of the females, 55% indicated their GPA was a 3.0 or better and 15% were below a 2.5 average. Overall, the women that were surveyed had higher GPA's than the men (Table E.4).

Race/ethnicity. The highest GPAs were obtained by Whites, and Hispanics where over half of each group obtained a 3.0 or better GPA. Of the Blacks, 6% obtained a 3.0 or better (Table E.4).

Table E.4

GPA of Respondents by Sex and Race

	TOTAL		SEX		RACE		
GPA	Freq	%	Male	Female	White	Black	Hispanic
1.0-1.49	1	.2	.0	.4	.0	2.8	.0
1.5-1.99	8	1.8	3.9	.7	1.1	11.1	.0
2.0-2.49	73	16.7	20.9	14.5	13.8	38.9	18.2
2.5-2.99	144	33.0	39.2	29.7	31.8	41.7	27.3
3.0-3.49	156	35.8	29.4	39.2	39.3	5.6	54.5
3.5-3.99	53	12.2	6.5	15.2	13.8	.0	.0
4.0	1	.2	.0	.4	.3	.0	.0

Note. Numbers indicate percentages.

Age. Table E.5 indicates that students older than 26 had better GPAs than students under 26 years old.

Table E.5

Age of Respondents by Students with GPAs 3.0 or Above

AGE	PERCENTAGE
17-19	45.9%
20-22	44.7%
23-26	38.5%
27-35	71.5%
35-45	85.7%
46-70	100.0%

Results of Correlation Analysis. Pearson Correlations indicated a statistically significant difference between GPA and sex; females were more likely to have the higher GPAs. A significant correlation was also found between GPA and school; AQ students were more likely to have higher GPAs. There was a significant negative correlation between GPA and race, White students were more likely to have received higher GPAs. A significant correlation was found between age and GPA; older students received better GPAs (Table E.14).

Religion

Age. When the students' religion was broken down by age categories the following was found (Table E.6). More nontraditional age students did not claim a religious preference. The majority of Protestants were ages 27-35. About half of the traditional age students (ages 17-22) and those 46-70 years old indicated they were Catholics.

Sex. Of the Catholic's, 28% were male and 72% females. Of the Protestants, 39% were males and 61% were females. Of the Jewish respondents, 31% were males and 69% were females (Table E.6).

Table E.6

Student's Religion by Age and Sex

Religion	Student's Age Categories							Sex	
	17-19	20-22	23-26	27-35	35-45	46-70	Total	M	F
Prot	37.6	36.3	46.2	71.4	50.0	16.7	38.1	43.1	36.3
Cath	51.0	50.0	30.8	21.4	35.7	50.0	47.4	38.6	53.2
Jewish	3.6	2.6	.0	.0	.0	16.7	2.9	2.6	3.2
None	6.2	8.4	23.1	.0	14.3	16.7	8.2	14.4	4.9

Note. Numbers are percentages. Table should be read, of those students 17-19 years old, 37.6% were Protestant.

Race/ethnicity. Thirty-five percent of the Whites were Protestant; 53% Catholic; 3% Jewish; 8% none. Seventy-five percent of the Blacks were Protestant; 6% Catholic; 6% none and 14% other. Of the Hispanics, 18% were Protestant; 55% Catholic and 27% none. Most of the White Protestants were Methodist, Lutheran or Presbyterian; most of the Black Protestants were Baptist or other; and most of the Hispanic Protestants were Methodist or Episcopalian.

Religious influence

Age. About 50% of the traditional age students indicated that religion had moderate influence in their lives, with 20% and 30% reporting little and great influence respectively. Religion being very influential was especially noted by those 23-26 years of age (62%) and those 46-70 years of age (67%) (Table E.7).

Sex. Little influence was reported by 31% of the males and 15% of the females. Almost half of the males and females responded moderate influence. Thirty six percent of the females and 23% of the males indicated that their religion was very influential (Table E.7). Overall, more women than men perceived their religion to be of much influence in their lives.

Table E.7

Influence of Respondent's Religion by Age and Sex

	Age						Sex		
	17-19	20-22	23-26	27-35	36-45	46-61	M	F	Total
Little	17.6	24.3	15.4	.0	14.3	16.7	30.5	14.8	20.2
Mod.	52.8	47.1	23.1	50.0	42.9	16.7	46.4	49.3	48.3
Great	29.5	28.5	61.5	50.0	42.9	66.7	23.2	35.9	31.5

Note. Numbers indicate percentages. Table should be read, of the respondents who were 17-19 years old, 17.6% said their religion had little influence on their lives.

Race/ethnicity. Twenty-one percent of Whites indicated that religion was of little influence; 49% moderate influence and 30% great influence. Nine percent of Blacks reported little influence; 40% moderate, and over half great influence. Forty-three percent of Asians reported little influence; 43% moderate influence and 14% great influence. Twenty percent Hispanics reported little influence; 40% moderate influence and 40% great influence (Table E.8).

Table 3.8

Influence of Respondent's Religion by Race

	White	Black	Asian	Hispanic
Little	21.0	8.6	42.9	20.0
Mod.	49.2	40.0	42.9	40.0
Great	29.8	51.4	14.3	40.0

NOTE. Numbers indicate percentages. Table should be read, 21% of the White respondents indicated religion had little influence on their lives.

Religious beliefs

Sex. A greater percentage of women than men were Catholic, and, overall, females perceived their religion to have a greater influence on their lives, and many indicated their views were liberal. A greater percentage of men were Protestants. Overall, men did not perceive their religion as having as much influence in their lives and they saw their religion as being more conservative than the women did (Table E.9).

Age. When the students' religious beliefs were collapsed by age categories it was found that the traditional age students were mainly moderate and liberal. Overall, the 23-26 year old group had the largest percentage who were conservative (23%). The 46-70 year old group and the 27-35 year old group had the largest percentage who were moderate (67% and 64% respectively). The 36-45 year olds were the most liberal (57%) (Table E.9).

Table E.9

Respondents' Religious Beliefs by Sex and Age

		Sex		Age					
	Total	M	F	17-19	20-22	23-26	27-35	36-45	46-70
Con.	16.9	19.3	15.5	16.1	18.0	23.1	14.3	.0	16.7
Mod.	57.0	56.0	57.6	60.9	55.0	38.5	64.3	42.9	66.7
Lib.	26.1	24.7	26.6	22.9	27.0	38.5	21.4	57.1	16.7

Note. Numbers indicate percentages. Con.=conservative; Mod.=moderate; Lib.=liberal.

Race/ethnicity. White and Black students were very similar in the percentage who were conservative, although a greater percentage of Blacks indicated their religion was liberal. In the Asian group almost 3/4 indicated moderate, the rest were divided equally between conservative and liberal. In the Hispanic group, no one indicated conservative, 60% indicated moderate, and 40% indicated their religion was liberal (Table E.10).

Table E.10

Respondents' Religious Beliefs by Race

	Race			
	White	Black	Asian	Hispanic
Con.	17.4	17.1	14.3	.0
Mod.	56.7	51.4	71.4	60.0
Lib.	25.9	31.4	14.3	40.0

Note. Numbers indicate percentages. Con.=conservative; Mod.=moderate; Lib.=liberal.

Results of Correlation Analysis. Significant results were found when religious preference was correlated with race; Whites were more likely to be Catholic. Religious influence was significantly correlated with age, sex, GPA, and school attended. Older students, females, students with higher GPAs, and students from AQ perceived their religion to be more influential. There were

significant negative relationships found between religious influence and parent's education level; the more education the parents had, the less influential religion was to the students. When religious beliefs (conservative, moderate or liberal) were correlated with age and school there were significant results. The older students and students from AQ perceived their religious beliefs to be more liberal than the younger students and those from MSU (Table E.14).

Family type

Age. Approximately 87% of students under the age of 23 were raised in 2 parent families during elementary school; 93% of those 27-35 years of age and 100% of those 23-26 and 36-70 years old. Between elementary and high school, there was about a 10% drop in two parent families, and an increase in single parent female headed, and step-families.

Race/ethnicity. During elementary school years 90.7% of the Whites and 61.1% of the Blacks indicated they lived in two parent families. Six percent of the Whites and 39% of the Blacks lived with single parent female headed families. In high school years, 83.3% of the Whites and 50% of the Blacks lived in two parent families. During this time, 8.2% of the whites and 41.7% of the Blacks lived in a single parent female headed family.

Results of Correlation Analysis. Significant negative correlations were found noted between GPA and family type at both the elementary school and high school levels. Students from two parent families received significantly higher grades than those in other family types. There was a significant negative correlation between school and family type; AQ had a greater percentage of two

parent families (Table E.14).

Community type

Race/ethnicity. Table E.11 presents the community type during elementary and high school years by the racial/ethic group of the student. Almost half of the Black students grew up in a large city during elementary school years as compared to approximately 7% of the Whites, 29% of the Asians, and 18% of the Hispanics. Approximately one quarter of the students in each racial category lived in the suburban areas. Twenty-five percent of the Whites, 3% of the Blacks, and no Asians or Hispanics lived in towns under 10K. All of these statistics varied little between elementary and high school years.

Table E.11

Community type of Respondents by Race and Level of School

	Elementary School Years					High School Years				
	Total	W	B	A	H	Total	W	B	A	H
Lg. City	11.5	7.4	47.2	28.6	18.2	11.0	7.2	47.2	14.3	18.2
Suburbs	29.7	30.5	25.0	14.3	27.3	31.0	31.0	25.0	42.9	36.4
Med. C.	17.9	17.8	22.2	14.3	18.2	17.7	18.0	19.4	14.3	9.1
Small C	16.8	17.2	5.6	42.9	27.3	16.8	17.5	5.6	28.6	27.3
Town	16.8	18.8	0	0	9.1	16.6	18.3	2.8	0	9.1
Farm	3.7	4.2	0	0	0	3.2	3.7	0	0	0
Country	3.4	4.0	0	0	0	3.7	4.2	0	0	0

Note. Where W=White, B=Black, AI=American Indian, A=Asian, H=Hispanic. Table should be read, 7.4% of the white students during their elementary school years lived in a large city.

Income

Parent's education level. When parents' education is broken down by parental income, of those whose fathers had less than a high school education, half made under $25,000, and three quarters made under $40,000 in 1989. Of those whose fathers had a high school education, about half made under $40,000

and about three-fourths made under $60,000. Of the fathers who had a bachelor's degree, 65% made over $50,000. Of the fathers who had finished their master's degree, 68% made over $60,000 in 1989. And for those fathers with a professional degree, 68% made over $75,000. It should be noted that parental income could reflect a single income or it may represent a two income family.

For those whose mothers did not finish high school, 35% of the parental income was below $25,000 and about half was below $35,000. Of those whose mothers had completed education at the high school level 41% made under $40,000, and 62% made under $60,000. Of the mothers who had completed their bachelor degrees, 70% made over $50,000. Of those mothers with masters degrees, 66% had incomes over $50,000 and for those mothers with professional degrees, 80% made over $75,000. Again it should be noted that parental income could reflect one or two person incomes. Since the majority of the students were from two parent families, it may be the higher the mother's degree the more likely it is that she also has a career and is bringing in an income.

GPA. There does not seem to be any difference in the student's grade point averages by their parent's income level. For all levels of reported income, about 50% of the students reported a GPA of 3.0 or better.

Results of Correlation Analysis. Income is significantly negatively correlated with age; the older student's parents made less income. There were significant negative correlations of parental income with school, marital status, residence and race. Parents of students from AQ made less money; single students' parents made more money; parents of students living in the dorms made more money, and

White students' parents made more money than other races represented (Table E.14).

Living Situation

Sex. Males and females were very similar in their residence categories, except for home ownership. Approximately 1% of the males and 9% of the females owned their homes. This corresponds with the marital status of the respondents, most of the males were single and more of the females (12%) were or had been married (Table E.12).

Age. When residence was analyzed by age, most of the younger students, under 23 years old, lived in the dorms. Over half of those questioned who lived in apartments were 20-22 years old, and approximately 96% of those living with their parents were 22 years old and under. Three quarters of those renting a house were in the 20-22 year old category and of those who owned a house, 88% were over 27 years of age (Table E.12).

Table E.12

Respondent's Residence by Sex and Age

		Sex		Age					
	Total	Male	Female	18-19	20-22	23-26	27-35	36-45	46-70
Dorm	68.0	68.8	67.5	91.2	59.7	23.1	7.1	.0	.0
Apt.	12.4	13.6	11.7	2.1	18.8	38.5	28.6	14.3	33.3
Rent H	5.9	7.1	5.3	.5	9.4	15.4	.0	14.3	16.7
Own H	5.7	.6	8.5	.5	.0	15.4	64.3	71.4	50.0
Parents	6.2	5.8	6.4	4.7	8.9	7.7	.0	.0	.0

NOTE. Numbers are percentages. Table should be read, 68% of the respondents lived in dormitories.

Results of Correlation Analysis. Significant results were noted for the correlation of age and residence; the older students lived in housing other than

dorms. When residence was correlated with GPA, there was also a significant difference; students not living in the dorms generally had higher GPAs. Students living off campus were more likely to be from AQ than MSU (Table E.14).

Parent's Education Level

Race/ethnicity. Table E.13, presents the education of the student's parents by the student's racial/ethnic status. Two-thirds of mothers of White students had education beyond high school; 12% had graduate degrees. Of the mothers of Black students, about half had education beyond high school; 20% had graduate degrees. Of the Asians, just over one quarter received more than a high school diploma, and 14% had graduate degrees. Of the Hispanics, under half of the mothers had more than a high school education, and 18% had graduate degrees. A greater percentage of mothers of Whites have college educations; a smaller percentage had completed graduate work. Comparing racial/ethnic groups, a greater percentage of the Blacks', Asians', and Hispanics' mothers did not go to college. However, of those who did, a greater percentage went on to graduate school.

Comparing the students' fathers education level, of the four races represented, just over a quarter of the White students' fathers, 36% of the Hispanics, and over half of the Blacks and Asians, ended their education after high school. Fathers with graduate degrees included 29% of the Whites, 19% of the Blacks, 14% of the Asians, and 27% of the Hispanics.

Table E.13

Education Level of Respondent's Parents by Race

	Mothers					Fathers				
Ed. Level	Total	W	B	A	H	Total	W	B	A	H
Less HS	4.6	2.7	2.8	42.9	36.4	6.2	3.2	25.0	28.6	18.2
HS	40.6	39.8	50.0	28.6	27.3	27.6	27.1	30.6	28.6	18.2
Jr. College	13.2	13.8	11.1	.0	18.2	8.2	8.5	11.1	.0	.0
Bachelors	25.1	27.3	13.9	14.3	.0	28.1	29.7	11.1	28.6	36.4
Masters	10.5	10.3	16.7	.0	9.1	17.4	18.6	8.3	.0	27.3
Doctorate	.7	.5	.0	.0	9.1	2.7	2.9	2.8	.0	.0
Prof.	1.1	.8	2.8	14.3	.0	7.3	7.4	8.3	14.3	.0

Note. Numbers indicate percentages. Where W=Whites, B=Blacks, A=Asians, H=Hispanics. Prof.=Professional degree (MD, DDS, JD etc.)

Results of Correlation Analysis. Students' parents' education level was significantly negatively correlated with age; older student's parents were less likely to have higher levels of education (Table E.14).

Table E.14

Correlations of Contextual, Demographic and Religious Variables

Variable	Corr. Coefficient	Significance
AGE		
Sex	.0448	.177
GPA	.2022	.000 *
Mother's Education	-.1524	.001 *
Father's Education	-.2085	.000 *
Parent's Income	-.1721	.000 *
Own Income	.5317	.000 *
School	.3453	.000 *
Marital	.6407	.000 *
Reside	.4201	.000 *
Racial	-.0320	.254
Family Type		
Elementary School	-.0676	.080
High School	-.0632	.095
Community Type		
Elementary School	-.0409	.198
High School	-.0209	.333
Religion		
Type	.0148	.380
Protestants	.0799	.153
Influence	.0986	.021 *
Conservative/liberal	.0801	.049 *
Sex		
GPA	.1930	.000 *
Mother's Education	-.0231	.315
Father's Education	-.0078	.435
Parent's Income	.0248	.306
Own Income	.3656	.003 *
School	.2413	.000 *
Marital	.1368	.002 *
Reside	.0142	.383

Table E.14 (cont'd).

Variable	Corr. Coefficient	Significance
Sex		
Racial	-.0699	.073
Family Type		
Elementary School	-.0246	.304
High School	-.0639	.091
Community Type		
Elementary School	.0269	.287
High School	.0355	.229
Religion		
Type	-.0399	.203
Protestant	-.0214	.391
Influence	.1904	.000 *
Conservative/liberal	.0438	.182
GPA		
Mother's Education	-.0080	.434
Father's Education	.0326	.249
Parent's Income	.0234	.316
Own Income	.4902	.000 *
School	.3139	.000 *
Marital	.1506	.001 *
Reside	.2020	.000 *
Racial	-.1854	.000 *
Family Type		
Elementary School	-.1073	.013 *
High School	-.0770	.054 *
Community Type		
Elementary School	-.1146	.008 *
High School	-.0835	.041 *
Religion		
Type	-.0676	.080
Protestant	.1908	.007 *
Influence	.1179	.007 *
Conservative/liberal	-.0005	.496
Mother's Education		
Father's Education	.4725	.000 *
Parent's Income	.2405	.000 *
Own Income	-.1386	.156
School	-.0438	.181
Marital	-.1037	.015 *
Reside	-.1095	.011 *
Racial	-.1121	.010 *
Family Type		
Elementary School	-.0842	.039 *
High School	-.0268	.288
Community Type		
Elementary School	-.0191	.346
High School	-.0092	.424
Religion		
Type	.0693	.074
Protestant	-.0608	.216
Influence	-.0725	.066
Conservative/liberal	-.0050	.458
Father's Education		
Parent's Income	.3732	.000 *
Own Income	-.1274	.177
School	-.1202	.006 *
Marital	-.1150	.008
Reside	-.0865	.035 *
Racial	-.1274	.004 *
Family Type		
Elementary School	-.0403	.200
High School	.0044	.463

Table E.14 (cont'd).

Variable	Corr. Coefficient	Significance
Father's Education		
Community Type		
Elementary School	.0292	.271
High School	.0398	.203
Religion		
Type	.0461	.168
Protestant	.0069	.465
Influence	-.0856	.037 *
Conservative/liberal	-.0023	.481
Parent's Income		
Own Income	.0529	.367
School	-.1562	.001 *
Marital	-.1195	.007 *
Reside	-.1277	.004 *
Racial	-.1853	.000 *
Family Type		
Elementary School	-.1350	.007 *
High School	-.2395	.000 *
Community Type		
Elementary School	.0899	.033 *
High School	.1174	.008 *
Religion		
Type	.0504	.152
Protestant	.2031	.005 *
Influence	-.1309	.004 *
Conservative/liberal	.0348	.240
Own Income n=54		
School	.1645	.117
Marital	.3223	.008 *
Reside	.4119	.001 *
Racial	-.2295	.047 *
Family Type		
Elementary School	-.2684	.025 *
High School	-.0690	.310
Community Type		
Elementary School	.1154	.203
High School	.2023	.071
Religion		
Type	-.1428	.149
Protestant	-.0321	.434
Influence	.1118	.208
Conservative/liberal	-.1086	.215
School		
Marital	.2476	.000 *
Reside	.3469	.000 *
Racial	-.0784	.051 *
Family Type		
Elementary School	-.0803	.047 *
High School	-.1290	.003 *
Community Type		
Elementary School	-.0913	.028
High School	-.0968	.022
Religion		
Type	.0095	.421
Protestant	.1855	.008 *
Influence	.2779	.000 *
Conservative/liberal	.1317	.003 *
Marital		
Reside	.2463	.000 *
Racial	-.0597	.107
Family Type		
Elementary School	-.0967	.022 *
High School	-.0414	.194
Community Type		
Elementary School	.0713	.068
High School	.0757	.057
Religion		

Table E.14 (cont'd).

Variable	Corr. Coefficient	Significance
Type	-.0264	.291
Protestant	.1098	.078
Influence	.0897	.031 *
Conservative/liberal	.0409	.198
Reside		
Racial	.0048	.460
Family Type		
Elementary School	-.0414	.194
High School	-.0459	.170
Community Type		
Elementary School	-.0172	.350
High School	.0031	.475
Religion		
Type	.0005	.496
Protestant	.1083	.081
Influence	.1309	.003 *
Conservative/liberal	.0092	.424
Racial		
Family Type		
Elementary School	.0452	.173
High School	.0708	.070
Community Type		
Elementary School	.1668	.000 *
High School	.1736	.000 *
Religion		
Type	.1090	.012 *
Protestant	-.1309	.046 *
Influence	.0056	.454
Conservative/liberal	.0232	.316
Family Type		
Elementary School		
High School	.6683	.000 *
Community type		
Elementary School	.0712	.069
High School	.0533	.133
Religion		
Type	-.0001	.499
Protestant	-.1738	.012 *
Influence	.0534	.134
Conservative/liberal	-.0519	.125
Family Type		
High School		
Community Type		
Elementary School	.0799	.048 *
High School	.0528	.135
Religion		
Type	-.0399	.203
Protestant	-.1588	.020
Influence	-.0756	.058
Conservative/liberal	-.0564	.121
Community Type		
Elementary School		
High School	.8937	.000 *
Religion		
Type	.1158	.008 *
Protestant	-.1588	.020 *
Influence	.0534	.134
Conservative/liberal	-.0441	.180
High School		
Religion		
Type	.1291	.003 *
Protestant	-.1095	.079
Influence	.0712	.069
Conservative/liberal	-.0453	.174

Table E.14 (cont'd).

Variable	Corr. Coefficient	Significance
Religion Type		
Protestant	.0214	.391
Influence	-.2059	.000 *
Conservative/liberal	.1048	.015 *
Religion Protestant		
Influence	-.0201	.398
Conservative/liberal	-.0482	.267
Religion Influence		
Conservative/liberal	-.1896	.000 *

NOTE. * = p<.05

APPENDIX F

RESULTS TABLES WITH ALL MORAL DEVELOPMENT (DITP) SCORES

Table F.1

Descriptive Statistics for Total Sample, Subsamples, and Norm Groups

GROUP		Stage2	Stage3	Stage4	Stage5A	Stage5B	Stage6	A	M	P	D	U
AQM	MEAN	4.211	17.595	17.384	9.905	3.263	2.795	2.737	2.105	26.605	18.025	-0.004
(n=19)	SD	3.489	7.711	5.223	6.545	3.314	2.204	2.281	1.969	15.697	7.520	0.149
AQF	MEAN	4.002	12.879	18.435	12.347	3.735	2.720	3.664	2.216	31.340	19.339	0.054
(n=81)	SD	3.220	6.616	5.675	6.036	2.896	2.779	2.999	2.023	13.588	7.051	0.140
MSM	MEAN	4.626	13.867	20.137	11.129	3.049	2.042	2.737	2.417	27.036	17.235	0.062
(n=76)	SD	3.136	6.182	6.396	5.744	2.649	2.100	2.350	2.097	12.002	6.097	0.147
MSF	MEAN	4.224	13.594	19.149	11.726	3.064	2.309	3.750	2.184	28.498	16.366	0.040
(n=125)	SD	3.010	6.463	5.668	5.905	2.662	2.501	2.998	1.982	11.527	6.231	0.150
TOTAL	MEAN	4.265	13.723	19.095	11.628	3.253	2.383	3.407	2.247	28.774	17.490	0.047
(N=301)	SD	3.122	6.547	5.858	5.944	2.769	2.472	2.831	2.014	12.563	6.594	0.146

Norms from Previous Samples**

GROUP		Stage2	Stage3	Stage4	Stage5A	Stage5B	Stage6	A	M	P	D	U
Jr Hi	MEAN	6.300	15.000	20.240	8.010	2.580	1.410	3.760	2.680	20.000	10.340	0.103
(n=270)	SD	3.100	5.310	5.740	4.610	2.490	1.890	2.890	2.210	9.040	5.830	0.039
Sr Hi	MEAN	5.150	11.840	19.170	13.100	3.090	2.420	2.720	2.510	31.030	19.480	0.195
(n=270)	SD	3.440	5.630	7.280	6.460	2.780	2.450	2.640	2.050	13.900	7.230	0.031
College	MEAN	3.050	8.600	17.010	15.810	5.200	4.890	2.540	2.890	43.190	25.410	0.108
(n-270)	SD	2.810	5.140	8.070	6.310	3.400	3.340	2.610	2.240	14.320	7.800	0.029
Grad Stu	MEAN	2.240	7.960	17.970	15.090	5.260	6.560	1.860	3.040	44.850	28.260	0.094
(n=270)	SD	2.510	5.660	8.670	6.110	3.520	3.350	2.430	2.350	15.060	8.030	0.026
Phil/Sem	MEAN		2.000	7.800	11.400	0.000	0.000	0.000	0.000	0.000	65.100	
(n=40)	SD	2.700	6.400	4.700	0.000	0.000	0.000	0.000	0.000	11.700		

Note. Missing data is indicated by 0.000. The TOTAL group is your whole sample before breaking it down by subsample.
Where subgroups AQM = AQ males; AQF = AQ females; MSM = MSU males; MSF = MSU females
SOURCE: *Rest, Data Analysis Service. **Rest (1987) Guide for the Defining Issues Test. Minneapolis: University of Minnesota.

Note. to F.1 (cont'd).

Stage 2 represents considerations that focus on the direct advantages to the actor and on the fairness of simple exchanges of favor for favor.

Stage 3 represents considerations that focus on the good or evil intentions of the parties, on the party's concern for maintaining friendships and good relationships, and being of being approved.

Stage 4 represents considerations that focus on maintaining the existing social-legal system, maintaining existing roles and formal organizational structure.

Stage 5A represents considerations that focus on organizing a society by appealing to consensus-producing procedures (such as abiding by the will of the people), insisting on due process (giving everyone his day in court), and safeguarding minimal basic rights.

Stage 5B represents considerations that focus on organizing social arrangements and relationships in terms of intuitively appealing ideals (but which may lack a rationale for gaining general support)

Stage 6 represents considerations that focus on organizing a society and human relationships in terms of ideals that appeal to a rationale for eliminating arbitrary factors and that are designed to optimize mutual human welfare.

A represents considerations that reflect an 'anti-establishment' attitude. These considerations presuppose an understanding of Stage 4, but fault existing authorities and 'the establishment' for being hypocritical and corrupt. The 'A' point of view is critical of society's conventions and but nothing positive in its place as a way for organizing society beyond 'every man for himself'.

M does not represent any point of view or type of moral reasoning. 'M' stands for 'meaningless' items. These are items written to serve as an internal reliability check on whether subjects are following test directions or not. A high score on M signifies that subjects are attending more to perceived complexity and loftiness of the items than to the meaning of the items.

P is the simple sum of scores from Stages 5A, 5B, and 6, converted to a percent. These three scores are combined because they behave very similarly empirically, and theoretically they are all versions of Principled moral thinking. P represents the degree to which a person's thinking is like the thinking of moral philosophers.

D represents a composite score based on Davison's scaling analysis of DIT items. It bypasses all a priori stage designations and derives scale values for the items through a latent-trait unfolding process. The D score behaves very much like the P score.

U represents a new index, the 'Utilizer' score. Theoretically this score represents the degree to which a subject uses concepts of justice in making moral judgments. This asserts that some people use considerations and criterial for moral judgment other than concepts of justice. The U score is derived from two pieces of DIT data: the action choices that people make, and the items that they rank as most important. If the items that a person picks then to go along with the person's action choice, then the person has a high U score because it is inferred that the person's concepts of justice is driving the advocacy of a particular course of action. If there is little fit, then the person had a low U score and it is inferred that the person makes moral decisions on some different basis than concepts of justice. The practical import of the U score is it can be used to increase the predictability of the DIT to behavior (Rest, 1987).

Table F.2

Correlations of Total Scores for Moral Development, Critical Thinking and Self-Concept

Moral Development		
Critical Thinking	.2289	.000*
Self-Concept		
Moral Development	-.0299	.274
Critical Thinking	.0307	.261

Table F.3

Correlations between levels of Moral Development, Critical Thinking and Self-Concept

Variables	Corr. Coefficient	Significance
Moral Development DITP (P Score)		
Critical Thinking		
Inference	.1913	.001*
Recognition	.0963	.026*
Deduction	.1772	.000*
Interpretation	.1594	.001*
Evaluation	.1281	.005*
Total Raw Score	.2289	.000*
Self-Concept		
Physical	-.1104	.013*
Moral-ethical	.1021	.020*
Personal	-.0281	.286
Family	-.0328	.255
Social	-.0377	.225
Identity	-.0371	.228
Self-satisfaction	-.0424	.197
Behavioral	-.0117	.407
Total Score	-.0299	.274
Critical Thinking Inference		
Self-Concept		
Physical	-.0533	.132
Moral-ethical	.0910	.028
Personal	.0442	.177
Family	.0519	.138
Social	-.0309	.259
Identity	.0261	.292
Self-satisfaction	-.0177	.356
Behavioral	.1108	.010*
Total Score	.0317	.253
Recognition		
Self-Concept		
Physical	-.0184	.350
Moral-ethical	-.0286	.275
Personal	.0321	.251
Family	-.0821	.042
Social	-.0388	.208
Identity	-.0575	.114
Self-satisfaction	-.0177	.355
Behavioral	.0475	.160
Total Score	.0011	.491

Table F.3 (cont'd).

Variable	Corr. Coefficient	Significance
Critical Thinking		
Deduction		
Self-Concept		
Physical	-.0946	.024*
Moral-ethical	.1244	.004*
Personal	.0600	.104
Family	-.0740	.060
Social	-.0235	.311
Identity	-.0405	.198
Self-satisfaction	-.0133	.390
Behavioral	.0521	.137
Total Score	.0085	.429
Interpretation		
Self-Concept		
Physical	-.0592	.107
Moral-ethical	.0616	.098
Personal	.0959	.022*
Family	-.0190	.345
Social	.0336	.241
Identity	.0059	.451
Self-satisfaction	.0033	.472
Behavioral	.0712	.068
Total Score	.0280	.279
Evaluation		
Self-Concept		
Physical	-.0340	.239
Moral-ethical	.1404	.002*
Personal	.0425	.188
Family	.0373	.218
Social	.0236	.311
Identity	.0403	.200
Self-satisfaction	.0162	.368
Behavioral	.0899	.030*
Total Score	.0479	.159
Critical Thinking Total Score		
Self-Concept		
Physical	-.0785	.051
Moral-ethical	.1305	.003*
Personal	.0805	.046*
Family	-.0349	.233
Social	-.0208	.332
Identity	-.0159	.370
Self-satisfaction	-.0110	.409
Behavioral	.1076	.012
Total Score	.0307	.261

Note. N is between 437 and 440. Results include all data.

Table F.4

Correlations of Demographic and Contextual Variables for Moral Development, Critical Thinking and Self-Concept

Variable	Corr. Coefficient	Significance
AGE		
Moral Development	.0049	.461
Critical Thinking	.1160	.008 *
Self-Concept	.1342	.003 *
SEX		
Moral Development	.0919	.032 *
Critical Thinking	-.0067	.445
Self-Concept	.0425	.188
SCHOOL		
Moral Development	.0959	.027 *
Critical Thinking	.0890	.032 *
Self-Concept	-.0143	.383
GPA		
Moral Development	.2133	.000 *
Critical Thinking	.4078	.000 *
Self-Concept	.1354	.002 *
FAMILY STRUCTURE		
Elementary school		
Moral Development	-.0013	.490
Critical Thinking	-.0390	.209
Self-Concept	-.0206	.334
High school		
Moral Development	.0190	.352
Critical Thinking	-.0488	.155
Self-Concept	-.0565	.119
COMMUNITY TYPE		
Elementary school		
Moral Development	-.0572	.126
Critical Thinking	-.0969	.022 *
Self-Concept	.0542	.129
High school		
Moral Development	-.0258	.303
Critical Thinking	-.0695	.074
Self-Concept	.1036	.015 *
MOTHER'S EDUCATION		
Moral Development	.0252	.306
Critical Thinking	.0232	.315
Self-Concept	-.0114	.406
FATHER'S EDUCATION		
Moral Development	-.0013	.490
Critical Thinking	.0203	.337
Self-Concept	.0055	.454

Table F.4 (cont'd).

Variable	Corr. Coefficient	Significance
SOCIO-ECONOMIC STATUS		
Parent's Income		
Moral Development	-.0519	.155
Critical Thinking	-.0511	.149
Self-Concept	-.0046	.463
Own Income		
Moral Development		
n=50	.0573	.346
Critical Thinking		
n=50	.0010	.497
Self-Concept		
n=50	.0957	.243
RACE/ETHNIC		
Moral Development	-.0452	.183
Critical Thinking	-.0762	.057
Self-Concept	-.0730	.064
MARITAL		
Moral Development	.0410	.205
Critical Thinking	.0355	.231
Self-Concept	.1355	.002*
RESIDE		
Moral Development	-.0127	.399
Critical Thinking	.1278	.004*
Self-Concept	.1327	.003*

Note. N=401-440. Results with all data.

Table F.5

T-Tests of Sex and Race by Moral Development, Critical Thinking and Self-Concept

Variable	Statistic	Moral Development	Critical Thinking	Self-Concept
SEX	t-test	-1.87	.13	-.85
Male	df	286.84	280.90	313.43
Female	prob	.06	.89	.38
	f-test	1.06	1.28	1.01
	prob	.73	.08	.95
RACE	t-test	2.78	4.04	.17
White	df	46.18	46.13	41.62
Black	prob	.01*	.00*	.87
	f-test	3.12	1.81	1.05
	prob	.00*	.04*	.78

Note. T-test is for separate variance rather than pooled variance. Results include all data.

Table F.6

One Way Analysis of Variance Contextual and Demographic Variables with Moral Development, Critical Thinking and Self-Concept

	Between Groups			Within Groups			Total		F	F
	df	SS	MS	df	SS	MS	df	SS	Ratio	Prob.
Age										
DITP	5	1310.88	262.18	393	56707.19	144.29	398	58018.07	1.81	.10
WGTRS	5	750.83	150.17	423	30971.49	73.22	428	31722.33	2.05	.07
TTPSCORE	5	11316.81	2263.36	425	414424.92	975.12	430	425741.73	2.32	.04 *
Community Elementary										
DITP	6	1954.61	325.77	397	57111.37	143.85	403	59065.98	2.26	.04 *
WGTRS	6	1468.06	244.67	427	30417.45	71.23	433	31885.51	3.43	.002*
TTPSCORE	6	5266.82	877.80	429	422540.06	984.94	435	427806.89	.89	.50
Community High										
DITP	6	617.02	102.84	397	58448.96	147.23	403	59065.98	.70	.65
WGTRS	6	931.09	155.18	427	30954.42	72.49	433	31885.51	2.14	.045*
TTPSCORE	6	9562.56	1593.76	429	418244.32	974.93	435	427806.89	1.63	.14
Parent's Income										
DITP	13	2044.93	157.30	372	65001.55	147.85	385	57046.48	1.06	.39
WGTRS	13	1166.55	89.73	402	29220.95	72.69	415	30387.50	1.23	.25
TTPSCORE	13	17507.00	1346.69	404	387652.52	959.53	417	405159.52	1.4	.15
Race										
DITP	4	428.18	120.55	395	58440.14	147.94	399	58922.32	.81	.51
WGTRS	4	780.59	195.15	424	30423.29	71.75	428	31203.8	2.72	.03 *
TTPSCORE	4	3631.03	907.76	426	418014.05	981.25	430	421645.08	.93	.45

Note. Where DITP=Moral Development, WGTRS=Critical Thinking, TTPSCORE=Self-Concept. Results include all data

Table F.7

Partial Correlations of Moral Development, Critical Thinking and Self-Concept, Controlling for Contextual and Demographic Variables

Controlling for	Corr. Coefficient	Significance
Age		
Moral Development		
Critical Thinking	.2299	.00
Self-Concept	-.0309	.54
Critical Thinking		
Self-Concept	.0154	.75
Sex		
Moral Development		
Critical Thinking	.2305	.00 *
Self-Concept	-.0340	.50
Critical Thinking		
Self-Concept	.0310	.52
School		
Moral Development		
Critical Thinking	.2223	.00 *
Self-Concept	-.0287	.57
Critical Thinking		
Self-Concept	.0321	.51
GPA		
Moral Development		
Critical Thinking	.1591	.001 *
Self-Concept	-.0299	.55
Critical Thinking		
Self-Concept	.0299	.53
Family type		
Elementary school		
Moral Development		
Critical Thinking	.2290	.00 *
Self-Concept	-.0299	.55
Critical Thinking		
Self-Concept	.0295	.53
High School		
Moral Development		
Critical Thinking	.2248	.00 *
Self-Concept	-.0269	.60
Critical Thinking		
Self-Concept	.0362	.45
Community type		
Elementary school		
Moral Development		
Critical Thinking	.2248	.00 *
Self-Concept	-.0269	.59
Critical Thinking		
Self-Concept	.0362	.45
High school		
Moral Development		
Critical Thinking	.2277	.00 *
Self-Concept	-.0274	.58
Critical Thinking		
Self-Concept	.0382	.43
Mother's education		
Moral Development		
Critical Thinking	.2284	.00 *
Self-Concept	-.0296	.55
Critical Thinking		
Self-Concept	.0310	.52

Table F.7 (cont'd).

Controlling for:	Corr. Coefficient	Significance
Religion		
Moral Development		
Critical Thinking	.2290	.00 *
Self-Concept	-.0312	.53
Critical Thinking		
Self-Concept	.0307	.53
Religious Influence		
Moral Development		
Critical Thinking	.2293	.00 *
Self-Concept	-.0316	.53
Critical Thinking		
Self-Concept	.0302	.51
Religious: Conservative or Liberal		
Moral Development		
Critical Thinking	.2288	.00 *
Self-Concept	-.0297	.55
Critical Thinking		
Self-Concept	.0324	.50
Marital Status		
Moral Development		
Critical Thinking	.2278	.00 *
Self-Concept	-.0358	.47
Critical Thinking		
Self-Concept	.0262	.59
Parent's Income		
Moral Development		
Critical Thinking	.2268	.00 *
Self-Concept	-.0302	.56
Critical Thinking		
Self-Concept	.0305	.54
Own Income		
Moral Development		
Critical Thinking	.2292	.11
Self-Concept	-.0356	.81
Critical Thinking		
Self-Concept	.0308	.83
Reside		
Moral Development		
Critical Thinking	.2324	.00 *
Self-Concept	-.0285	.57
Critical Thinking		
Self-Concept	.0140	.77
Racial		
Moral Development		
Critical Thinking	.2263	.00 *
Self-Concept	-.0333	.51
Critical Thinking		
Self-Concept	.0253	.60

Note. Table should be read, controlling for age, moral development with critical thinking gives a correlation coefficient of .2299 wish a significance at .00. Results include all data.

Table F.8

Correlations of Moral Development, Critical Thinking, and Self-Concept with Religion Variables

Variable	Corr. Coefficient	Significance
Religion		
Moral Development	.0363	.233
Critical Thinking	.0023	.481
Self-Concept	.0345	.236
Religious Influence		
Moral Development	.0186	.355
Critical Thinking	-.0163	.368
Self-Concept	.0836	.041 *
Conservative or liberal		
Moral Development	.0331	.255
Critical Thinking	.1558	.001 *
Self-Concept	-.0362	.227

Note. Results with all data

Table F.9

T-test of Religion with Moral Development, Critical Thinking, and Self-Concept

Variable	Statistic	Moral Development	Critical Thinking	Self-Concept
RELIGION	t-test	-.57	.57	-.29
Prot.	df	349.43	368.16	340.97
Cath.	prob	.57	.57	.78
	f-test	1.49	1.24	1.22
	prob	.01*	.16	.18

Note. Separate variance is used for t-test. Results include all data.

Table F.10

One Way Analysis of Variance of Religion Variables

	Between Groups			Within Groups			Total		F	F
	df	SS	MS	df	SS	MS	df	SS	Ratio	Prob
Influence										
DITP	2	108.88	54.44	400	59068.89	147.67	402	59177.77	.37	.69
WGTRS	2	8.56	4.28	428	31719.41	74.11	430	31727.97	.06	.94
TTPSCORE	2	3576.70	1788.35	431	421076.56	976.98	433	424653.27	1.83	.16
Con/Liberal										
DITP	2	92.26	46.13	398	58147.06	146.10	400	58239.33	.32	.73
WGTRS	2	769.48	384.74	426	30814.37	72.33	428	31583.85	5.32	.005
TTPSCORE	2	1016.85	508.42	429	422176.97	984.10	431	423193.81	.52	.59

Note. Where DITP=Moral Development, WGTRS=Critical Thinking, TTPSCORE=Self-Concept. Results include all data.

APPENDIX G

RESULTS TABLES WITH CONSISTENT MORAL DEVELOPMENT (DITP) SCORES

Table G.1

Descriptive Statistics of Moral Development, Critical Thinking and Self-Concept

Variable	Cases	Mean	Standard Deviation
Moral Development			
DITP	320	28.6416	12.6407
Critical Thinking			
Inference	443	8.3115	2.6581
Recognition	443	11.0293	3.2867
Deduction	443	10.2867	2.4414
Interpretation	443	11.1806	2.4978
Evaluation	439	11.3508	2.3359
Total Raw Score	439	52.1230	8.5546
Self-Concept			
Physical	441	66.7007	8.0756
Moral-ethical	441	67.6281	7.8145
Personal	441	65.9524	7.4468
Family	441	69.5170	8.2258
Social	441	69.0136	7.4982
Identity	441	125.3991	9.9724
Self-satisfaction	441	104.7823	13.6860
Behavioral	441	108.8934	12.2054
Total Score	439	338.0748	31.2594

Note. Results with consistent DIT P scores.

Table G.2

Correlations of Total Scores for Moral Development, Critical Thinking and Self-concept

Moral Development		
Critical Thinking	.2297	.000*
Self-Concept		
Moral Development	-.0460	.207
Critical Thinking	.0307	.261

Note. Results with consistent DIT P scores

Table G.3

Correlations between levels of Moral Development, Critical Thinking and Self-Concept

Variables	Corr. Coefficient	Significance
Moral Development DITP (P Score)		
Critical Thinking		
Inference	.2007	.000*
Recognition	.1070	.028*
Deduction	.1723	.001*
Interpretation	.1334	.008*
Evaluation	.1304	.010*
Total Raw Score	.2297	.000*
Self-Concept		
Physical	-.1291	.011*
Moral-ethical	.1007	.036*
Personal	-.0546	.166
Family	-.0455	.209
Social	-.0457	.208
Identity	-.0261	.321
Self-satisfaction	-.0720	.100
Behavioral	-.0395	.242
Total Score	-.0460	.207
Critical Thinking		
Inference		
Self-Concept		
Physical	-.0533	.132
Moral-ethical	.0910	.028
Personal	.0442	.177
Family	.0519	.138
Social	-.0309	.259
Identity	.0261	.292
Self-satisfaction	-.0177	.356
Behavioral	.1108	.010*
Total Score	.0317	.253
Recognition		
Self-Concept		
Physical	-.0184	.350
Moral-ethical	-.0286	.275
Personal	.0321	.251
Family	-.0821	.042
Social	-.0388	.208
Identity	-.0575	.114
Self-satisfaction	-.0177	.355
Behavioral	.0475	.160
Total Score	.0011	.491

Table G.3 cont'd

Variable	Corr. Coefficient	Significance
Critical Thinking		
Deduction		
Self-Concept		
Physical	-.0946	.024*
Moral-ethical	.1244	.004*
Personal	.0600	.104
Family	-.0740	.060
Social	-.0235	.311
Identity	-.0405	.198
Self-satisfaction	-.0133	.390
Behavioral	.0521	.137
Total Score	.0085	.429
Interpretation		
Self-Concept		
Physical	-.0592	.107
Moral-ethical	.0616	.098
Personal	.0959	.022*
Family	-.0190	.345
Social	.0336	.241
Identity	.0059	.451
Self-satisfaction	.0033	.472
Behavioral	.0712	.068
Total Score	.0280	.279
Evaluation		
Self-Concept		
Physical	-.0340	.239
Moral-ethical	.1404	.002*
Personal	.0425	.188
Family	.0373	.218
Social	.0236	.311
Identity	.0403	.200
Self-satisfaction	.0162	.368
Behavioral	.0899	.030*
Total Score	.0479	.159
Total Score		
Self-Concept		
Physical	-.0785	.051
Moral-ethical	.1305	.003*
Personal	.0805	.046*
Family	-.0349	.233
Social	-.0208	.332
Identity	-.0159	.370
Self-satisfaction	-.0110	.409
Behavioral	.1076	.012
Total Score	.0307	.261

Note. N=317 for those with DITP scores. N is between 437 and 440 for all others. Results with consistent DIT P scores.

Table G.4

Correlations of Demographic and Contextual Variables for Moral Development, Critical Thinking and Self-Concept

Variable	Corr. Coefficient	Significance
AGE		
Moral Development	.0213	.353
Critical Thinking	.1160	.008 *
Self-Concept	.1342	.003 *
SEX		
Moral Development	.1025	.034 *
Critical Thinking	-.0067	.445
Self-Concept	.0425	.188
SCHOOL		
Moral Development	.1019	.035 *
Critical Thinking	.0890	.032 *
Self-Concept	-.0143	.383
GPA		
Moral Development	.2425	.000 *
Critical Thinking	.4078	.000 *
Self-Concept	.1354	.002 *
FAMILY STRUCTURE		
Elementary School		
Moral Development	-.0275	.313
Critical Thinking	-.0390	.209
Self-Concept	-.0206	.334
High School		
Moral Development	-.0150	.395
Critical Thinking	-.0488	.155
Self-Concept	-.0565	.119
COMMUNITY TYPE		
Elementary School		
Moral Development	-.0653	.123
Critical Thinking	-.0969	.022 *
Self-Concept	.0542	.129
High School		
Moral Development	-.0329	.279
Critical Thinking	-.0695	.074
Self-Concept	.1036	.015 *
MOTHER'S EDUCATION		
Moral Development	.0375	.252
Critical Thinking	.0232	.315
Self-Concept	-.0114	.406
FATHER'S EDUCATION		
Moral Development	.0014	.490
Critical Thinking	.0203	.337
Self-Concept	.0055	.454

Table G.4 cont'd

Variable	Corr. Coefficient	Significance
SOCIO-ECONOMIC STATUS		
Parent's Income		
Moral Development	-.0474	.206
Critical Thinking	-.0511	.149
Self-Concept	-.0046	.463
Own Income		
Moral Development n=38	.1304	.218
Critical Thinking n=54	.0010	.497
Self-Concept n=55	.0957	.243
RACE/ETHNIC		
Moral Development	-.0488	.194
Critical Thinking	-.0762	.057
Self-Concept	-.0730	.064
MARITAL		
Moral Development	.0899	.055
Critical Thinking	.0355	.231
Self-Concept	.1355	.002*
RESIDE		
Moral Development	-.0298	.298
Critical Thinking	.1278	.004*
Self-Concept	.1327	.003*

Note. N=317 for DIT P scores, n=437-440 for all others. Results with consistent DIT P Scores.

Table G.5

T-Tests of Sex and Race by Moral Development, Critical Thinking and Self-Concept

Variable	Statistic	Moral Development	Critical Thinking	Self-Concept
SEX	t-test	-1.82	.13	-.85
Male	df	202.75	280.90	313.43
Female	prob	.07	.89	.38
	f-test	1.05	1.28	1.01
	prob	.76	.08	.95
RACE	t-test	2.58	4.04	.17
White	df	39.22	46.13	41.62
Black	prob	.01*	.00	.87
	f-test	3.59	1.81	1.05
	prob	.00*	.04*	.78

Note. T-test is for separate variance rather than pooled variance. Results with consistent DIT P Scores.

Table G.6

One Way Analysis of Variance of Contextual and Demographic Variables with Moral Development, Critical Thinking and Self-Concept

	Between Groups			Within Groups			Total		F	F	
	df	SS	MS	df	SS	MS	df	SS	Ratio	Prob.	
Age											
DITP	5	978.45	195.69	309	48816.84	157.98	314	49795.29	1.24	.29	
WGTRS	5	750.83	150.17	423	30971.49	73.22	428	31722.33	2.05	.07	
TTPSCORE	5	11316.81	2263.36	425	414424.92	975.12	430	425741.73	2.32	.04	*
Community Elementary											
DITP	6	1590.15	265.03	311	49181.41	158.14	317	50771.56	1.67	.13	*
WGTRS	6	1468.06	244.67	427	30417.45	71.23	433	31885.51	3.43	.002	*
TTPSCORE	6	5266.82	877.80	429	422540.06	984.94	435	427806.89	.89	.50	
Community High											
DITP	6	493.94	82.32	311	50277.62	161.66	317	50771.56	.51	.80	
WGTRS	6	931.09	155.18	427	30954.42	72.49	433	31885.51	2.14	.045	*
TTPSCORE	6	9562.56	1593.76	429	418244.32	974.93	435	427806.89	1.63	.14	
Parent's Income											
DITP	13	2219.58	170.74	298	46901.10	162.29	302	49120.66	1.05	.40	
WGTRS	13	1166.55	89.73	402	29220.95	72.69	415	30387.50	1.23	.25	
TTPSCORE	13	17507.00	1346.69	404	387652.52	959.53	417	405159.52	1.4	.15	
Race											
DITP	4	392.89	98.22	310	50206.59	161.96	314	50599.48	.61	.66	
WGTRS	4	780.59	195.15	424	30423.29	71.75	428	31203.89	2.72	.03	*
TTPSCORE	4	3631.03	907.76	426	418014.05	981.25	430	421645.08	.93	.45	

Note. Where DITP=Moral Development, WGTRS=Critical Thinking, TTPSCORE=Self-Concept. *=p<.05. Results with consistent DIT P Scores.

Table G.7

Partial Correlations of Moral Development, Critical Thinking and Self-Concept, Controlling for Contextual and Demographic Variables

Controlling for	Corr. Coefficient	Significance
Age		
Moral Development		
Critical Thinking	.288	.00
Self-Concept	-.0493	.38
Critical Thinking		
Self-Concept	.0154	.75
Sex		
Moral Development		
Critical Thinking	.2316	.00 *
Self-Concept	-.0506	.37
Critical Thinking		
Self-Concept	.0310	.52
School		
Moral Development		
Critical Thinking	.2226	.00 *
Self-Concept	-.0447	.43
Critical Thinking		
Self-Concept	.0321	.51
GPA		
Moral Development		
Critical Thinking	.1476	.009 *
Self-Concept	-.0820	.15
Critical Thinking		
Self-Concept	.0299	.53
Family type		
Elementary school		
Moral Development		
Critical Thinking	.2288	.00 *
Self-Concept	-.0465	.41
Critical Thinking		
Self-Concept	.0295	.53
High School		
Moral Development		
Critical Thinking	.2292	.00 *
Self-Concept	-.0469	.41
Critical Thinking		
Self-Concept	.0362	.45
Community type		
Elementary school		
Moral Development		
Critical Thinking	.2249	.00 *
Self-Concept	-.0426	.45
Critical Thinking		
Self-Concept	.0362	.45

Table G.7 (cont'd).

Controlling for	Corr. Coefficient	Significance
Community type		
High school		
Moral Development		
Critical Thinking	.2280	.00 *
Self-Concept	-.0428	.45
Critical Thinking		
Self-Concept	.0382	.43
Mother's education		
Moral Development		
Critical Thinking	.2290	.00 *
Self-Concept	-.0456	.42
Critical Thinking		
Self-Concept	.0310	.52
Religion		
Moral Development		
Critical Thinking	.2299	.00 *
Self-Concept	-.0479	.40
Critical Thinking		
Self-Concept	.0307	.53
Religious Influence		
Moral		
Critical Thinking	.2300	.00 *
Self-Concept	-.0474	.40
Critical Thinking		
Self-Concept	.0302	.51
Religious: Conservative or Liberal		
Moral Development		
Critical Thinking	.2253	.00 *
Self-Concept	-.0454	.42
Critical Thinking		
Self-Concept	.0324	.50
Marital Status		
Moral Development		
Critical Thinking	.2275	.00 *
Self-Concept	-.0589	.30
Critical Thinking		
Self-Concept	.0262	.59
Parent's Income		
Moral Development		
Critical Thinking	.2278	.00 *
Self-Concept	-.0462	.42
Critical Thinking		
Self-Concept	.0305	.54

Table G.7 (cont'd).

Controlling for	Corr. Coefficient	Significance
Own Income		
Moral Development		
Critical Thinking	.2315	.17
Self-Concept	-.0592	.73
Critical Thinking		
Self-Concept	.0308	.83
Reside		
Moral Development		
Critical Thinking	.2355	.00 *
Self-Concept	-.0424	.45
Critical Thinking		
Self-Concept	.0140	.77
Racial		
Moral Development		
Critical Thinking	.2269	.00 *
Self-Concept	-.0497	.38
Critical Thinking		
Self-Concept	.0253	.60

Note. Table should be read, controlling for age, moral development with critical thinking gives a correlation coefficient of .2299 with a significance at .00. Results with consistent DIT P Scores.

Table G.8

Correlations of Moral Development, Critical Thinking and Self-Concept with Religion Variables

Variable	Corr. Coefficient	Significance
Religion		
Moral Development	.0545	.167
Critical Thinking	.0023	.481
Self-Concept	.0345	.236
Religious Influence		
Moral Development	.0156	.391
Critical Thinking	-.0163	.368
Self-Concept	.0836	.041 *
Conservative or liberal		
Moral Development	.0766	.087
Critical Thinking	.1558	.001 *
Self-Concept	-.0362	.227

Note. Results with consistent DIT P scores.

Table G.9

T-tests of Religion with Moral Development, Critical Thinking, and Self-Concept

Variable	Statistic	Moral Development	Critical Thinking	Self-Concept
RELIGION	t-test	-.87	.57	-.29
Prot.	df	276.66	368.16	340.97
Cath.	prob	.38	.57	.78
	f-test	1.42	1.24	1.22
	prob	.04*	.16	.18

Note. Separate variance is used for t-test. Results with consistent DIT P Scores.

Table G.10

One Way Analysis of Variance of Religion Variables

	Between Groups			Within Groups			Total		F	F
	df	SS	MS	df	SS	MS	df	SS	Ratio	Prob
Influence										
DITP	2	15.88	7.94	315	50755.68	161.13	317	50771.56	.04	.95
WGTRS	2	8.56	4.28	428	31719.41	74.11	430	31727.97	.06	.94
TTPSCORE	2	3576.70	1788.35	431	421076.56	976.98	433	424653.27	1.83	.16
Con/Liberal										
DITP	2	315.03	157.51	313	49575.59	158.39	315	49890.62	.99	.37
WGTRS	2	769.48	384.74	426	30814.37	72.33	428	31583.85	5.32	.005*
TTPSCORE	2	1016.85	508.42	429	422176.97	984.10	431	423193.81	.52	.59

Note. Where DITP=Moral Development, WGTRS=Critical Thinking, TTPSCORE=Self-Concept. Results with consistent DIT P Scores.

APPENDIX H

ADDITIONAL ANOVA RESULTS

Table H.1

One Way Analysis of Variance of Contextual and Demographic Variables with Moral Development, Critical Thinking and Self-Concept, including eta^2.

	Between Groups			Within Groups					
	df	SS	MS	df	SS	MS	F	sig.	Eta	Eta^2
School										
MD	1	527.59	527.59	316	50243.97	158.99	3.32	.069	.1019	.0104
CT	1	252.58	252.58	432	252.58	73.22	3.45	.064	.0890	.0079
SC	1	88.09	88.08	434	4427718.81	985.53	.09	.765	.0143	.0002
Race/ethnicity										
MD	5	502.01	100.40	310	50206.59	161.95	.61	.684	.0995	.0099
CT	5	784.71	156.94	426	30719.29	72.11	2.17	.055	.1578	.0249
SC	5	3757.78	751.56	428	418976.72	978.92	.77	.573	.0943	.0089
Family Type Elementary School										
MD	3	1175.24	391.75	314	49596.32	157.95	2.48	.061	.1521	.0231
CT	4	323.27	80.81	429	31562.23	73.57	1.09	.356	.1007	.0101
SC	4	4348.13	1087.03	431	423458.75	982.50	1.10	.353	.1008	.0102
Family Type High School										
MD	4	529.46	132.36	313	50242.10	160.52	.82	.51	.1021	.0104
CT	4	298.35	74.58	429	31587.15	73.63	1.01	.400	.0967	.0094
SC	4	2223.60	555.90	431	425583.28	987.43	.56	.689	.0721	.0052
Sex										
MD	1	533.31	533.31	316	50238.24	158.98	3.35	.06	.1025	.0105
CT	1	1.43	1.43	432	31884.08	73.81	.01	.889	.0067	.0000
SC	1	773.93	773.93	435	427257.93	982.20	.79	.375	.0425	.0018
Religion										
MD	4	515.60	128.90	312	50191.69	160.87	.80	.525	.1008	.0102
CT	4	122.49	30.62	428	31715.73	74.10	.41	.799	.0620	.0038
SC	4	5013.90	1253.47	431	422176.07	979.52	1.27	.277	.1083	.0117
Martial Status										
MD	4	813.05	203.26	313	49958.52	159.61	1.27	.280	.1265	.0160
CT	4	544.64	136.16	429	31340.87	73.06	1.86	.115	.1307	.0171
SC	4	9153.13	2288.28	432	418878.72	969.63	2.36	.052	.1462	.0214
Residence										
MD	5	1351.99	270.39	311	49370.47	158.75	1.70	.134	.1633	.0267
CT	5	1457.97	291.59	427	30412.54	71.223	4.09	.001	.2139	.0457
SC	5	9928.00	1985.60	430	418087.96	972.29	2.04	.071	.1523	.0232

Table H.2

One Way Analysis of Variance of Moral Development, Critical Thinking, Self-Concept with Sex and School

	Between Groups			Within Groups			Total		
	df	SS	MS	df	SS	MS	df	SS	F Ratio	F Prob.
MD	3	998.16	332.72	314	49773.39	158.51	317	50771.56	2.09	.1003
CT	3	360.58	120.19	430	315524.93	73.31	433	31885.51	1.63	.1796
SC	3	1083.54	361.18	432	426723.35	987.79	435	427806.89	.36	.7778

Table H.3

One Way Analysis of Variance Multiple Comparisons of Contextual and Demographic Variables with Moral Development, Critical Thinking and Self-Concept

Var.	F	Scheffee	Student Newman Keuls	Duncan
Age				
MD	.10	00	00	00
CT	.07	00	00	(5 & 1)
SC	.04	00	(2 & 5)	(1 & 5,6) (2 & 5,6)

1=17-19; 2=20-22; 3=23-26; 4=27-35; 5=36-45; 6=46-70

Community Type Elementary School				
MD	.04	00	00	(1 & 7) (5 & 7)
CT	.002	(5 & 7)	(1,3,4,5,6 & 7)	(1,3,4,5,6 & 7)
SC	.50	00	00	00

Community Type High School				
MD	.65	00	00	00
CT	.04	(3,4,5,6 & 7)	(3,4,5,6 & 7)	
SC	.14	00	(3 & 6)	

1=large city over 250K; 2=suburban area; 3=medium 50K-250K; 4=small 10K-50K; 5=town under 10K; 6=farm or ranch; 7=open country

Parent's Income				
MD	.39	00	00	(3 & 5,6,7,8,11,13,14)
CT	.25	00	00	(2,12 & 5)
SC	.15	00	00	(10 & 13) (6 & 10,11)

1=under $9,999; 2=$10,000-$14,999; 3=$15,000-$19,999; 4=$20,000-$24,999; 5=$25,000-$29,999; 6=$30,000-$34,999; 7=$35,000-$39,999; 8=$40,000-$44,999; 9=$45,000-$49,999; 10=$50,000-$59,999; 11=$60,000-$74,999; 12=$75,000-$99,999; 13=$100,000-$149,999; 14=$150,000 & over

Racial/ethnicity				
MD	.51	00	00	00
CT	.03	(1 & 2)	(1 & 2)	(1 & 2)
SC	.45	00	00	00

1=White; 2=Black; 3=American Indian; 4=Asian; 5=Hispanic

Religious Influence				
MD	.69	00	00	00
CT	.94	00	00	00
SC	.16	00	00	00

1=little; 2=medium; 3=high

Conservative/liberal				
MD	.73	00	00	00
CT	.005	(3 & 2)	00	00
SC	.59	00	00	00

1=conservative; 2=moderate; 3=liberal

Mothers' education				
MD	.89	00	00	00
CT	.77	00	00	00
SC	.91	00	00	00

Fathers' education				
MD	.52	00	00	00
CT	.11	00	00	00
SC	.91	00	00	00

1=less than high school; 2=high school; 3=jr. college degree; 4=bachelors degree; 5=masters degree; 6=doctorate; 7=professional degree

Table H.3 (cont'd).

Var.	F	Scheffee	Student Newman Keuls	Duncan
Religion				
MD	.65	00	00	00
CT	.82	00	00	00
SC	.24	00	00	00

1=Protestant; 2=Catholic; 3=Jewish; 4=none; 5=other

Marital Status				
MD	.33	00	00	00
CT	.16	00	00	00
SC	.32	00	00	00

1=single; 2=married; 3=divorced; 4=widow/widower

Note. 00=No two groups are significantly different at the .05 level. Numbers inciate pairs of groups significantly different at the .05 level. Table should be read: Mean scores of students ages 17-19 years of age were significantly different than students 36-45 years of age.

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