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A cross-sectional study of the relationship between Perry's scheme, Marcia's identity statuses, educational level and gender

Pearson, Frances Carolyn, Ph.D.
The Ohio State University, 1989
A CROSS-SECTIONAL STUDY OF THE RELATIONSHIP BETWEEN
PERRY'S SCHEME, MARCIA'S IDENTITY STATUSES,
EDUCATIONAL LEVEL AND GENDER

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

by

Frances Carolyn Pearson, M.S.

The Ohio State University
1989

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To My Children, Carrie, Steven, and Christine
ACKNOWLEDGMENTS

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CHAPTER I
INTRODUCTION

Introduction
This chapter will present an overview of the rationale for studying the relationship between cognitive-structural and psychosocial development in college students, a brief description of Marcia's Identity Statuses and Perry's Scheme of Intellectual and Ethical Development, and a summary of the design of this study. First, the theoretical basis for the study and the implications for student affairs will be discussed. A problem statement will be presented, followed by a list of the definitions of terms and the hypotheses to be tested.

Overview
Cognitive-structural theories and psychosocial theories of development have contributed to an understanding of the complexity of college student development and provided a framework for much of the work done in student personnel administration. The two families of theories describe different developmental processes which occur in adolescents and young adults, but development is exceedingly complex and involves multiple processes occurring simultaneously, both externally and internally. A greater understanding of college student development could be realized by studying how cognitive-structural and psychosocial theories are related.
Cognitive-structural theories originate primarily in the work of Piaget and describe cognitive-structural changes which occur in an invariant hierarchical sequence of stages of ways of making meaning of experience. The theory used in this study, Perry's Scheme of Intellectual and Ethical Development in college students, is an extension of Piaget's work which is commonly used in practice because it describes stages of formal and post-formal cognitive-structural development that occur in early adulthood. According to this theory, college students initially view knowledge from a dualistic perspective of right or wrong and then progress through stages of increasingly complex ways of making meaning. At the highest levels, individuals view knowledge as contextual or relativistic and are capable of making commitments in a relativistic world (Perry, W. G., 1968, 1981a).

Cognitive-structural theories begin with the assumption that development occurs in a sequence of stages of qualitatively different ways of making meaning of experiences (Piaget, 1960). The stages are assumed to be hierarchical, meaning that each successive stage incorporates the preceding stages, but is qualitatively different and more complex than the earlier stages (Perry, W. G., 1968, 1981a; Piaget, 1960). For example, in Perry's Scheme, position one is characterized by a right-wrong view of the world with no awareness of alternatives and position two is an advance over the former position because of the increased recognition of competing points of view (Perry, W. G., 1968, 1981a). In cognitive-structural theory, the stages are also assumed to occur in an invariant sequence, meaning that each stage must be experienced before advancing to the next stage, no stages can be skipped, and regression does not occur (Perry, W. G., 1968,
In addition, the stages are thought to be universal across cultures, but progressive development through the stages requires a rich, complex environment which challenges a person's assumptions (Piaget, 1960). Cognitive-structural theorists believe that development results from the natural tendency of the organism toward increasing organization and involves processes of assimilation and accommodation. An individual assimilates new information into the existing structural way of making meaning and does not alter that structure until new experiences create sufficient challenge to the current assumptions. When there is too much dissonance between the current way of viewing the world and new experiences, the individual accommodates and advances to a more complex structure (Piaget, 1960). In Perry's Scheme, for example, exposure to more than one alternative point of view challenges a dualist's basic assumptions about right and wrong and causes dissonance and movement to a more complex way of making meaning (Perry, W. G., 1968, 1981a).

In contrast, psychosocial theories have been derived from Erikson's theoretical description of psychosocial developmental tasks which confront individuals at different stages of the lifespan. According to Erikson (1959a, 1959b), the primary developmental task of early adulthood is identity formation and lack of resolution of this task results in identity confusion. Marcia (1964, 1966) has elaborated on Erikson's dichotomous description of the task of identity formation and defined four identity statuses or ways of resolving identity issues, based upon whether an individual has gone through a crisis or process of exploration and whether or not the individual has made a commitment on identity issues. For example, in this scheme, Foreclosures have a committed identity on one or more psychosocial issues,
such as occupation or ideology, but they have not arrived at this identity through a process of self-exploration. Foreclosed individuals are considered to be developmentally different from the Identity Achieved who have made commitments after having explored various alternatives on identity issues. The two other statuses, Diffusion and Moratorium, are uncommitted statuses and are distinguished by whether or not a person is in the process of exploration (Marcia, 1964, 1966, 1980).

Psychosocial theories are also based on an assumption that development occurs in a sequence of stages, but these stages are defined by psychosocial tasks and the stages are cumulative rather than hierarchical. According to this family of theories, development follows an epigenetic principle, or natural unfolding, with each part emerging in its own time to form an increasingly integrated whole. The developmental tasks arise as a consequence of both internal and external factors, such that psychological maturation parallels societal and institutional expectations. For example, the task of identity vs identity confusion occurs when the individual has sufficient biological, psychological, and cognitive maturity to become autonomous and societal norms simultaneously prescribe that the person begins to enter the adult world. The stages are sequential and cumulative; they occur in a specific order and the resolution of each task affects subsequent tasks. For instance, issues of identity need to be resolved before the stage of intimacy can occur and successful or unsuccessful resolution of identity issues will affect the nature of subsequent intimate relationships. Furthermore, in this family of theories, it is assumed that individuals can recycle through the stages and work on issues that were inadequately resolved previously (Erikson, 1959a, 1959b, 1968).
Although these two families of theories have different underlying assumptions about development, they both describe processes which are occurring simultaneously and probably interact (Chickering, 1981; Rodgers, 1980). These theories have usually been studied separately and the research which has attempted to explore the relationship between them has been inconclusive, but a greater understanding of the complexity of development can be achieved by examining the relationship between them.

Cognitive-structural theories and psychosocial theories both describe stages of development that occur across the lifespan, but the focus of this study was on development in late adolescence and early adulthood, the age of traditional college students. This is the period of life when individuals are forming an identity (Erikson, 1959a) and have reached a stage of formal or post-formal operations (Perry, W. G., 1968, 1981a; Piaget, 1960). Longitudinal research has demonstrated that both these developmental processes occur simultaneously during the college years, but it is also assumed that there is a relationship between them that exists beyond what can be attributed to college level alone. Theoretically, cognitive complexity is necessary for young adults to explore alternatives and make commitments on identity issues (Adams, 1976; Erikson, 1959a; Marcia, 1980; Perry, W. G., 1968, 1981a). But other factors such as family or cultural background, environmental press and opportunity, and personality are also variables which contribute to identity, so cognitive complexity alone is probably not sufficient for the resolution of identity issues. This study was designed to explore the association between cognitive and psychosocial development in traditional college-aged students, using Perry's Scheme and Marcia's identity statuses.
Identity Statuses

Erikson (1959a, 1959b, 1968) theorized that the developmental stage of late adolescence and early adulthood is the resolution of the task of identity. He hypothesized that identity formation involves an exploration of occupational, ideological, and relationship issues and making commitments on those issues. From Erikson's theoretical constructs about identity formation, Marcia (1964, 1966) developed a model to describe four identity statuses, or different ways of coping with the identity issue. The identity statuses are defined by two dimensions: a) whether or not an individual has experienced a crisis and b) whether or not an individual has made a commitment in the specific psychosocial content areas defined by Erikson (Fig. 1).

<table>
<thead>
<tr>
<th>Crisis</th>
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<td>Commitment</td>
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<td>Identity</td>
<td>Foreclosure</td>
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<td>Achievement</td>
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<tr>
<td>No Commitment</td>
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<tr>
<td>Moratorium</td>
<td>Diffusion</td>
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<td>or</td>
<td></td>
</tr>
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Fig. 1. Identity Status Model

In the model, crisis refers to going through a process of exploration on identity issues and commitment means making choices and taking action on the same issues. Foreclosures are defined as having made a
commitment without having experienced a crisis. A person in the Foreclosed status assumes an identity based on the values of authority figures or latches on to the first choice that comes along, eg. choosing a career that is determined by parents. Achieved, in contrast, have made commitments after a process of exploring various alternatives. The Diffusion and Moratorium statuses are characterized by not being committed, but they differ in that the Moratoriums are in crisis and the Diffusions are not or have abandoned the effort. In the scheme, the Foreclosures and Diffusions are considered to be lower statuses developmentally because they have not gone through a process of exploration (Marcia, 1964, 1966, 1980; Waterman, 1982).

Individuals can be in different statuses on different identity issues because development does not occur at the same rate in all domains. For example, Erikson (1959a) concluded that college students are most likely to be concerned with issues related to occupation. Research summarized by Waterman (1982) showed that occupational issues and interpersonal relationships are important to college students, but that religious ideology is not a salient issue during the college years. Levinson's (1978) research on the stages of adult male development across the lifespan also supported these findings and showed that adults typically work on no more than one or two psychosocial issues at a time. When Marcia developed an interview for measuring identity status, he included questions on occupation, ideology, and interpersonal relationships in order to tap the most critical psychosocial domains. The Revised Version of the Extended Objective Measure of Ego identity status, which was used in this study, gives scores for total identity status and two substatures, ideology and interpersonal
relationships, allowing researchers to examine the different domains independently.

Although this is a typological model and the identity statuses are considered to be stable by some researchers, Marcia (1980) assumed that they can also be arranged along a developmental continuum, with lower statuses displaying less adaptive characteristics (e.g., lower self-esteem, external locus of control, and impulsivity). He also emphasized that the statuses are not static and suggested studying the developmental processes rather than the pure types to provide a more meaningful understanding of the process of identity formation. Waterman (1982) has outlined the most comprehensive model of all the possible developmental pathways involving the identity statuses, including paths that represent stability, progressive change, and regression.

Considerable research has been done on the identity statuses, comparing them to other variables, such as personality characteristics, cognitive characteristics, and college behavior (Bourne, 1978; Marcia, 1980; Waterman, 1982, 1985). Longitudinal studies have also been conducted on college students showing that development does occur during the college years (Marcia, 1980; Waterman, 1982). Additional research on the identity statuses and gender has demonstrated that the process of identity formation is the same for males and females, but the content areas differ, e.g., male identity formation initially seems to be related to occupational issues and female development seems to be related to interpersonal relationships (Marcia, 1980).

One area that Marcia recommended studying further is the relationship between cognitive development and identity formation (Marcia, 1980).
Previous research studies have been conducted using the identity statuses and tests of Piaget's formal operations, but the results have been inconclusive (Marcia, 1980). Some cognitive-structural theorists have suggested that there are forms of adult cognition beyond formal operations which are characterized by relativism, an acceptance of contradiction and ambiguity, subjectivity, and creative problem-solving in real life situations (Arlin, 1975; Bassaches, 1980; Cavanaugh, Kramer, Sinnott, Camp, & Markley, 1985; Gilligan & Murphy, 1979; Kramer, 1983; Labouvie-Vief, 1980, Perry, W. G., 1968, Piaget, 1972.) According to these theorists, formal operations is an insufficient measure of the complexity of adult cognition and may even be maladaptive in a pluralistic environment. It is conceivable, therefore, that post-formal operations is necessary for identity formation to occur because one must be able to make meaning in a relativistic world in order to explore alternatives and make commitments. Hence, there could be a relationship between the identity statuses and Perry's Scheme, which describes both formal and post-formal ways of making meaning.

**Perry's Scheme**

Perry's Scheme of Intellectual and Ethical Development in college students describes cognitive-structural stages that occur during adulthood, particularly within the college environment. The theory describes how individuals make meaning of their experiences, especially how they view the nature of knowledge, values, and responsibility. Perry, W. G. (1968, 1981a) emphasized that progressive change in cognitive structure is related to the formation of an identity and the last three stages in his scheme describe how cognitive processes are involved in making commitments on identity issues. Like Erikson (1959b, 1968) and Marcia (1980), Perry observed that
development can occur at different rates in different content areas and that the most salient identity issues for college students are occupation, ideology, and relationships (Perry, W. G., 1968, 1981a).

According to Perry, W. G. (1968, 1981a), students typically begin college with simplistic ways of making meaning and advance to more complex ways of making meaning during their collegiate experience. The simpler cognitive structures (stages 1 and 2) are Dualistic, where there is an assumption that absolute right and wrong answers exist to questions of knowledge and valuation. The middle stages (stages 3 and 4) are Multilistic and Relativistic, in that students assume and recognize many alternatives, but find it difficult to identify criteria for evaluation and making personal commitments. The higher complex stages (stages 5 - 9) are contextual and related to the formation of commitments in a context of probability. In the higher stages, criteria for evaluation exist but they are not absolute, and individuals recognize the necessity of making choices in a relativistic world. There are nine positions in the developmental pathway, only the first five being cognitive-structural. The simpler stages in the scheme appear to be related to less adaptive personality characteristics and less adequate identity formation, while the relativistic and contextual stages seem to be associated with more adaptive characteristics and identity exploration or achievement. Although regression is believed not to occur in the scheme, Perry has observed and described alternatives to growth called Retreat, Escape, and Temporizing. These can be temporary or semi-permanent.

Empirical studies using Perry's Scheme have emphasized the practical use of the theory in areas such as counseling, curriculum development,
and classroom teaching. Further research on the relationship to identity issues has been limited, however. An examination of the existing literature provides some support for the assumption that there is a relationship between Perry's Scheme and the identity statuses. For instance, there is some evidence that the characteristics of the Perry positions are similar to the characteristics of Marcia's identity statuses. Dualists have been found to be authoritarian, low on cognitive complexity, and demonstrate an external locus of control. In contrast, the committed positions seem to display characteristics such as internal locus of control, high self-esteem, and cognitive complexity. (Perry, W. G.,1968; Slepitza & Knefelkamp, 1976). It could be assumed that the Dualistic positions would correlate with lower identity statuses such as Diffusion and Committed Positions would correlate with higher statuses such as Identity Achieved. In addition to the similarities in characteristics between the two schemes, longitudinal studies have shown that some college students can progress through at least position 5 on the Perry positions during the college years, at the same time that they are also developing a sense of identity (Perry, W. G.,1981a).

Lastly, research on gender has shown that there are stylistic or qualitative differences in how females and males progress through the cognitive-structural stages, but not structural differences (Baxter-Magolda, 1987; Belenky, Clinchy, Goldberger, & Tarule, 1986). These findings seem to be consistent with the research on the identity statuses.

The Study

Although both Perry's Scheme and Marcia's identity statuses describe development in the college years and both researchers have
hypothesized a relationship between cognitive-structural development and identity formation, no research has been done comparing the two schemes. Hence this study was designed to explore the relationship between the two.

Marcia's model and Perry's Scheme have been selected for this research project for a number of other reasons. First, both theories are appropriate for studying college-aged students because they describe processes that occur in early adulthood. Second, they both focus on exploration and commitment as underlying constructs in the developmental process and, in both schemes, the exploration of alternatives precedes the achievement of identity. Third, theoretical and empirically tested characteristics of the different identity statuses appear to be similar to many of the characteristics of the different Perry positions. Fourth, there is evidence that the college experience is related to development in both domains. Fifth, adequate instruments exist for measuring development in both schemes.

**Problem Statement**

Cognitive-structural theories and psychosocial theories are two separate families of developmental theory which have different assumptions and usually have been studied separately. They are generally thought to occur simultaneously and be related. Previous efforts to study the relationship between the two kinds of theories have been inconclusive, especially when identity formation and Piaget's formal operations have been used as the variables. This study was an attempt to clarify the possible relationship between the two using Marcia's identity statuses and Perry's Scheme of Intellectual and Ethical Development as the theoretical bases for the study.

A possible relationship between the two theories used in this study is depicted in Figures 2 and 3. The path models show educational level and
cognitive level having significant effects on total identity status and also an interaction between the two. Gender was not expected to have an effect on total identity status, but it was expected to affect the identity content areas (substatuses) and to interact with cognitive levels.

![Diagram](image1)

Fig. 2: Path Model Depicting the Relationship between Educational Level, Cognitive Level, Gender and Total identity status

![Diagram](image2)

Fig 3: Path Model Depicting the Relationships between Educational Level, Cognitive Level, Gender, and Identity Substatuses of Occupation/Ideology and Interpersonal Relationships
Questions to be Explored

1. Will progressively higher levels of education be associated with cognitive-structural development?
2. Will progressively higher levels of education be associated with identity formation?
3. Will there be an association between cognitive level and identity status?
4. Will specific Perry positions be associated with specific identity statuses; Dualists are Foreclosed, Multiplists are Diffuse or Moratorium, Relativists are Moratorium, and Committed are Achieved?
5. Will Perry alternatives to growth be associated with specific identity statuses?
6. Is Cognitive-structural development a necessary but not sufficient condition for identity formation?
7. Do the path models in Figures 2 and 3 depict the relationships between educational level, cognitive-structural development, gender, and identity formation?

Definition of Terms

The following is a list of definitions of the terms which will be found throughout this document. These are provided to assist the reader in the review of the literature and subsequent chapters.

Achieved - an identity status which is characterized by having gone through a crisis and made a commitment on identity issues of occupation, ideology, or relationships (Marcia, 1980).

Accommodation - modification of a cognitive-structure to equilibrate with the demands of the environment; occurs as a result of dissonance between the structure and the environment (Ginsburg & Opper, 1979).
**Assimilation** - incorporation of the environment into the existing cognitive-structure (Ginsburg & Opper, 1979).

**Cognitive-structural development** - an invariant, hierarchical, universal sequence of qualitatively different stages of ways of making meaning of one's experiences, specifically in the ways in which one views knowledge, values, and responsibility (Perry, W. G., 1968).

**Commitment** - making a choice on identity issues and taking action on that choice (Marcia, 1980); existential stages of cognitive-structural development characterized by affirmation and commitment in areas such as career, politics, values, and personal relationships with an awareness of relativism and internal agency and responsibility (Perry, W. G., 1968).

**Crisis** - a process of exploration of alternatives on identity issues of occupation, ideology, and/or relationships (Marcia, 1980).

**Cumulative stages** - psychosocial stages which are qualitatively different and resolution of one stage effects resolution of subsequent stages (Erikson, 1959a, 1968).

**Diffusion** - an identity status characterized by not actively exploring identity issues and not having made commitments (Marcia, 1980).

**Dualism** - stages 1 and 2 of cognitive development in which meaning is divided into two realms; good vs. bad, right vs. wrong, we vs. they; right answers exist, authorities know them; knowledge is quantitative; students learn by memorization and hard work; agency is “out there” (Perry, W. G., 1968).

**Escape** - an alternative to growth in cognitive-structural development; characterized by alienation, abandonment of responsibility, exploitation of Multiplicity (Perry, W. G., 1968).
Foreclosure - an identity status which is defined by having made commitments on identity issues without having gone through a crisis (Marcia, 1980).

Formal operations - Piaget's highest stage of cognitive-structural development in which adolescents have the ability to deal with hypothetical possibilities, combinatorial properties of variables, and reversibility and their thought is flexible so they can adapt to a variety of problems (Ginsburg & Opper, 1979).

Hierarchical stages - cognitive-structural stages which increase in complexity, incorporate previous stages, and are qualitatively different (Piaget, 1960).

Identity - "an accrued confidence that one's ability to maintain inner sameness and continuity is matched by the sameness and continuity of one's meaning for others" (Erikson, 1959a); involves an integration of past, present and future identifications into a whole; a consolidation of social roles; a convergence of physical, social, and cognitive maturity.

Identity status - a mode or style of coping with identity issues, defined by whether or not an individual has gone through a crisis and whether or not a commitment has been made on identity issues (Marcia, 1980).

Identity substatuses - two content areas of identity formation, occupation/ideology and interpersonal relationships, which are measured by the identity instrument used in this study (Bennion & Adams, 1986).

Invariant sequence - stages which occur in a specific order, no stage can be skipped, and all individuals progress through the same sequence if they continue to develop (Piaget, 1960).

Moratorium - an identity status that is characterized by active exploration
of identity issues without having made a commitment; the only “in crisis” identity status (Marcia, 1980).

**Multiplicity** - stages 3 and 4 of cognitive-structural development in which diversity of opinion and values is perceived as legitimate in areas where right answers are not yet known; opinions are without patterns or systems; everyone has a right to own opinion; criteria for evaluation do not exist (Perry, W. G., 1968).


**Psychosocial development** - qualitative stages of psychological and social change which occur as a natural unfolding, or epigenesis, across time; cumulative sequential stages defined by resolution of developmental tasks (Erikson, 1959a, 1968).

**Relativism** - stages 5 and 6 of cognitive-structural development in which individuals perceive diversity of opinion, values and judgement; diversity is derived from coherent sources, evidence, logic, systems, and patterns; analysis and comparisons exist; knowledge is qualitative and depends on context (Perry, W. G., 1968).


**Stages** - relatively stable forms or structures in cognitive-structural theory (Perry, W. G., 1968); periods defined by specific developmental tasks in psychosocial theory (Erikson, 1959a, 1968).
Structure (Form) - the assumptions and expectancies which underly how a person views the nature and origin of knowledge and value; also forms of action, thought, feeling, purpose, and care that are congruent with the assumptions (Perry, W. G., 1968).


Universality - the degree to which all people progress through the same stages of development; that all individuals at a specific level will have passed through the same sequence of stages (Piaget, 1960).

Summary

In summary, there is considerable agreement in the literature that both cognitive-structural development and identity formation occur during the college years and that the two are probably related. The purpose of this study was to examine the possible relationship between Perry’s Scheme of Intellectual and Ethical Development and Marcia’s identity statuses. The effects of educational level and gender were also analyzed because of the importance of these variables in both types of development. Specifically, the study attempted to answer several questions: a) whether there is a relationship between cognitive-structural development and identity formation that exists beyond what can be attributed to level of education; b) whether specific Perry positions correspond to specific identity statuses; c) whether cognitive development is a necessary but not sufficient condition for identity formation; and d) whether there are gender differences in the relationship between the two. In addition, a path model of the relationships between all variables was developed and tested.
The intent of his study was to contribute to the theory base which underlies student personnel administration. Since identity formation is central to traditional aged college students, a study of the relationship between identity and cognitive maturity would be helpful in designing environments that enable students to mature and develop. Furthermore, a study of the relationship between the two theories would begin to help clarify the cognitive processes involved in identity formation. Lastly, the study would add to an understanding of the nature of the identity component of the various Perry positions.
CHAPTER II
REVIEW OF THE LITERATURE

Introduction

This chapter reviews the theoretical and research literature on Marcia's Identity Statuses and Perry's Scheme of Intellectual and Ethical Development. The chapter will start with a summary of the theoretical foundations and assumptions underlying each scheme. Literature which is relevant to the questions of how the schemes are related to education, gender, and each other will be discussed, since those are the key variables which were studied in this research. The chapter will conclude with an analysis of how the schemes may be related and will present a possible model to depict the relationships.

Psychosocial Development

Erikson (1959a, 1959b, 1968) was one of the first psychologists to describe stages of psychological development which occur across the lifespan. According to Erikson (1959B), human psychosocial growth results from both inner psychological conflicts as one matures and outer demands of the institutions of society. Erikson (1959b, 1968) believed that growth follows an epigenetic principle or grounded plan, such that each part arises at a particular time or stage during the lifespan and the parts accumulate until all of the various parts form a functioning, integrated whole. When
the conflicts at each stage are resolved successfully, the result is an increased sense of inner unity, an increased capacity to do well, an active mastery of the environment, an integrated personality, and an ability to perceive the world and self correctly (Erikson, 1959b).

According to Erikson’s theory, the stages of development are defined by psychosocial tasks which result from this natural unfolding of inner biological and psychological processes and external institutional processes or expectations. Each stage comes to ascendancy at its own time, meets a crisis, and is resolved or not resolved in various ways. The tasks of childhood development are defined by crises of trust, autonomy, initiative, and industry and the crises of adulthood involve the resolution of issues of intimacy, generativity, and integrity. The pivotal point in Erikson’s model of development is the formation of a sense of identity which occurs in late adolescence and early adulthood. Erikson (1959a, p. 90) defines ego identity as “an accrued confidence that one’s ability to maintain inner sameness and continuity is matched by the sameness and continuity of one’s meaning for others.” He further suggests that identity formation involves a consolidation of social roles, an increase in self-esteem, and a gradual integration of one’s past identifications, present lifestyle, and sense of future into a whole (Erikson, 1959a, 1959b). He states:

Ego identity then, in its subjective aspect, is the awareness of the fact that there is a self-sameness and continuity to the ego’s synthesizing methods, the style of one’s individuality, and that this style coincides with the sameness and continuity of one’s meaning for significant others in the immediate community. (Erikson, 1968, p. 50. [italics in original]).
This process occurs throughout life, but is most critical in adolescence, when the physical, social, and cognitive factors all converge (Marcia, 1980). As Erikson states,

"dire urgency forces young individuals into choices and, with increasing immediacy, leads to more final self definition, to irreversible role patterns, and thus to commitments for life." (Erikson, 1959b, p. 111).

Therefore, the resolution of the psychosocial task of identity achievement vs. identity confusion is the immediate crisis to be faced by adolescents and young adults. Societies provide an institutional moratorium during which time the adolescent is expected to make commitments for their adult lives. Erikson (1968) says,

Societies offer, as individuals require, more or less sanctioned intermediary periods between childhood and adulthood, institutionalized \textit{psychosocial moratoria}, during which a lasting pattern of ‘inner identity’ is scheduled for relative completion (p. 66 [italics in original]).

He also points out that identity formation occurs best in an environment that provides an opportunity to explore multiple possibilities and that the college environment, in particular, provides a moratorium for young people to work on identity issues before taking on adult responsibilities and roles. The key issues which must be resolved in order to successfully negotiate this period of life are occupation, ideology, and relationships. Erikson (1959a) concluded that the formation of a sense of identity on ideological issues is the most significant indicator of the resolution of the identity crisis, but he observed that most young people are preoccupied with forming an occupational identity. A lack of successful resolution of identity issues results in a sense of identity confusion and prevents normal development.
through later adult stages of intimacy, generativity, and integrity (Erikson, 1968).

Marcia (1964, 1966, 1980) used the constructs in Erikson’s theory to develop a model of four types or styles of coping with the identity crisis, which are called identity statuses. The identity statuses are defined by whether or not an individual has experienced a crisis and made a commitment on identity issues. Experiencing a crisis means being aware of identity questions of occupation, ideology, and relationships and going through a process of exploring alternatives. Making a commitment refers to making choices on identity issues and taking action based on those choices. The identity statuses were shown previously in Figure 1 (p. 7).

Foreclosures in this model have not experienced a crisis, but life circumstances and/or personal choices have prematurely locked them into a commitment, usually based on the values of parents or some other authority figure (Bourne, 1978; Marcia, 1964, 1966, 1980; Waterman, A. S., 1982, 1985). For example, a Foreclosed person would not engage actively in career exploration, but would choose a career to meet parental expectations or whatever option presented itself first. Foreclosure is considered to be one of the lower statuses developmentally, but may represent the norm when there are not a variety of alternatives available, as would be the case in previous times of history, in other cultures, and for women in our society (Cote & Levine, 1988).

Diffusions are not currently in crisis and also have not made a commitment, but they may or may not have experienced a previous crisis. There are two types of Diffusion: a) pre-crisis Diffusions who are unaware of alternatives or needs to define themselves and have not explored options,
and b) post-crisis Diffusions who may have gone through a process of exploration and then discontinued the process. In the first case, a person in Diffusion is not concerned about identity issues and is willing to let fate or external circumstances dictate courses of action. This is most likely the status of young adolescents and, according to Marcia (1980), represents the polar opposite of the Identity Achieved or the equivalent of Erikson's identity confusion. In contrast, a Diffusion who has already experienced a crisis on identity issues is aware of alternatives, but this person has abandoned the effort of exploring for the time being, either because the effort produced too much anxiety or because the issues were no longer urgent (Cote & Levine, 1988a, 1988b; Marcia, 1980).

Moratoriums are in crisis and have not made a commitment or only a vague one (Marcia, 1964, 1966, 1980; Waterman, A. S., 1982, 1985). Individuals in this status are actively exploring identity issues and are the only "in crisis" status. For example, a person who is in Moratorium on religious ideology would be exploring and seeking to learn about various religious beliefs before making a firm personal choice or commitment. There is some disagreement as to whether this is a status like the others. For instance, Matteson (1972) proposed that this is the only process status and the other statuses all represent outcomes. Several authors agree that passage through Moratorium represents the active negotiation of the identity crisis and the pivotal point in development (Cote & Levine, 1988a, 1988b; Marcia, 1980; Waterman, A. S., 1982, 1985, 1988). This status is the one that Erikson was most likely describing when he discussed the moratorium of college students and there is considerable research evidence that many
college students are in this crisis state (Cote & Levine, 1988a; Bourne, 1978; Marcia, 1980; Waterman, A. S., 1982, 1985).

The Identity Achieved are defined as having experienced a crisis and having made a commitment on one or more identity issues. Therefore, a person who has explored occupational alternatives and made a choice is classified as Identity Achieved in the area of occupation. But, an individual may be achieved in only one area of identity and not others (Grotevant, Thorbecke, & Meyer, 1982; Marcia, 1980.) A question arises over how permanent the commitments in this status are. Cote and Levine (1988a) cautioned that college students who have appeared to be Identity Achieved and to have made commitments at one point in time may actually be in Moratorium and have only made a series of temporary choices. Marcia (1976) found that this status was not necessarily stable over time and other researchers (Cote & Levine, 1988a; Waterman, A. S., 1988) have concluded that individuals can recycle through identity issues.

According to Marcia (1980), the identity statuses have several advantages over Erikson’s theoretical constructs. They describe a wider variety of styles of coping with identity issues than the simple dichotomy described in Erikson’s theory. In addition, they can be placed on a developmental continuum, where Foreclosure and Diffusion represent lower levels of development and Moratorium and Identity Achieved are higher developmentally. The typology also defines both healthy and pathological characteristics for each each type. For instance, Diffusions may be considered to be carefree or alienated; Foreclosed may be seen as stable and dependable or rigid and intolerant; Moratoriums can be creative or anxious; and Identity Achieved can be seen as mature, flexible, and adaptive, but may be maladaptive if
commitments are made prematurely. Lastly, Marcia (1980) believed the identity statuses are more objective than Erikson's original description of identity formation because they are characterized by degree of crisis and commitment and those two underlying constructs can be quantified.

Since the constructs of crisis and commitment can be measured, the identity status model is useful for research purposes (Marcia, 1980). Marcia (1966) originally developed a semi-structured interview to assess level of crisis and commitment in three content areas which Erikson indicated are most important in identity formation: occupation, religious ideology, and political ideology. The interview was later expanded to include questions on premarital sex to tap the domain of interpersonal relationships and hopefully eliminate gender bias (Grotevant, et al, 1982). Using the expanded interview, it was found that sex issues were important for men as well as women (Rogow, Marcia, & Slugoski, 1983). Other interview formats have also been developed, as well as objective measures which are suitable for large research studies (Adams, Shea & Fitch, 1979; Grotevant & Adams, 1984; Bennion & Adams, 1986.) There is evidence, in studies using both interviews and objective measures, that identity status agreement between any two domains is predictive of over-all identity status (Adams, Bennion, & Huh, 1987; Kroger, 1986; Rogow, et al., 1983).

**Typology vs. Developmental Model**

The identity statuses can be conceptualized as either a typology of relatively stable styles of resolving identity issues or as a developmental model in which individuals can move from one status to another during the process of identity formation. Marcia (1964, 1966) originally described a typology but he also emphasized that some of the statuses are higher
developmentally than others and he assumed a continuum underlies the statuses. Specifically, Moratorium and Identity Achieved were considered to be higher statuses because they represent individuals who are engaged in exploration or have made commitments after exploration. In other words, the crisis statuses correspond to higher and more adaptive ego development. There is considerable empirical evidence that Foreclosure and Diffusion are lower statuses and Moratorium and Identity Achieved are developmentally advanced statuses, based upon measures such as self-esteem, locus of control, authoritarianism, and cognitive complexity (Marcia, 1964, 1966, 1967; Marcia & Friedman, 1970; Meilman, 1979; Slugoski, Marcia, & Koopman, 1984; Waterman, A. S., 1985; Matteson, 1972). Recently, Marcia (1980) has re-emphasized that the statuses are not static and has recommended paying more attention to the developmental processes that underly identity formation.

For many purposes, it is advantageous to think of the identity statuses as a simple typology and there is some disagreement about whether they can be arranged on a continuum. Most research employs a typological model when investigating the identity statuses, e.g., studies which correlate the identity statuses with various personality characteristics, cognitive characteristics, or college performance. Cote and Levine (1983; 1988a) were convinced from their research and a synthesis of related literature that there is no conclusive evidence of a developmental continuum that underlies the statuses.

Despite those arguments, there is extensive empirical support for the assumption that the statuses can be arranged along a developmental continuum. In a three year longitudinal study, for instance, Adams and
Montemayor (cited in Adams, Bennion, & Huh, 1987) demonstrated nine developmental pathways; three were progressive, three were regressive, one was stable, and two were unstable. Numerous other studies by Waterman, A. S. and his colleagues have demonstrated support for a developmental continuum (Waterman, A. S., 1982, 1985). Most authors agree that the identity statuses can be arranged along a developmental continuum, but the nature of the continuum is unclear (Marcia, 1980). In particular, the research on the Diffusion status has been inconclusive.

In early research, it was assumed that Diffusion was the lowest status because it was analogous to Erikson's concept of identity confusion (Marcia, 1967). More recently, Marcia (1980) admits that it is not clear whether individuals begin adolescence as Foreclosures or Diffusions. Diffusions are assumed to be a low status developmentally, based on measures of self-esteem, locus of control, authoritarianism, impulsivity, and field independence, but they also score high on cognitive complexity and similar to Moratoriums on anxiety and other measures (Marcia, 1980). Research conducted by Matteson (1972) demonstrated that Diffusions exhibit characteristics similar to Moratoriums, so he hypothesized that Diffusion is higher than Foreclosure. Some of the validity and reliability studies on the Extended Objective Measure of Ego Identity Development also show that Diffusion is similar to Moratorium (Adams, et al., 1987), which lends support to Matteson's argument. Cote and Levine (1988a) pointed out that there may be several types of Diffusion and that Diffusion, as defined by Marcia, is not analogous to Erikson's identity confusion or the polar opposite of identity Identity Achieved. Others have argued that there are two types of Diffusion: pre-crisis and post-crisis Diffusion (Marcia, 1980). So,
it seems unclear where the Diffusion status would lie along a developmental continuum and whether there might be different Diffusions at different developmental levels.

Waterman, A. S. (1982, 1985) has conceptualized the most comprehensive model of identity development, depicting most of the possible pathways between statuses (Fig. 4, p. 33). In this model, individuals begin in Diffusion (pre-crisis), probably in early adolescence before identity issues become salient, and can either remain in that status or move into Foreclosure or Moratorium. If the progression is into Foreclosure, it would mean that an individual makes a commitment without exploring possibilities, perhaps seizing the first opportunity that arises. If, on the other hand, the movement is into Moratorium, the individual would begin a process of exploration. The second stage of the model shows that Foreclosures can move to Diffusion or Moratorium or remain Foreclosed. A shift to Diffusion implies that the individual merely abandons commitments. Progression into Moratorium could mean that earlier commitments were unsatisfactory and a process of exploration is initiated. From Moratorium, movement is only possible into Identity Achieved or Diffusion because by definition it is not possible to be Foreclosed after experiencing a crisis. A shift to Achievement would entail making a commitment in at least one content area and a shift to Diffusion would mean abandoning the search for commitments, similar to a post-crisis Diffusion. Individuals can stay in Moratorium, but it is not likely because of the high anxiety associated with being in crisis. Identity Achieved individuals can either remain achieved, move back into Moratorium and reassess identity issues, or regress into Diffusion. According to Waterman, A. S. (1982, 1985), Diffusion to Foreclosure, Foreclosure
to Moratorium, and Moratorium to Identity Achieved represent progressive developmental shifts because they are movement into either a more reflective phase or into commitment. Movement into Diffusion from any other status represents a regressive shift in this model. Movement from Achievement to Moratorium is a resumption of exploration of identity issues rather than a regression, and remaining in one status represents a stable type. By definition, there can be no movement into Foreclosure from either of the crisis statuses.

Fig. 4. A Model of the Sequential Patterns of Ego Identity Development
(D=identity Diffusion, F=foreclosure, M=moratorium, A=Identity Achieved)

This model was based on the assumption that Diffusion is the lowest status, which may be the case for Diffusion in early adolescence, or pre-crisis Diffusion. But if one considers Matteson's (1972) hypothesis that Diffusion is higher than Foreclosure, the previously mentioned inconsistencies in empirical studies, and Marcia's (1980) uncertainty about whether Foreclosure or Diffusion is the lowest status, it could alter the interpretation of the model. Foreclosure to Diffusion would be a progressive shift if it were into post-crisis Diffusion. In this case, it is conceivable that an individual would become aware of other possibilities which challenge initial
commitments, but would choose not to engage in exploration for a variety of reasons. For example, if Diffusions are extremely cognitively complex but lack integrative capability, as Marcia (1980) has suggested, they may be overwhelmed with a pluralistic environment. If there is a post-crisis Diffusion, which represents a higher status than Foreclosure, movement into Foreclosure from this status would represent a regressive shift. An alternative model of progressive and regressive shifts is depicted in Figure 5.

![Diagram of identity statuses]

Fig. 5: Alternative Model of Progressive and Regressive Developmental Paths of identity statuses

As will be seen later, this model is strikingly similar to Perry's Scheme of cognitive-structural development and, if the two are parallel and related developmental processes, the relationship between them could lend support for this alternative model of identity development.

**Research on identity statuses**

Extensive research has been conducted over the past twenty years to validate the identity statuses and further define the characteristics of each status. The studies have ranged from longitudinal research to verify development during the college years to studies that correlate the identity
statuses with various personality characteristics, cognitive characteristics, interpersonal styles, and family antecedents. Comprehensive reviews are available which summarize the extensive literature bases (Adams, et al., 1987, Bernard, 1981; Bourne, 1978; Marcia, 1980; Waterman, A. S., 1982, 1985). The literature which is most important to this study, however, is that which describes the developmental processes of identity formation during the college years and the characteristics of the identity statuses which may be related to the Perry Scheme.

Longitudinal Research

There is longitudinal evidence to validate progressive developmental shifts through the identity statuses during the college years, but some of it shows that development occurs at different rates in different content areas. The most extensive longitudinal studies have been conducted by Waterman, A. S. and his colleagues. One longitudinal study of college freshmen showed positive development on occupational issues and regressive development on ideology (Waterman, A. S. & Waterman, C. K., 1971). The composite of several studies demonstrated that there is a decrease in Moratoriums and Diffusions and an increase in Identity Achieved during the college years on occupational and political issues, but on religious issues there is a shift from Foreclosure to Diffusion (Waterman, A. S., 1982; Waterman, A. S., Geary, & Waterman, C. K., 1974; Waterman, A. S. & Goldman, 1976; Waterman, A. S. & Waterman, C. K., 1971). From those studies, Waterman, A. S. (1982) concluded that the college environment promotes the resolution of the identity crisis on occupational and ideological issues, but it promotes crisis and not commitment on religious issues. It would appear that religion is not an urgent concern for college students or that the
environment of college does not challenge and press for a resolution in this area. In several other studies, there was strong evidence of development on occupational issues, but there were conflicting results when development on ideology and interpersonal issues was measured. Meilman (1977) found that occupational and political crisis and commitment increased with age and there was a significant increase in the number of individuals in the Identity Achieved status as age increased. The same study, however, showed increases in crisis, but not commitment, on religious and sexual issues. In a study of women, it was also shown that occupational and political identity status increased with age and college experience, but not religious or sexual identity status (Prager, 1985). These studies partially substantiate A. S. Waterman's (1982) claim that adolescents do not necessarily make commitments on religious issues, but they also indicate that both sexual and religious issues are of concern for this age group. The college environment may help in the resolution of some issues more than others.

Other longitudinal research using the identity statuses also demonstrated progressive shifts during the college years. Meilman (1979) studied males ages 12 to 24 and concluded that the greatest change in identity was between ages 18 and 21. Rodman (1983) also provided evidence that age and identity status are related, but other research revealed that young adults do not necessarily make commitments during the college years. For instance, one study demonstrated that subjects aged 19-20 had not yet achieved a sense of identity, which is consistent with theory (Offer, Marcus, & Offer, 1970); another showed that most subjects at age 21 are still in Moratorium (Meilman, 1977). This implies that young adults may prolong
making commitments and supports Erikson’s notion of a moratorium during the college years. The longitudinal studies on women are mixed, showing a high rate of Diffusion for seniors in one early study (Constantinople, 1969) and less Diffusion in another (Stark & Traxler, 1974). Waterman, A. S. and Goldman (1976) concluded, however, that if subjects entered a crisis on any issue during the college years, the probability of successfully resolving it was high.

Several studies examined the stability of the statuses in conjunction with a longitudinal design. Waterman, A. S., et al. (1974) found that the Identity Achieved status was the most stable and the Moratorium status was relatively unstable from the freshman to the senior year, which supports theoretical predictions. They also provided evidence that Foreclosure is a relatively stable status on occupation, but not on ideology, perhaps because there is more social pressure to resolve occupational issues and there are no time constraints on exploring ideological issues. The same study, however, showed that 13% of the seniors were in the Diffusion status on both occupation and ideology and 33% were Diffuse in one of those areas, indicating that Diffusion can be relatively stable or that students have abandoned the effort to explore in certain domains. Josselson (1987), on the other hand, found stability on ideology and relationships for women, but not on occupation. Similarly, she found Foreclosure, Moratorium, and Identity Achieved to be stable after the senior year and Diffusion to be stable for some women. There was also evidence (Waterman, et al. 1974) that as subjects shifted from exploration in one content area to another, they moved into higher identity statuses, but there were some students where content changed and status did not. Another three-year longitudinal study showed
that 50% of subjects showed progressive growth, 14% remained stable, 11% regressed, and 25% had unstable patterns (Adams & Montemayor, cited in Adams, Bennion & Huh, 1987). Of those that progressed, 80% of the growth occurred in freshmen Moratoriums, which lends credence to the belief that the transition during the freshman year is particularly critical. Diffusions in that study were the most unstable in their development, while the committed statuses were the most stable. Some Foreclosures also moved into Diffusion or were unstable. In a study of first-year air force cadets, half entered as uncommitted, over half remained in the same status after one year, the Identity Achieved status was the least stable and Foreclosed was the most stable (Dellas & Jernigan, 1987). In a follow-up study six years after his initial research, Marcia (1976) found that the high identity statuses were more subject to change than the low statuses, that Moratoriums had 100% change rate, and that subjects from the Identity Achieved and Moratorium statuses had even moved into Foreclosure. The latter finding, which contradicts theoretical constructs, could be explained as foreclosing on one's identity (Marcia, 1980) or as evidence that what appeared to be commitments actually represented temporary choices during the Moratorium stage (Cote & Levine, 1988a). Taken together, these studies seem to support the assumption that Moratorium is the least stable status and the committed statuses are most stable, but the stability of the Identity Achieved status over time is questionable. It is interesting to note that Diffusion may be a relatively stable status during the college years, possibly because it is acceptable in the college environment (Waterman, A. S. et al.; 1974).
Identity Statuses and the College Experience

There appears to be a relationship between the college experience and identity formation. In a study comparing college students with non-college students, the non-college students were significantly more Identity Achieved and the college students were more frequently in Moratorium, supporting the hypothesis that college fosters an extended moratorium on identity issues (Munro & Adams, 1977b). Although the college youth displayed less commitment than non-college youth, the authors of that study attributed the differences to ideological rather than occupational identity. A comparison of college students from rural and urban backgrounds showed that rural students make the greatest change in identity, probably because they have not previously been exposed to a pluralistic environment (Fry, 1974). In a study by Adams and Fitch (1983), it was shown that different college departments seemed to attract different identity statuses and that development was related to the cultural climate within the departments. Two studies provided evidence that expressive writing, such as poetry writing and keeping a journal, in high school and college also promotes identity development, probably because it encourages introspection on personal issues (Waterman, A. S. & Archer, 1979; Waterman, A. S., et al., 1977). In a study of women, Weston and Stein (1977) demonstrated a relationship between participation in campus activities and identity achievement.

The identity statuses differ on their performance in college and their satisfaction with the environment. Diffusions tend to be overachieving and Foreclosures underachieving during their freshman year (Berzonsky, 1985). The Moratoriums are most dissatisfied with their education (Waterman A.
S. & Waterman, C. K., 1970) and are most likely to drop out of college (Ochberg, 1986). Cross and Allen (1970) found a correlation between SAT scores, high GPA, and identity achievement, but another study found no relationship between the identity statuses and academic achievement (Rodman, 1983).

**Personality Characteristics**

There appear to be significant differences between the identity statuses on a variety of personality variables (Bernard, 1981; Bourne, 1979; Marcia, 1980). For instance, Moratoriums are the most anxious and Foreclosures are the least anxious (Marcia, 1967; Podd, Marcia, & Rubin, 1970); however, Foreclosures may be low on anxiety because they are high on repression or denial (Marcia, 1980). Foreclosures are also highest in authoritarianism (Marcia, 1964, 1966, 1967; Marcia & Friedman, 1970; Matteson, 1974; Schenkel & Marcia, 1972) and need for social approval (Orloffsky, Marcia, & Lesser, 1973). Diffusions are most influenced by peer pressure and are most likely to exhibit conformity behavior, in contrast to the Identity Achieved who engage in conformity behavior to gain in achievement (Adams, Ryan, Hoffman, Dobson, & Nielsen, 1985). According to Rothman (1984), Diffusions also display compulsive-obsessive-rigid behavior and alienation when their options are blocked, which suggests the formation of a negative identity. In a study of the relationship between identity status, dogmatism, purpose in life, and neuroticism, Cote and Levine (1983) found that Foreclosures tended to be neurotically dependent, Moratoriums were tenderminded and tolerant, and Identity Achieved had a high sense of purpose.
Most of the research on personality supports the contention that Foreclosure and Diffusion are lower statuses developmentally and Moratoriums and Identity Achieved are higher statuses. Foreclosures and Difusions have been shown to be low on self-esteem (Marcia, 1967), exhibit external locus of control (Adams & Shea, 1978), have a closed or diffuse life-style (Marcia, 1976), be low on cultural sophistication (Waterman, A. S. & Godman, 1976; Waterman, A. S. & Waterman, C. K., 1971), have an insecure attachment style (Kroger, 1985; Kroger & Haslett, 1988), and to be low on autonomy (Orlofsky, et al., 1973; Matteson, 1974; Waterman, A. S. & Waterman, C. K., 1971). The same studies demonstrated that the Moratorium and Identity Achieved statuses exhibit the opposite characteristics. One study found no significant differences on locus of control, however (Rodman, 1983). In addition to the above characteristics, Moratoriums and Identity Achieved take personal responsibility for their own lives (Marcia, 1980), are high on independence and achievement (Andrews, 1973), exhibit more expressiveness, intimacy and interpersonal choice (Munro & Adams, 1977a), are high on sex-role identity, self-concept, and psychological adjustment (LaVoie, 1976), and high on both intrapersonal and interpersonal adjustment (Neuber & Genthner, 1977).

The differences between the high and low statuses on personality characteristics are not always so clear cut. Both the Identity Achieved and Foreclosed score relatively high on Depression (Rothman, 1984) and fear of success (Larkin, 1987), possibly because of concerns about fulfilling their own or others expectations of them. On the MMPI, college students in Moratorium show conflict, Foreclosures are characterized by adherence to parental values, and both Identity Achieved and Diffuse have normal scores
These results are what would be expected theoretically, except for the normal scores for the Diffusion status. The authors of that study interpret the finding as evidence that Diffusion might be adaptive in a college environment.

**Interpersonal Characteristics**

Further research has identified interpersonal characteristics which distinguish between the statuses. Diffusions tend to be withdrawn, wary of peers and authorities, angry and hostile, and terrified of teachers, while Foreclosures are talkative, compliant toward authorities, well behaved, and responsive in highly structured situations (Donovan, 1975). The Diffusions are the least intimate and most alienated of all the statuses (Kinsler, 1972; Orlofsky, et al., 1973). Diffusions and Foreclosures have also been shown to have superficial, stereotypic relationships, in contrast to Moratoriums and Identity Achieved who are capable of close, intimate relationships, which is consistent with theoretical predictions that identity formation precedes intimacy (Orlofsky, et al., 1973; Kacerguis & Adams, 1980; Raskin, 1985).

Both Diffusions and Moratoriums, however, express the greatest loneliness (Craig-Bray, Adams, & Dobson, 1988). Moratoriums are the least cooperative (Podd, et al., 1970) and can be expressive, competitive, rebellious, and volatile (Donovan, 1975). Identity Achieved generally exhibit a capacity to care, are non-competitive, and maintain a respectful relationship with authorities (Donovan, 1975). They also have supportive, harmonious relationships with parents and other authority figures (Jacobson, 1977). A study by Slugoski, et al. (1984), however, showed that both of the higher statuses can be cooperative and facilitative and that the Foreclosed status can be antagonistic when defending a strongly held belief.
Cognitive Characteristics

Research on cognitive characteristics has also revealed differences between the low statuses and high statuses. It is interesting to note that most studies have found no differences in terms of intelligence for either males or females (Cross & Allen, 1970; Marcia, 1964; Marcia & Friedman, 1970; Schenkel, 1975), but one investigation of high school females demonstrated a relationship between intelligence, conceptual level, tolerance of ambiguity, and identity status, with intelligence contributing to differences on all variables (Raphael, 1975). In terms of cognitive complexity, using the Role Repertory Test, Foreclosures were low, Diffusions were high, and Moratoriums and Identity Achieved were moderate (Tzuriel & Klein, 1977). In a study using Schroeder, Driver, and Streufert's Paragraph Completion Test to measure cognitive complexity, the results were similar but the higher statuses were more integratively complex (Marcia, 1980; Slugoski, et al., 1984). Marcia's (1980) interpretation of those findings was that the Diffusions may be extremely complex, but lack organizational and integrative capabilities to resolve identity issues. A study of women, however, demonstrated that Moratoriums were the most cognitively complex and both Diffusions and Moratoriums were high on self-cognition (Josselson, 1972). The high statuses have also been shown to be more reflective than impulsive (Waterman, C. K. and Waterman, A. S., 1974), better on a Concept Attainment Task under conditions of stress (Marcia, 1964, 1966), and higher on moral reasoning (Podd, 1972; Rowe & Marcia, 1980).

Research on Piaget's formal operations and the identity statuses is inconclusive (Berzonski & Barclay, 1981; Marcia, 1980). Two studies were not able to demonstrate any significant differences in formal operations
across the identity statuses (Cauble, 1976; Wagner, 1976,1987). Wagner's (1987) study did reveal a low correlation between identity and one Piagetian combinatorial task, but performance on the formal task was attributed to self-esteem rather than identity status per se. Rowe and Marcia (1980) conducted a study using a small sample that showed only one subject who was in Moratorium or Achievement was not at formal operations. The authors interpreted that research as partial support for the assumption that formal operations is a necessary but not sufficient condition for identity formation. Another study showed a significant positive correlation between ego identity, formal operations, and grade in school, but grade in school accounted for 21 percent of the variance, while formal operations, egocentrism, and sex accounted for only 2 percent (Protinsky & Wilkinson, 1986). Taken together, these studies indicate that the relationship between formal operations and identity formation is unclear and may indicate that other variables are mediating factors.

Gender Differences

In recent years, authors have debated whether identity formation is the same for both women and men. Erikson (1959b, 1968) thought that women's identity was related to "filling the inner space" and that women did not form a sense of identity until they were in a relationship with a man. Other theorists and researchers have suggested that men form a sense of identity through a process of separation (Gould, 1978; Levinson, 1978; Vaillant, 1977) and women's identity is formed through connected relationships and may precede or even be fused with the developmental task of intimacy (Delworth, 1989; Gilligan, 1982a, 1982b; Hodgson & Fischer, 1979; Josselson, 1973,1977,1983,1987; Josselson, Greenberger, &

Some of the studies with Marcia's original interview format showed that women did not follow the same patterns as men on occupational and ideological issues (Marcia, 1980). In males, the lower statuses shared common characteristics and the higher statuses were similar to each other on a number of variables, but in women, some of the original studies showed that Foreclosures were more like Identity Achieved (Hodgson & Fischer, 1979; Marcia, 1980). For instance, both Foreclosures and Identity Achieved conformed least to peer pressure (Toder & Marcia, 1973) and were field-independent, which may be related to their ability to make commitments (Schenkel, 1975). Foreclosed women also scored high on self esteem and low on anxiety, while Identity Achieved women were low on self esteem and high on anxiety, which is the opposite of what would be predicted (Marcia & Friedman, 1970; Schenkel & Marcia, 1972). A more recent study, also demonstrated high self esteem in both Foreclosed and Identity Achieved women, but the Foreclosed were highest (Prager, 1982). These findings were interpreted to mean that Foreclosure is an adaptive status in women because of societal norms which discourage female exploration (Marcia & Friedman, 1970; Marcia, 1980). It has also been suggested that the gender differences could be attributed to cultural expectations at a particular time in history and the differences could disappear, as women break out of traditional female roles and more role opportunities are available (Marcia, 1980; Morgan & Farber, 1982; Peck, 1986; Whitbourne & Waterman, A. S., 1979.)

Other studies dispute the previous evidence and have demonstrated greater ego development in both Moratorium and Identity Achieved women
relative to the Diffuse and Foreclosed women. Two studies used early memories to view personality and showed higher ego levels in Moratorium and Identity Achieved women (Josselson, 1982; Orlofsky & Frank, 1986). The authors concluded that the traditional measures of identity status may not be adequate for tapping underlying ego strength. Ginsburg and Orlofsky (1981) have also shown that women in the higher statuses were more advanced in their ego development. Another study of the relationship between ego-identity status and social-influence style also demonstrated a significant difference in ego development between the lower statuses and higher statuses. Women in the lower statuses were least able to integrate and analyze ideas and were manipulative in interpersonal relationships compared to with the higher status women who were able to synthesize large volumes of information and were cooperative and compromising (Read, Adams, & Dobson, 1984).

Raphael (1977) presented evidence that there were methodological difficulties in the studies of women. Studies frequently used older women, but when younger women were used the processes and patterns were the same as for men. Marcia and his colleagues recognized that the original studies may have been biased against women due to the choice of variables studied, so the format for Marcia's interview was expanded to include questions to tap the domain of interpersonal relationships and more accurately assess female development (Grotevant, et al., 1982; Marcia & Friedman, 1970, Marcia, 1980). Follow-up studies showed that the new areas were more predictive of women's identity, but that they were also predictive of identity formation in men (Marcia, 1980; Schenkel & Marcia, 1972).
There is some evidence of gender differences by content area, rather than in the process of identity formation, but there are conflicting results between studies. Early studies demonstrated that female development is related to interpersonal issues and male development is related to occupation, as would be expected from the theoretical literature (Douvan & Adelson, 1966; Alishio & Schilling, 1984; Josselson, Greenberger, & McConchie, 1977; Marcia, 1980; Waterman, A. S., 1982, 1985). In contrast, a number of studies showed no gender differences on occupational or ideological identity formation, only on relationship issues (Waterman C. K. & Nevid, 1977; Waterman, A. S., 1982). Further research has shown that females are frequently in Moratorium or Identity Achieved on relationship issues, while males are Foreclosed or Diffuse (Hodgson & Fisher, 1979; Matteson, 1977; Waterman, C. K., & Nevid, 1977). But, other studies demonstrated that attitude toward premarital sex is a relevant issue for males as well as females (Matteson, 1972; Meilman, 1977, 1979; Rogow, et al., 1983) and one study showed that sex roles and values have the highest predictive relationship with identity for both men and women (Matteson, 1972). Recent investigations have revealed few sex differences by content area (Kroger, 1986; Marcia, 1980).

Some research has demonstrated gender differences in occupational identity, however. Orloffsky (1978) found that high identity men and women scored high on achievement motivation and self-esteem, but that fear of success was highest in low identity men and high identity women. In a recent study of women, however, the committed statuses demonstrated less fear of success than the uncommitted statuses (Freilino & Hummel, 1985). One study showed qualitative differences in how men and women
perceive occupational commitments: Men associated an occupational commitment with an instrumental orientation, while women associated occupational identity with working hard and avoiding competition (Grotevant & Thorbecke, 1982).

Erikson (1968) theorized that identity precedes the formation of intimacy in males and, as indicated above, others have suggested that female identity may be associated with the development of intimacy. The literature is unclear on that point, with different pieces of research having shown different relationships between identity issues, intimacy, and gender. Hodgson and Fischer (1979) found that more females than males were intimate and that identity was more closely related to intimacy in males than females, but Tesch (1980) demonstrated a relationship between identity achievement and intimacy for both sexes. In a study of 78 college students, Schiedel and Marcia (1985) found more women than men in a high intimacy-low identity group, supporting the notion that females deal with intimacy prior to identity. Fitch and Adams (1983) demonstrated that occupational identity was related to intimacy in men and religious identity was associated with intimacy in women, but in another study of identity formation and social relations, Craig-Bray, et al. (1988) concluded that exploration on ideological issues was predictive of intimacy for both men and women. One study showed male intimacy was correlated with religion, politics, and sex roles, while female intimacy was only related to the area of politics (Tesch, 1980). Kacerguis and Adams (1980) demonstrated an association between occupational identity development and intimacy for both men and women. No sex differences were found in a study of adults (Raskin, 1985). It would appear that forming a sense of identity on one or more issues is related to intimacy for both genders.
Additional research on women reveals that women's patterns of identity development may be varying as a result of changing societal values. Recent studies by Rothman (1984) and Kroger (1986) showed no sex differences in identity formation, which could be a reflection of changing times. The study by Rothman, however, did show that Foreclosed women were lowest on anxiety, which supports previous claims that Foreclosure is adaptive in a closed system that does not allow exploration. The low anxiety of Foreclosed women could also be attributed to denial, in the same way that Marcia (1980) interpreted low anxiety in Foreclosed men. Identity Achieved women have been shown to be more contemporary in their sex-role attitudes and to be enrolled in more atypical majors (Fannin, 1979). Orlofsky (1977) demonstrated that women who had a more masculine sex-role orientation were higher in self-esteem and more likely to be Identity Achieved, but Hodson and Fischer (1981) showed that women who followed a non-traditional career path were more likely to experience anxiety and low self-esteem.

Relationship to Perry's Scheme

Marcia (1980) emphasized that the identity statuses share the same theoretical underpinnings as Perry's Scheme of Intellectual and Ethical Development and some of the research on the identity statuses demonstrates the similarities. For instance, it is clear that the process of identity formation occurs during the college years, that it is a developmental process, and that the characteristics associated with the different identity statuses are similar to the descriptors of the Perry positions applied to identity content areas.
Cognitive-structural Development

Piaget's theory has provided the foundation for most other theories of cognitive-structural development. He studied the underlying structure of thought in children from infancy to adolescence and described a hierarchical, invariant sequence of qualitatively different stages which appear to be universal. The theory which he proposed assumes that cognitive advancement occurs as a result of normal neurological development, exposure to a complex social environment, and accumulated experiences with things in the physical environment. Intelligence is a composite of the normal functions or tendencies of organism to organize and adapt to the environment, the structure which underlies thought processes, and the content of the thoughts (Ginsburg & Opper, 1979; Piaget, 1960).

Piaget (1960) believed that intelligence is a form of biological adaptation and that organisms have a natural tendency toward increased organization and equilibration. He assumed that an individual in any stage of development has a specific way of making meaning of experiences, or cognitive-structure. As an individual interacts with the environment and development progresses, the internal cognitive-structures are reorganized through processes of assimilation and accommodation. There is a tendency to exercise the existing structure at any stage and assimilate new experiences with the environment into that structure. If, however, new experiences challenge the existing structure sufficiently, the individual will accommodate and move to a higher stage of logical reasoning. These organizational functions of assimilation and accommodation remain the same, no matter what the stage of development (Ginsburg & Opper, 1979).
Piaget divided development into four major stages: sensorimotor in infants; preoperational in children of 2 to 7 years; concrete operational at 7 to 11 years of age, and formal operational in adolescents and adults. Advancement through the stages represents a decrease in egocentrism and an increase in objectivity and complex thinking (Ginsburge & Opper, 1979; Piaget, 1960). Formal operations, which is representative of adolescent thought, is the stage which would emerge about the same time as individuals are confronted with the psychosocial task of identity formation. At this stage, individuals are capable of imagining the possibilities in a situation, taking into account all of the combinations of eventualities, and forming and testing hypotheses (Ginsburg & Opper, 1979).

Piaget (1960) originally assumed the structure of adult cognition was stable after attaining the level of formal operations. However, he observed that adults do not always demonstrate formal operations, yet they can reason at high levels in special content areas related to their experiences. This observation caused him to question whether there is a common structure of adult reasoning which cuts across content areas and which represents another stage beyond formal operations (Piaget, 1972). He commented, however, that it would be difficult to define and measure the structure because of the variation in adult experiences.

Recently, theorists have suggested that mature cognition transcends formalistic thinking and pure logic and that formal operations, as described by Piaget, may not even be useful and may be maladaptive for most adults on an everyday basis (Basseches, 1980; Cavanaugh, Kramer, Sinnott, Camp, & Markley, 1985; Gilligan & Murphy, 1979; Kitchener, K. S. & Kitchener, R., 1981; Kramer, 1983; Labouvie-Vief, 1980; Labouvie-Vief &
According to Kitchener, K. S. (1983), there are three levels of cognition: cognition where one can compute, memorize, read, perceive and solve problems; meta-cognition where one is capable of monitoring one's own progress in cognition; and epistemic cognition where one can reflect on the limits of knowing, the certainty of knowledge, and the criteria for evaluating knowledge. It is assumed that cognition and meta-cognition occur in childhood, but epistemic cognition is characteristic of adults. Others have defined adult cognition as: an emphasis on temporary forms, wholeness, change, and interactive relationships (Bassaches, 1980); a modifiable and adaptive specialization (Labouvie-Vief, 1980); an ability to hold committed beliefs while recognizing they are subjective and tentative (Holden, 1978, Perry W. G., 1968, 1981); an ability to find problems (Arlin, 1975); and a realization of relativism, acceptance and integration of contradiction, and the recognition of the interdependence of variables (Kramer, 1983). According to Gilligan and Murphy (1979), adult cognition is relativistic, self-affirming, and committed. Riegel (1973) also proposed a model of adult cognition that is dialectical and interactive. All of these theorists appear to share common assumptions about adult cognition: that it is complex, wholistic, and plastic; that it takes into consideration multiple possibilities in a relativistic world; that it is concerned with inter-relationships rather than independence of variables; and that it is related to adult experiences and personal commitment. Adult cognition, therefore, appears to advance in complexity beyond formal operations and to interact with psychosocial variables such as identity formation.

There are two closely related theories which have attempted to describe and measure the structures underlying the thought of young adults
and adults: Perry's Scheme of Intellectual and Ethical Development in the College Years and the Reflective Judgment of Kitchener, K. S. and King. Both theories describe stages of development that occur during the college years and considerable research has been done to validate the theories and develop methods for measuring them. The two theories differ in that Perry, W. G. (1968, 1981a) described structures for making meaning and applied them to psychosocial issues, while Kitchener, K. S. and King (1981) attempted to define only the structures of adult logic. The scheme described by Perry has some marked similarities with the identity statuses.

**Perry's Scheme of Intellectual and Ethical Development**

William Perry (1968) and his colleagues at Harvard interviewed 280 students from Harvard and Radcliff between 1958 and 1963. From over 464 interviews and 84 four-year longitudinal sequences, they formulated a scheme to describe the cognitive development which occurs during the college years. The scheme is based on the same basic assumptions as Piaget's theory; that development is movement toward increasing organization and that there are stages which are invariant, hierarchical, and perhaps universal. In general, the scheme emphasizes a shift from simple to complex ways of making meaning of experiences, a shifting sense of responsibility from external to internal, an increasing detachment and objectivity, and the formation of commitments based on an examination of pluralism. Inherent in the scheme is a decentering and a shift toward meta-thinking. Developmental changes occur in how one views knowledge, responsibility and values. The first five stages in the scheme are formal and structural and the later stages are an application of stage 5 meaning making to existential and psychosocial questions. The entire process of
cognitive-structural development is thought to be related to identity issues, such as occupation, ideology, and relationships for the college-aged person. In this scheme, identity is a product of both the content and the structure for making meaning (Perry, W. G., 1968, 1981a).

According to Perry, W. G. (1968; 1981a), development progresses in an orderly sequence of stages of ways of making meaning of experiences. Each stage represents a stable form or structure which is derived from the forms the person brings, forms which are inherent in the environment, and the congruence between the two. A structure is defined as "the formal properties of the assumptions and expectancies a person holds at a given time with regard to the nature and origins of knowledge and value . . . (and also) the forms of action, thought, feeling, purpose, and care that are congruent with the assumptions" (Perry, W. G., 1968, p. 42). The stages of development progress toward greater complexity and differentiation and are invariant, sequential, and hierarchical (Moore, 1982; Perry, W. G., 1968, 1981a; Rodgers, 1980, 1983). The structure, sequentiality, and hierarchy of Perry's positions has been supported in research findings (Kurfiss, 1977b; Perry, W. G., 1981a).

Perry, W. G. (1981a) recognized that, although the positions are static by definition and each stage is qualitatively different, development is actually movement through the positions. He assumed that developmental processes occur because of an inner energy and an urge to mature, combined with a supportive environment that provides opportunities for growth. He also recognized, like the psychosocial theorists, that development can occur at different rates in different psychosocial content areas (Perry, W. G., 1968; 1981a). This was supported in a study of college
students by Kurfiss (1977b) which showed that the awareness of pluralism occurs first in academic and social areas and is then applied to the formation of a personal value system.

There are nine sequential positions or stages of progressive growth in the scheme. These can be grouped into four categories: Dualism, Multiplicity, Relativism, and Commitment. Although regression is not believed to be possible in cognitive-structural theories, there are three positions in this scheme which represent deflections from growth: Retreat, Escape, and Temporizing (Perry, W. G., 1968, 1981a). The scheme is diagramed in Figure 6.

\[
\text{Development} \quad \rightarrow \quad \text{Dualism} \quad \rightarrow \quad \text{Multiplicity} \quad \rightarrow \quad \text{Relativism} \quad \rightarrow \quad \text{Commitments} \quad \rightarrow \quad \text{Evolving Commitments}
\]

Position 1 → 2 → 3 and/or 4a → 4b → 6 → 7 → 8 → 9

Retreat  Escape  Temporizing

Fig. 6: A Map of Development

In Dualism (Positions 1 and 2), meaning is divided into two realms; good vs. bad, right vs. wrong, we vs. they. Dualists believe that right answers exist and authorities know them, that uncertainty is an error of some
sort, that knowledge is quantitative, a teacher's role is to teach the right answers, and that students learn by memorization and hard work. In Dualism, agency is “out there” (Moore, 1982; Perry, W. G., 1968, 1981a; Rodgers, 1980, 1983).

Basic Duality (Position 1) is a hypothetical stage derived from a theoretical extension of the model. Individuals in this position are undifferentiated and perceive everything as absolutes. They subscribe to simple obedience toward authorities because authorities are seen as omniscient and inseparable from knowledge. This position is characterized by a total lack of perception of uncertainty or alternatives because detachment and objectivity is impossible. Evaluation is viewed in terms of quantity and evaluation of performance is indistinguishable from evaluation of self (Moore, 1982; Perry, W. G., 1968, 1981a; Rodgers, 1983).

In the next position, Multiplicity Prelegitimate (Position 2), diversity and complexity are perceived, but absolutes and right answers still exist. Uncertainties are attributed to a mistake of some kind, such as poorly qualified authorities who are failing in their roles or to authorities who present complexities as something for students to work on. In this stage, it is important to work diligently to find the right answers, but there is no room for personal interpretation (Moore, 1982; Perry, W. G., 1968, 1981a; Rodgers, 1983).

The two dualistic positions resemble the Foreclosed identity status in a number of ways. They are authoritarian and exhibit an external locus of control. They are also relatively low on cognitive complexity, are not open to exploring possibilities, and represent low developmental levels.
In Multiplicity, especially Position 3, diversity of opinion and values is legitimate in areas where right answers are not yet known, but right answers still exist and it is assumed they will be known someday. In position 4, there are no patterns for forming opinions and no criteria for making judgments, so everyone has a right to his or her own opinion. Right answers are unknown in most areas, if not all (Moore, 1982; Perry, W. G., 1968, 1981a, Rodgers, 1983).

In Multiplicity Subordinate (Position 3), legitimate human uncertainty is temporary in areas where the right answer is not yet known, but this does not affect the nature of truth itself. Truth remains absolute and knowable in principle. The issue of evaluation in this stage becomes one of finding the technique which the authorities want (Perry, W. G., 1968), but students are unclear about the standards of evaluation (Rodgers, 1983.) The teacher's role is perceived as one of training students how to find the right answers and knowledge is still measured in terms of quantity, not quality (Rodgers, 1983).

In position 4, uncertainty prevails and everyone has a right to his or her own opinion. There are no authorities per se. Individuals can be either oppositional or adhering in this position. If they are oppositional (Multiplicity Correlate), their style is rebellious and they consider their own opinion to be as valid as any other. Consequently authorities have no right to evaluate the opinions of others and are considered to be ignorant if they do. If they are adhering (Relativism Subordinate), multiplicity is still something that teachers want students to work on or a way that teachers expect students to think. In both styles, this stage is the beginning of meta-thought and an initial awareness of relativism as students start to
recognize the difference between unexamined beliefs and considered judgments (Moore, 1982; Perry, W. G., 1968, 1981a; Rodgers, 1983).

The Multiplistic stages of cognitive development have some resemblance to the post-crisis Diffusion status or extended Moratorium. They are aware of alternatives, but lack the integrative complexity to sort out the possibilities and make commitments. They exhibit an internal locus of control by stage 4, but have a tendency to escape by letting fate take its course or to stay busy so they do not think about "who they are." They do not appear to be as anxious and alienated as Diffusions. Individuals in oppositional stage 4, on the other hand, may be just as alienated as Diffusions. They may exhibited the same ambivalent attitude toward authorities and rebellious nature as Moratoriums, but they lack the higher self-esteem associated with the Moratorium status. Adhering individuals in position 4, on the other hand, exhibit the higher self esteem of the Moratorium status.

Theoretically, there is a "cognitive flip" at position 4 in the scheme. In this stage there is a realization that all knowledge is relative and simple-right wrong answers exist only in special cases (Moore, 1982; Perry, W. G., 1968, 1981a; Rodgers, 1983). This revolution in thinking is accompanied by changes in how one views the role of authority, self, and peers. At position 4, peers, self and authorities are seen as equals who are learning each others opinions. At position 5 peers and self are seen as making valuable contributions to knowledge and authorities become colleagues in the search for knowledge rather than disseminators of truth. It follows that evaluation at position 5 is collaborative and is dissociated from personal worth. There is also a change in how one views responsibility and values. There is an increasing awareness of one's sense of responsibility for learning and for
making value judgments in a relativistic world. Emotional maturation and identity formation are now possible with the change in cognition at Position 5 (Moore, 1982; Perry, W. G., 1968, 1981a) and there is a significant increase in dialectical thinking (Slepitza, 1983).

In Relativism (Position 5) questions about knowledge and truth become contextual. Diversity of opinions, values, and judgments are recognized and cherished. In contrast to the opinions held by multiplists, alternative points of view in the relativistic positions are derived from coherent sources, evidence, logic, systems, and patterns. Students in these positions are capable of analyzing information and making complex comparisons, synthesizing various sources of information, and transferring learning across contexts (Moore, 1982; Perry, W. G., 1968, 1981a; Rodgers, 1983).

Positions 4 and 5 represent a drastic revolution in thinking, from fundamental dualism to perceptions of the relativistic nature of knowledge. In position 5, non-absolute criteria are used to make judgments of good and bad about knowledge and to evaluate progress. There is a sense of expansion, as well as a sense of insecurity in a pluralistic world. The person may become increasingly decentered, detached, and objective (Moore, 1982; Perry, W. G., 1968, 1981a).

Compared to Piaget's theory, the last four positions in Perry's scheme employ the logic of conviction rather than the logic of rational certainty (Moore, 1982.) These stages are existential, rather than formal structural stages, and have been criticized for departing from Piagetian phenomena (King, 1978; Kitchener, K. S. & King, 1981). It is possible, however, that they partially represent the existential nature of adult
cognition. It is these positions seem to closely parallel the higher levels of identity formation.

Position 6 (Commitment Foreseen) is the first existential position in the scheme. In this position, energy is invested in self-affirmation and orienting oneself in a relativistic world. The person engages in coming to terms with his or her past and confronting identity issues of career, marriage, religion, politics, social endeavors, and general values using position 5 cognition. In addition, there is an increase in sense of responsibility, similar to the higher identity statuses, but at this stage an individual only recognizes the need for commitment (Perry, 1968; 1981a).

The last three positions in the scheme (Positions 7, 8, and 9) are directly related to identity and style of commitment. Identity comes from both the content of the issues and the form or structure of position 5 cognitive development (Moore, 1982; Perry, W. G., 1968, 1981a). The last positions involve self-affirmation and making choices or decisions in career, politics, values, and personal relationships. In these positions, choices and decisions are made with an awareness of relativism, as distinct from commitments which are made without questioning. The motivation to explore possibilities and make commitments comes from within. There is an openness to taking risks, a tolerance of paradox, and a sense of trust that comes from being oneself and being a part of the community. Commitments at this stage are wholehearted and involve both contemplation and action. Progression through these stages involves making initial commitments, exploring the implications of those commitments, and developing depth of commitment (Perry, W. G., 1968, 1981a).
Perry, W. G. (1968) observed that growth is not always a linear progression from one stage to the next, but instead there are spurts of development which are interrupted by periods of pausing to assess the new situation. Apart from the mainline of development, there were stages when growth was suspended, negated, or even reversed. He called these alternatives to growth Temporizing, Retreat, and Escape.

Temporizing is postponed movement, usually associated with Position 5 (Moore, 1982; Perry, W. G., 1968, 1981a). This occurs when an individual loses the motivation to make sense out of a relativistic world or wants to postpone making decisions for a period of time. Temporizing may be a pause, especially before entering position 6 or it may be an opportunity for growth into different content areas. There is sometimes a sense that something just might turn up and a sense of guilt and shame for not being committed and responsible similar to that expressed by Moratoriums. One of the dangers of Temporizing is that one can slip toward fate (as in escape below), similar to when one moves from Moratorium to Diffusion in the identity statuses.

Retreat usually occurs between positions two and three when there is a perception of “no way out” of acknowledging multiplicity (Moore, 1982; Perry, W. G., 1968, 1981a). The individual avoids complexity and ambivalence by regression to a stubborn entrenchment in Dualism, similar to the shift from post-crisis Diffusion to Foreclosure in the identity statuses.

The Escape alternative to growth is one of alienation and abandonment of responsibility or of staying busy in order to not have to engage the implications of everything being related. It is usually associated with position 4 (Moore, 1982; Perry, W. G., 1968, 1981a). There is an exploitation of
multiplicity and relativism to avoid commitment. Individuals in this alternative cannot find criteria for making judgments and hence may not identify with anything. They forget about deciding, leave decisions to fate, or make choices based on emotion of the moment. In these senses, they are analogous to the post-crisis Diffusions who avoid or abandon the process of exploration and are highly influenced by external factors. This can be a settled condition or a transition.

Although the Perry scheme is derived from Piaget’s assumptions about development and the early stages describe formal thought, there is evidence that it deviates from Piaget’s work in significant ways. Perry’s scheme integrates both cognitive-structural development and psychosocial development, in that it includes both the structures of meaning making and psychological commitments (Moore, 1982). Perry, W. G. (1968) has acknowledged that the early stages are formal structural and the later stages are existential. More recently Perry has joined Kitchener and King in discussing the possibility that the higher stages are cognitive-structural in that they reflect a form of dialectical reasoning, but he deviates from them in holding that dialectical reasoning necessarily encompasses psychosocial questions (Perry, W. G., 1981b). In addition, Perry, W. G. (1985) has responded to the critics and argued that changes in sense of self and structure are interrelated throughout the entire scheme.

**Research**

Considerable research has been done on the Perry scheme, particularly on developing instrumentation to measure the positions and defining practical applications in educational settings, such as academic advising and career exploration (Moore, 1982; Perry, W. G., 1981a). Very few
studies have attempted to relate the scheme to other theories or to correlate the positions of cognitive development with psychological variables. A recent study which compared Perry's scheme and Piaget's formal operations confirmed that they are describing two different aspects of intellectual development (Perry, B., Donovan, Kelsey, Paterson, Statkiewicz, & Allen, 1986). A large portion of the research on cognitive development has used the Reflective Judgment model rather than Perry's scheme. To the extent that the two theories are related, the research on Reflective Judgment is also useful in understanding development on the Perry scheme.

**Longitudinal and Cross Sectional Studies**

Perry's original studies were conducted on college students and concluded that cognitive development occurs during the college years. Cross-sectional studies using Perry's scheme have demonstrated that change occurs gradually over the four years of college, with seniors being in positions 3 and 4 (Baxter Magolda, 1988). Scores ranging from 2 to 5 have been confirmed in other cross-sectional studies of college students (Blake, 1976; Coil, 1983; Griffith, 1985; King, 1978). One interesting research finding is that there appears to be a regression in cognitive level upon entry to college that is similar to Perry's Retreat (Griffith, 1980). Most of the research available has been conducted using the Reflective Judgment model, which is an elaboration and extension of Perry's scheme. A summary of cross-sectional studies using that model demonstrated that Reflective Judgment increases significantly with educational level (King & Kitchener, K. S., 1984; Kitchener, K. S. & King, 1985). The over-all means were as follows: freshmen=3.60, sophomores=3.40, juniors=3.68, seniors=4.08, beginning graduate students=4.24, advanced graduate students=5.04. Thus, there is
an upward trend of approximately one-half stage from the freshman through senior years and one stage between senior year and advanced graduate school. Interestingly, there seems to be very little difference between students in their first year of graduate school and advanced graduate school (Lawson, 1980). The occurrence of the Committed positions in traditional aged college students has not been confirmed (King, 1978). It is evident from all the research that there is a correlation between educational level and advancement through the stages of the Perry scheme and the Reflective Judgment model, but progress is slow and the higher stages seem to be rare.

Perry's scheme was originally derived from an in-depth analysis of two longitudinal studies of students at Harvard and a third longitudinal study was conducted by Clinchy and Zimmerman (1982) at Wellesley College to elaborate on the positions (Perry, W. G., 1981a). Since that time, several studies on high school through college aged students, using the Reflective Judgment model, have confirmed that people change longitudinally over time (Brabeck, 1984; King & Kitchener, K. S., 1984; Kitchener, K. S. & King, 1985). In one 5 year longitudinal-sequential study of Reflective Judgment, it was found that the greatest change of two stages occurred in a sample that started as high school juniors, a moderate change of one stage occurred in subjects who started as juniors in college, and no significant change was demonstrated in advanced graduate students (King, Kitchener, K. S. & Wood, 1984, 1985). A recent 4-year longitudinal study of Reflective Judgment in college students showed an increase from 3.62 to 4.19 and also demonstrated no differences due to academic major (Welfel & Davison, 1986).
Cognitive Development and Education

There is some support for the contention that cognitive development, as measured by Reflective Judgment, is related to education, rather than to other academic variables. One study demonstrated a relationship to year in college, but not to major or sex (Welfel, 1979). Other research on college students have shown that the development of Reflective Judgment cannot be attributed to intellectual ability as measured by a Concept Mastery Test, the SAT, or verbal reasoning ability (Welfel, 1979), formal operations, socioeconomic status, or verbal fluency (Kitchener, K. S. & King, 1985). Additional evidence has confirmed that changes in Reflective Judgment could not be accounted for by changes in verbal aptitude (King, Kitchener, K. S., & Wood, 1984). Selection into higher education and sex, however, were both significant in a study that compared college students with non-college students (Lawson, 1980). As a result of these findings, Kitchener, K. S. and King (1985) have hypothesized that different levels of Reflective Judgment are indicative of differences in maturation, education, and selection into higher education, rather than age or cognitive variables. Baxter Magolda (1988) also demonstrated that Perry position is not correlated with learning style, as measured by Kolb's Learning Styles Inventory.

Other researchers have attempted to determine whether education or age are most significant in cognitive development. In a study of subjects aged 18-88, it was determined that higher education was significantly related to higher levels of cognitive development on the Perry scheme, but that age was also a factor (Deopere, 1988). Younger subjects in that study were more Relativistic and older subjects were more Dualistic at all levels of education and intelligence, which seems contradictory to what would be
expected. Another study of traditional and non-traditional college students demonstrated that education had a significant effect on Reflective Judgment, but age did not (Strange & King, 1981). In a summary of the research on Reflective Judgment, Kitchener, K. S. and King (1985) concluded that both age and education promote intellectual development, education is more important than other life experiences for traditional aged college students, and neither age nor undergraduate education promotes advancement to the highest levels of Reflective Judgment.

Gender Differences

The literature on gender differences on the Perry scheme shows mixed results and parallels some of the findings of gender differences in psychosocial development. There appear to be no structural differences between the genders, but there is evidence of stylistic differences with males tending to use a style called separateness and females tending to use a style called connectedness. These differences parallel what Gilligan (1982a, 1982b) has indentified as a voice of justice and a voice of care.

According to Belenky, Clinchy, Goldberger, and Tarule (1986), women have been socialized to remain silent, so their style of learning is to receive knowledge from others rather than to actively engage in the learning process. They believe that development requires that these women emerge from silence and begin to express their voice. Their research revealed that women's patterns of cognition largely parallel Perry's scheme, except for the stylistic differences. In their descriptions of the early stages, women are silent learners and recipient learners, relying on authorities to impart knowledge. In the third stage, women are aware of the uncertainty of knowledge, but rely on their subjective intuition and experience for
answers. In the fourth stage, procedural learning, there are two distinct ways of knowing: a "separate" way of knowing and a "connected" way of knowing. Males, and some females, using separate ways of knowing take an active approach to learning by constructing objective arguments and engaging in active dialogue to arrive at answers. Individuals who used a connected way of knowing, in contrast, relied on subjective knowledge and attempted to understand another person's argument rather than challenge it. It is thought that the connected way of knowing is associated with female passivity and avoidance of conflict. The last stage is characterized by relativism and the use of both forms of knowing.

Recent research on gender differences on the Perry scheme lends support to the previous observations about male and female cognitive development. Baxter Magolda (1987, 1988, 1989) observed that there were no significant gender differences in movement through the Perry positions, but that there are stylistic or qualitative differences similar to those described by Belenky, et al (1986). Men in her research took a more active approach to their learning, while women were more passive and reliant on peers. Males appeared to move out of position 2 faster than females, and the author attributed that to the self-reliance that men gained from engaging in more active learning patterns (Baxter Magolda, 1988). Women in position two were more reliant on authorities than males (Baxter Magolda, 1989), were concerned with the easiest way to learn, and were hesitant to speak in class (Baxter Magolda, 1988). In position three, however, females were less reliant on authorities than males, but more dependent on subjective knowledge and dialogue with peers (Baxter Magolda, 1988, 1989). In position three, females believed that no idea is wrong, were reluctant to express
their views or take risks in exploring their beliefs, and failed to legitimize their opinions because of their passivity and concern with peers (Baxter Magolda, 1988).

Similarly, Benack (1982) found that male subjects could be categorized easily into the Perry positions, but that women frequently received hybrid scores. Those women who scored as position 3/4 would not condemn other people's opinions as wrong and their dualistic beliefs coexisted with a belief that many opinions could be right. Women who scored 3/6 applied dualistic principles when making decisions, but examined the intricacies in any situation and valued the opinions of others. They did not articulate any committed values of their own, however.

Alishio and Schilling (1984) examined the relationship between Perry's Scheme and Loevinger's Ego development and provided evidence of no significant differences in structure or content between men and women on the Perry scheme. They discovered that male ego development focused on occupational issues and female personality development was related to interpersonal issues, but only males showed a strong correlation between intellectual and ego development. A different study using Loevinger's model however, demonstrated a relationship between ego development and interpersonal reasoning in females and physical-mathematical reasoning and verbal intelligence in males (Hurtig, Petersen, Richards, & Gitelson, 1985).

**Relationship to Psychological Variables and Identity Formation**

Perry, W. G. (1968, 1981a) hypothesized that cognitive development is related to increases in self esteem, the use of analytic skills, flexibility,
field independence, risk-taking, openness, and locus of control. Most of these variables have not been tested empirically.

There is some research available supporting developmental changes on personality characteristics across the Perry positions. Interview data show qualitative changes in the use of absolutes, the ability to be intraceptive, the ability to analyze and synthesize, openness to alternative perspectives, ability to assume responsibility, ability to take on new roles, the ability to take risks and a shift from external to internal locus of control (Knefelkamp & Slepitza, 1976). These same authors documented that there is a sense of being responsible for self and an increase in being reflective beyond stage 6. They also noticed an increase in self awareness and internal motivation across positions. It has also been observed that Dualists like structure, similar to Foreclosures (Knefelkamp & Slepitza, 1976; Widick, 1977). There is evidence of shifts in agency across Perry positions (Clinchy & Zimmerman, 1982), an increase in both internal locus of control and Perry positions when Developmental Instruction is applied to in a career development class (Crommett, 1982), and a relationship between relativism and the capability to empathize in counseling situations (Benack, 1983).

Kurfiss (1977a, 1981) has proposed that a strong relationship exists between the Perry scheme and Marcia's identity statuses. Her premise was that formal operations is necessary for identity formation to occur but it is not sufficient. She argued that an individual in concrete operations is unable to consider multiple possibilities, but in formal operations, an individual is capable of generating hypotheses, speculating on alternatives, and engaging in future-oriented thinking. According to her, these are all congruent with Moratorium reasoning which is necessary for the achievement
of a sense of identity, but formal operations are inadequate for describing the dialectical adult thinking that is involved in making personal commitments. In other words, formal operations would be sufficient for moratorium, but dialectical reasoning would be necessary for Identity Achievement. The author contended that the Perry scheme bridges the gap between cognitive development and psychosocial development and she provided evidence that Perry and Marcia are describing the same phenomena from different perspectives. Specifically, she suggested that Foreclosure is related to Dualism, Diffusion is related to Multiplism, Moratorium is similar to Relativism, and Committed is Identity Achieved.

The Relationship between the Theories

Theoretical and empirical evidence supports the belief that cognitive and psychosocial development are related. Most theorists have agreed that a certain level of cognitive complexity is necessary for individuals to explore possibilities and form a sense of identity. There is empirical evidence that development occurs in both domains during the college years and is associated with the educational experience. Evidence also demonstrates that progressively higher levels of cognitive development and identity formation share common characteristics. The gender differences which occur in both cognitive-structural and psychosocial development appear to be related to separateness in males and connectedness in females.

Theoretical Evidence

There is a consensus among authors that a relationship exists between cognitive-structural and identity development. For instance, Erikson (1959a) assumed that identity formation involves an integration of social
experiences and a shift to a complex level of conceptualization. He con-
cluded that as cognitive-structural differentiation occurs, there is a decen-
tering or movement out of being embedded in one's own point of view. This
allows one to take multiple perspectives, which is the primary process for
identity formation to occur. By definition, an achieved sense of identity
evolves from a process of exploring alternatives and making commitments,
which are the same processes which underly cognitive-structural develop-
ment on the Perry Scheme (Marcia, 1980). Piaget (1972) also seemed to
recognize that cognitive development is related to psychosocial develop-
ment. He suggested that adult cognition is specialized in different content
areas and that there is a structure underlying adult cognition that cuts
across different psychosocial content areas. Other theorists interested in
post-formal operations have proposed that adult cognition is wholistic,
relativistic, existential, and related to problem-solving in real life situations
Labouvie-Vief, 1980; Gilligan and Murphy, 1979). Perry, W. G., (1968) also
concluded that identity formation involves both cognitive-structural devel-
opment and psychosocial content. He indicated that exploring alternatives
on identity issues requires the development of meta-thinking and that true
commitments can only be made after a clear realization of pluralism.

Other researchers also seem to agree that the development of com-
plex cognitive processes is necessary for an exploration of alternatives and
the formation of a sense of identity (Adams, 1976; Berzonsky & Barclay,
Adams says,

It is our belief that ego-identity can be best conceptualized as a cognitive growth and structural differentiation process that evolves with cognitive stage development and ego maturation... the transformation of egocentric thought parallels the development of ego maturation and social stage development, facilitating the internalization of new psychological structures relevant to ego identity formation (Adams, 1976, p. 153).

He argued that the two processes must be studied simultaneously to gain a greater understanding of the process of identity formation and concluded that,

In a broad sense it appears that identity formation is an integration of social experiences and intrapsychic development from an undifferentiated state to a complex differentiated level of conceptualization. The ego integrates the conceptual framework and manner in which an individual interacts with the world. Psychosocial development provides the social interactive settings and is affected by decentering. The cognitive component is the over-all organizational unit that structures the interrelation between thought, perception, and social interaction. (Adams, 1976, p. 161).

The overwhelming agreement among authors seemed to be that cognitive development is a necessary condition for identity formation to occur.

Empirical Evidence

Despite the theoretical predictions that cognitive development and identity formation are correlated, no studies have actually confirmed a relationship between Perry's scheme and the identity statuses. Various studies using other measures of cognitive and psychosocial development have provided conflicting evidence about the association between cognitive development and psychosocial development. As previously mentioned, the relationship between the identity statuses and formal operations is inconclusive. In
a recent one year longitudinal study using Chickering vectors and Reflective Judgment, Polkosnik and Winston (1989) found that Developing Autonomy, Developing Relationships, and Developing Purpose increased at a faster rate than Reflective Judgment. They concluded that the development of autonomy was a necessary condition for cognitive development, which is the opposite of what has been predicted theoretically. One study has shown that the means for Reflective Judgment increase across identity statuses (Glatfelter, 1982). Despite the lack of studies directly comparing Perry's Scheme and the identity statuses, a review of the related literature provides support for a relationship between them.

Longitudinal and cross-sectional studies of the identity statuses and Perry positions confirm that both developmental processes occur simultaneously during the college years. There is evidence of an increase in the number of individuals in the Identity Achieved status as age increases (Meilman, 1977, 1979; Rodman, 1983), but the rate of change seems to vary in different content areas (Waterman, 1982). The greatest progressive growth may occur in freshman Moratoriums (Adams & Montemayor, cited in Adams, Bennion, & Huh, 1987), but there is also evidence that a large number of individuals are still in Moratorium at age 21 (Meilman, 1979) and a significant number of seniors are in the Diffuse status (Waterman, A. S., et al., 1974). Various patterns of progression, regression, and instability have been demonstrated (Adams & Montmayor, cited in Adams, Bennion, & Huh, 1987), but Moratorium appears to be the least stable status because of the high anxiety associated with being in crisis (Marcia, 1980; Waterman, A. S., et al., 1974). Contrary to expectations, Diffusion may be a relatively stable status in a college environment which supports that status.
(Waterman, A. S., et al. (1974) and Identity Achieved can be relatively unstable, which suggests that commitments made in college may actually be temporary choices (Cote & Levine, 1988a). The research on Perry levels shows that development during college is a slow process, with progression of approximately one-half to one stage during the four undergraduate years (Kitchener, K. S. & King, 1985). Seniors are typically in positions 3 and 4 (Baxter Magolda, 1988). There may be a Retreat during the freshman year due to adjustment to the environment (Griffith, 1980). Taken together, these studies confirm the developmental progress during college on both schemes, but it is clear that psychosocial regressions can occur and that progression in the identity statuses is not linear. One could conclude that most Freshmen would be either Foreclosed or Diffuse on identity statuses and in Dualism or early Multiplism on Perry positions. Or, if freshmen score as Identity Achieved, this would be more like a premature choice for Perry rather than a reflective commitment if the student was still in Dualism. Seniors would most likely be at Perry position 3 or 4 and in the Moratorium or Identity Achieved identity statuses, but identity status could vary a lot, especially within different content areas. It appears that the number of Seniors who are in higher Perry levels would be rare and many seniors would not have an achieved sense of identity. So it seems that the developmental processes are not necessarily completed by the end of the college years.

Identity formation and cognitive-structural development both seem to be related to the educational experiences encountered in college. Erikson (1968) pointed out that college provides a psychosocial moratorium and Perry, W. G. (1968) concluded that college provides an opportunity to
explore various alternatives and make commitments in a pluralistic environment. Indeed, more college youth seem to be in the Moratorium identity status than non-college youth (Munro & Adams, 1977b). Identity formation appears to be effected by the nature of the college environment (Adams & Fitch, 1983), participation in campus activities (Weston & Stein, 1977), and coursework that encourages self-exploration (Waterman, A. S. & Archer, 1979; Waterman, A. S., et al., 1977). Education is probably more significant than age in the cognitive development of traditional aged college students (Kitchener, K. S. & King, 1985).

When cognitive variables are examined, there also seems to be support for the similarities between cognitive-structural and psychosocial development. It is interesting to note that intelligence does not seem to be a factor in either developmental process (Cross & Allen, 1970; Marcia, 1966; Marcia & Friedman, 1970; Schenkel, 1975; Welfel, 1979). The correlations with formal operations also appear to be low (Marcia, 1980; Berzonski & Barclay, 1981; Kitchener, K. S. & King, 1981, Perry, B., et al., 1986). Development on both schemes does appear to be related to moral reasoning (Perry, 1968; Podd, 1972; Rowe & Marcia, 1980), the ability to analyze and synthesize complex information (Knefelkamp & Slepitza, 1976; Marcia, 1980; Perry, 1968; Sligoski, et al., 1984) and a reflective cognitive style (Knefelkamp & Slepitza, 1976; Waterman, C. K. & Waterman, A. S., 1974). The high identity statuses were shown to be related to performance on a Concept Attainment Task under conditions of stress (Marcia, 1964, 1966), but no relationship was found between Reflective Judgment and a Concept Mastery Task (Welfel, 1979).
There is theoretical and empirical evidence that development in both theories entails shifts in various personality characteristics, such as autonomy, locus of control, how one views authority, field dependence-independence, self esteem, and openness to alternatives (Marcia, 1980; Perry, W., 1968, 1981a). Studies confirm that there are progressive developmental shifts from the low statuses to the high statuses on locus of control (Adams & Shea, 1979; Waterman, A. S., et al, 1970), closed vs. open lifestyle (Marcia, 1976), self-esteem (Marcia, 1967), and autonomy (Matteson, 1974). Perry, W. G. (1968) hypothesized similar shifts in relation to cognitive-structural development and Knefelkamp & Slepitz (1976) documented shifts in openness to alternatives, internal locus of control, and autonomy.

Studies on gender differences in each domain demonstrate that differences exist in content areas, but not in the process of development (Alishio and Schilling, 1984; Baxter Magolda, 1987; Marcia, 1980; Waterman, 1982; 1985; Waterman, et al, 1977). It appears that male cognitive and psychosocial development is related to occupational issues and female development is associated with interpersonal issues, but there is a lack of consistency among the studies. In cognitive development there seem to be stylistic differences, such that males are more active and females are more passive (Baxter Magolda, 1987).

An Alternative Model

It is conceivable that a developmental model could account for both cognitive development and identity formation. Kurfiss (1977a, 1981) hypothesized that Foreclosures are Dualistic, Diffusions are Multiplistic, Moratoriums are Relativistic, and Identity Achieved are Committed, but this model did not account for the differences within the Diffusion status or
for alternatives to growth, such as the Escape positions in Perry's scheme. The only available research on the relationship between the two schemes was a study of reentry women which demonstrated a significant decrease in mean scores on Reflective Judgment from Identity Achieved, to Moratorium, to Foreclosed, to Identity Diffused (Glatfelter, 1982). These results suggest that Diffusion is lower than Foreclosure on cognitive-development, contrary to Kurfiss's (1977a, 1981) prediction, but other evidence cited previously revealed that Diffusions may be more cognitively complex than Foreclosures. It is unclear whether Foreclosure or Diffusion is the lower status developmentally and there may be more than one type of diffusion, so a model that integrates both cognitive-structural and psychosocial development could help clarify that question.

Kurfiss's (1977a, 1981) model could be adjusted to include a pre-crisis Diffusion that would be representative of early adolescence and a post-crisis Diffusion that would be more typical of college-aged students who are aware of multiple possibilities. The post-crisis Diffusion might correspond to Multiplism in Perry's scheme. It is possible, also, that deflections from growth in the Perry Scheme correlate with regression in the identity statuses: regression from Diffusion to Foreclosure would be Retreat; Escape would be a regression from Moratorium to Diffusion or an extended Moratorium, and Temporizing would be an extended state of Moratorium. In its most severe form, giving up and letting fate take over, Temporizing could also correspond to a slip from Moratorium into Diffusion or Foreclosure. A more comprehensive model that incorporates processes from both Waterman's model and Perry's Scheme and accounts for these relationships is represented in Figure 7.
This model assumes that pre-crisis Diffusion precedes Foreclosure and is a status of early adolescence. It may be characteristic of individuals who do not have the physical, psychological, and cognitive maturity to engage actively in the identity process. The Foreclosed status and Dualistic cognitive positions would be most obvious at the beginning of the college experience when parental values are accepted and there is little awareness of alternatives. In Multiplism and post-crisis Diffusion, there is an awareness of alternatives but a lack of autonomy, self-esteem, and cognitive resources for exploring the possibilities in a pluralistic world. Moratorium and Relativism represent the crisis period in identity formation and turning point in cognitive development, when there is an active exploration of identity issues and the recognition of the necessity for making commitments. The Identity Achieved and Committed cognitive positions are the positive developmental outcomes of that process. The escape positions of Perry’s scheme would also correspond to identity statuses in this model; Retreat is an entrenchment in Dualism and Foreclosure, Escape is an abandonment of responsibility like the typical Diffusion or extended Moratorium, and Temporizing is an extended Moratorium or a slip into Diffusion.
An examination of the literature provides some support for these relationships. There are stage specific characteristics of the different Perry Positions which correspond with the identity statuses in the model (Table 1, Appendix A). An examination of these relationships shows that both Foreclosures and Dualists are authoritarian, like structure, are low on cognitive complexity, and exhibit external locus of control. The Dualistic way of thinking in absolutes may be related to the Foreclosed rigid problem-solving. In a similar manner, Diffusions resemble Perry's level of Multiplicity. Both these groups appear to be aware of and cherish possibilities, but lack the integrative ability to engage in an active exploration of issues. They are field dependent, low on autonomy, respectful of authority, and external on locus of control. Moratoriums and Relativists, who represent the stage of active exploration in both schemes, display characteristics of high self-esteem, internal locus of control, reflectivity, and cognitive complexity. The Identity Achieved status and Committed positions in Perry's scheme are committed on identity issues and are high on most personality and cognitive characteristics. The Retreat position represents an entrenchment in Dualism to avoid complexity, very much like the closed, rigid, intolerance of the Foreclosure status. Perry Escapes have abandoned responsibility and are detached, withdrawn, hostile, and angry like the alienated Diffusions or they are keeping busy like the extended Moratorium. Lastly, Temporizing appears to be the extended Moratorium of the college years, when there is a postponement of making commitments and some feelings of anxiety and guilt, but it may also be a state of Diffusion if exploration is abandoned and fate is allowed to take over.
**Limitations of the Model**

Some caution needs to be exercised in assuming a one-to-one correlation between the Perry positions and the identity statuses, however. Although the theoretical and empirical evidence supports a relationship between the two, both theories start with different assumptions about development, describe different theoretical constructs, and focus on different domains of development. When studying the relationship between different, but similar constructs; the overlap between them and the correlations may be low (Cote & Levine, 1988a). For example, a study of the relationship between Kohlberg’s moral development, Loevinger’s ego development, and conceptual development demonstrated that they share some structural similarities but are not all measuring the same construct. In that study, the partial correlations were most meaningful (Lutwak, 1984). Similarly, cognitive-structural development and identity formation may only be partially correlated.

Identity development occurs at different rates in different content areas, so the relationship between the two schemes would not necessarily hold for all content areas. Based upon the research on gender differences, cognitive development is more likely to correlate with occupation/ideology for males and with relationship issues for females. If, as the research suggests, religious ideology may not be a salient issue in many college environments, there may be no correlation between it and cognitive development.

There is evidence that college promotes cognitive complexity and identity formation, but it also provides opportunities for an extended moratorium on identity issues (Adams & Fitch, 1977; Erikson, 1968; Marcia, 1980; Waterman, 1985.) Therefore, a student could be advanced on Perry
positions, but not yet using that way of making meaning about identity issues. Cognitive complexity may be necessary to explore alternatives in a pluralistic world, but other factors may also be important; eg. historical trends, societal pressure to make commitments, opportunities to explore. The identity statuses could be lower than expected relative to the cognitive levels or could be lower in some domains than in others. Hence, it is possible that cognitive development would be a necessary but not sufficient condition for identity development.

Longitudinal and cross-sectional research on the Perry positions and identity statuses do not support a direct association between them. There is evidence that many individuals develop to the higher levels of identity formation in college, but there is very little evidence of individuals at the highest Perry positions. Therefore, commitment on Marcia's scheme and Commitment in Perry's scheme may not be analogous constructs. For example, Marcia's Identity Achieved could be a mixture of what Perry would call premature choices (stages 2 and 3) and reflective commitments (stages 5 and above).
Summary

This chapter has summarized the theoretical and empirical evidence which supports a relationship between Perry's scheme of Intellectual and Ethical Development and Marcia's identity statuses. There are many similarities between the two schemes and theorists generally agree that they should be related, but both theories are complex and there are significant differences between them as well. The correlation between Perry's scheme and Marcia's identity statuses is assumed to be present, but the nature of the relationship has not been confirmed empirically.


CHAPTER III
METHODOLOGY

Introduction

This chapter presents a summary of the methodology used to conduct the study. The design of the study, sampling procedures, and methods of data collection are discussed. The instruments used in the study are described, along with the rationale for the choice of instruments. Hypotheses and a summary of the statistical procedures used to test the hypotheses are also presented.

Design

This study was a correlational study of cognitive development, identity status, educational level, and gender. A cross-sectional design was used for the study. Theoretical and empirical evidence has demonstrated that students progress from Dualism to Relativism or perhaps Commitment in cognitive-structural development and from Foreclosure or Diffusion to Achievement in identity formation during the college years, so a cross-sectional sample of students was expected to produce a reasonable distribution of the identity statuses and perhaps of cognitive positions. The cross-sectional sample consisted of freshmen, junior, and senior males and females from the Colleges of the Arts and Sciences at The Ohio State University. The study did not entail any treatment or intervention strategy, but
attempted to assess development that occurs during the college experience. Time and financial constraints precluded the use of a longitudinal design.

Sample

Sampling Criteria

A sample of freshmen, junior and senior males and females from the Colleges of the Arts and Sciences at The Ohio State University was selected and contacted personally or sent letters asking for their voluntary participation. An effort was made to stratify the sample to insure equal numbers of males and females and equal numbers of students from each of the classes because controlling for independent variables facilitates asymmetrical log linear analysis (Kennedy, 1983). It was also important to obtain a distribution of subjects across educational levels to maximize the probability of obtaining subjects at all developmental levels. The most important criterion in the sampling was to insure an adequate distribution of as many of the Perry positions and the identity statuses as possible. An adequate sample would produce expected cell frequencies of 5 for contingency tables and log linear analysis. It was expected that the lowest stages and highest stages would be difficult to obtain because empirical evidence has demonstrated that student progress on cognitive-structural and psychosocial development during the undergraduate years is somewhat limited. Many students do not reach the highest Perry stages by their senior year and may not have an achieved identity.

A cross-sectional sample of students from different class ranks was used for three reasons. First, time and financial constraints precluded the use of a longitudinal design and it was anticipated that a cross-sectional
sample would yield group data that approximates general developmental processes in individuals. Second, the cross-sectional sample was expected to produce an adequate distribution of subjects across Perry positions and identity statuses. Third, a decision was made to include educational level as a variable in the analysis because of the evidence that college students progress in cognitive-structural development and identity formation during the college years.

The subjects were asked to indicate their age, year of high school graduation, class rank, number of years at The Ohio State University, and gender on a cover sheet when they completed the instruments for the study (Appendix C). For the purposes of the study, the classes were defined as follows:

- Freshmen: graduated from high school 1988; rank 1; age 18-19; first year at OSU
- Junior: graduated from high school 1986; rank 3, age 20-21; third year at OSU
- Senior: graduated from high school 1984; rank 4; age 21-23; end of fourth year at OSU

Students who were over 23 years of age were eliminated from the study because older and/or returning students could have had experiences outside of the college environment which impacted their development. Students who were under 17 years of age were also be eliminated because it was uncertain whether they would meet the criteria of physiological, psychological, and cognitive maturity necessary for the identity formation stage of psychosocial development.
The optimum number of subjects for the study was 480 in order to meet the criterion of expected cell frequencies of 5. This was calculated by multiplying 3 educational levels by 4 Perry positions by 4 identity statuses by 2 genders by 5 subjects per cell (\(3 \times 4 \times 4 \times 2 \times 5 = 480\)). It was assumed that such a large sample would be difficult to obtain. By collapsing the identity statuses or the cognitive positions to two levels (high and low) the number of subjects required could be reduced to 240. Therefore, an effort was made to obtain as many participants as possible, with a goal of a minimum of 240, or 80 from each class rank (40 males and 40 females).

Individuals who were in the Perry categories of Retreat, Escape, and Temporizing were expected to be rare, so no attempt was made to draw a large enough sample to get a significant distribution of those levels. It was assumed that those that occurred would be examined independently from the rest of the data.

**Sampling Procedures**

Senior students were sampled during Spring quarter, 1988 in order to assess their development at the end of their college experience. Freshmen and juniors were studied during Fall quarter, 1988 so that data would show developmental levels at the very beginning of college and mid-way through the college experience.

The junior and senior students were initially contacted by letter and asked to participate in the study. The letters discussed the nature of the study, how the subjects were chosen, and why it was important to participate (Appendix C). Subjects were insured of their confidentiality, that the study would not be harmful to them in any way, and that they could withdraw from the study at any time. They were asked to return a
pre-stamped postcard which was enclosed with the letter to indicate their intentions to participate or not (Appendix C). They had a choice of attending one of two group sessions to complete the instruments or having the packet mailed to them to be returned when completed. Two group sessions for administering the instruments were held on campus for juniors and seniors, one in the evening and one during the daytime, and the students were encouraged to attend one of these if possible. At each session, verbal instructions were given for completing the instruments and two hours were allowed for the total process. Each student was given a packet containing written instructions, a page for recording demographic data, a human subjects consent form (HS-027) to sign, and both assessment instruments (Appendix C). The order of the instruments in the packet was randomly varied and the students were instructed to do them in order. This was expected to minimize confounding due to fatigue, lack of interest, or similarities between the instruments. Students who did not attend the group sessions could request that their packet of instruments be mailed to them with written instructions that were the same as the oral instructions given in the group sessions. They were encouraged to complete the instruments in the order they appeared in the packet within a 2 hour time frame and return them to room 301 Ramseyer Hall or room 201 Ohio Union within a week. All participants were paid $5 when they turned in their packets, either at the group session or at the designated office on campus.

The senior sample consisted of all senior honors students in the Colleges of the Arts and Sciences. The honors seniors were used to maximize the possibility of obtaining students in the higher cognitive-structural positions. In deciding to use the honors seniors, it was recognized that the
senior sample would not be a random representation of all seniors. Since the purpose of the study was to examine the relationships among variables, rather than to generalize to a larger population, randomization was sacrificed in favor of getting an adequate distribution of cognitive levels. The list of all the honors seniors was obtained from the Colleges of the Arts and Sciences during spring quarter, 1988. A total of 230 subjects were sent letters and asked to participate. In the initial sampling, 60 students participated. Over the course of summer and autumn quarters, those who were still in school were telephoned and asked to participate (phone call follow-up, Appendix C). Eighty questionnaires were finally completed from this group, but it was discovered that they fell into different age groups. Seven were students who were over 23 years of age and it was decided not to include those at all. Eighteen subjects, 11 females and 7 males, were actually 5th year seniors. It was decided to include them in the analysis, but analyze them separately if possible. If there were not enough subjects to produce the required 5 subjects per cell, the 5th year group would be combined with the rest of the senior sample. Eight of the subjects entered college in 1985, so they were really a year younger than was originally expected for the senior group and it was decided to include them with the subjects from the junior sample who were the same year. This left a total of 33 females and 12 males who actually met the criteria for the senior sample.

A random sample of juniors from the Colleges of the Arts and Sciences was also contacted and asked to participate. The list of subjects for this sample was generated from the student data base by University Systems, with the approval of the University Registrar. The list was composed of 250 students who were 20-21 years of age and were classified
as class rank 3. There was an equal number of males and females. They were sent letters during autumn quarter, 1988. Thirty subjects completed questionnaires either through the mail or group sessions. Since the response rate was low, non-respondents were contacted by phone and asked to participate (phone call follow-up, Appendix C). A total of 77 subjects completed questionnaires, 42 females and 30 males. It was discovered that only 28 females and 19 males in this sample met the criteria of entering college in 1986 and the remainder entered in 1985, making them one year ahead of the desired class. It was decided to use them all, but to combine those who entered in 1985 with the seniors who also entered in 1985, thereby forming a separate category between the juniors and seniors. These would be collapsed into the junior group to produce contingency cell sizes of 5, if necessary.

At The Ohio State University freshmen students have a choice of entering Arts and Sciences at University College or enrolling directly in the Colleges of the Arts and Sciences. Students who directly enroll in the Colleges of the Arts and Sciences are typically more committed in their career choice and have higher SAT scores than those who enter Arts and Sciences at University College (Tootle, personal communication, March, 1988). Therefore, an attempt was made to obtain an equal number of freshmen who directly enrolled and freshmen from University College for the study. This was expected to increase the probability of obtaining subjects in the lower cognitive positions and identity statuses, as well as allowing for comparison between these two groups at a later time. Permission was granted by the Colleges of the Arts and Sciences and by University College
to go to their UVC 100 classes to solicit students' voluntary participation (Appendix B).

The procedure for the freshmen was essentially the same as for seniors and juniors, except that they were contacted personally, either in classes or in the residence halls. To obtain the freshmen sample, the author visited six UVC 100 classes, explained the study, assured the students of their confidentiality, and asked for volunteers. One-hundred and fifty questionnaires were distributed in the classes and it was anticipated that the return rate would be high because the students had already self-selected. Only 10 questionnaires were returned during autumn quarter, 1988 despite efforts by the UVC 100 instructors to collect more. The names of the students who had taken the questionnaires were not known, but a list of all the students in the UVC 100 classes for directly enrolled Arts and Sciences students was obtained. Letters were sent to all of those students (n= 130) asking them to return the questionnaires, participate if they had not already done so, and offering to pay them $5 (Appendix C). Ten more were completed as a result of that effort. After consultation with the advisor of this project and with the staff in the Olentangy residence halls, it was decided to utilize students in the residence halls during winter quarter to complete the freshman sample. The hall directors and resident assistants in each hall contacted residents directly and asked them to participate and attend group sessions where pizza and soft drinks would be served. Flyers were distributed by the hall directors and reminder notices were sent to those who agreed to attend (Appendix C). As a result of that effort, the total freshman sample was increased to 49, 34 females and 15 males, which was still far less than the 80 needed for the study.
Sampling Results

The final outcome of the sampling was as follows: 49 freshmen who graduated from high school in 1988; 47 juniors who graduated in 1986; 38 juniors and seniors who graduated in 1985; 45 seniors who graduated in 1984; and 18 5th-year seniors who graduated in 1983. The response rate was approximately 30% for seniors, 25% for juniors, and less than 25% for freshmen. The gender distribution was about 2 females to 1 male. The frequency distributions and percentages of subjects by grade and gender are presented in Table 2 and Figure 8 (Appendix D). Although this sample failed to meet the minimum established for the study, it was decided to go ahead with the analyses, rather than spend another year collecting more data.

Instruments

A revised version of the Widick-Knefelkamp Sentence Stem and Essay Test and the Revised Version of the Extended Objective Measure of Ego Identity Status (EOM-EIS2) are the instruments which were selected for this study. The Widick-Knefelkamp Sentence Stem and Essay Test was used to determine Perry positions because it measures all nine Perry positions of development, is relatively easy to administer and score, and has been shown to be a valid instrument for measuring Perry positions. The EOM-EIS2 was chosen because it is an objective measure which can be administered to large groups, shows acceptable validity when compared to Marcia's interview, and it yields a variety of useful data, eg. total scores and sub-scores, categorical and interval data.
The Perry Instrument

The Widick-Knefelkamp Sentence Stem and Essay Test is a production instrument which measures cognitive-structural development as described by the Perry scheme (Widick, 1975). It consists of five open-ended sentence stems and two essays which were developed from an analysis of Perry's Scheme and case study data (Widick, 1975). The revised version is the same as the original, except for the additional instructions to respond to (a) "what comes to your mind" and (b) "the meaning of that for you" for each sentence stem. This expanded version was expected to produce more scorable data (Rodgers, personal communication, March, 1988). According to Loevinger (1976), production instruments such as this one have the advantage of tapping the subjects' ways of making meaning directly from what they write.

The instrument is scored by trained raters. Each item is scored on a 9 point scale corresponding to the 9 positions in the Perry scheme and the scores are determined by the underlying cognitive structure and behavioral correlates in the response, rather than the content. A subject's final profile is derived from eleven scores, one for each sentence stem and three for each essay. The profile shows the percent of responses at each Perry position. The dominant stage is the one with at least 50% of the responses. The final score is a two-digit index, comprised of the dominant stage and a subdominant stage, or any stage represented by more than 25% of the responses. A subject's score is written to show the dominant score with the subdominant score in parentheses, eg. 4(5), (3) 4. The data can be interpreted as either categorical data by using the dominant score, or as interval data by including the subdominant scores as transitional positions.
(Widick, 1975). For the purposes of this study, the scores were treated as categorical data in order to not violate theoretical assumptions about the positions being qualitatively discreet and so that specific Perry positions could be compared to specific identity statuses in the analysis.

According to Loevinger (1976) construct validity on production instruments can be determined by whether there is good inter-rater reliability on an instrument, indicating that the underlying constructs can be detected consistently by more than one trained rater. Validity on the original Widick-Knefelkamp Sentence Stem and Essay Test was assumed to be good because the instrument was developed from Perry's constructs (Widick, 1975). Initial studies of inter-rater reliability for the different parts of the instrument were moderate, but significant (.35 - .62.) Percentage of stage agreement between raters, however was 26% for sentence stems, 19% for essay one, and 23% for essay two. This increased dramatically when agreement within one stage was considered. Inter-rater agreement within one position was 100% for sentence stems, 87% for essay one, and 97% for essay two (Widick, 1975). Since that time, similar results have been obtained in at least a dozen unpublished studies (Rodgers, personal communication, April, 1987). Inter-rater reliability within one position was considered to be adequate for this study because the Perry positions would be grouped in the final analysis.

Two trained raters scored the instruments. In addition to rating the instruments on the nine developmental positions, the raters were asked to note and classify any protocols that fell into the categories of Retreat, Escape, or Temporizing because of the research interest in whether the escape positions are associated with specific identity statuses. The
agreement between raters was 73% within the same stage, 87% within 1/3 of a stage, and 100% within 2/3 of a stage. Only one protocol was unratable.

The Identity Instrument

The Revised Version of the Extended Objective Measure of Ego Identity Status (EOM-EIS2) was used to measure identity statuses instead of Marcia's interview because it is easily administered, is free of rater bias, gives both total and subscale scores, and gives both transition and typology scores for parametric or non-parametric analysis (Bennion & Adams, 1986). Marcia originally developed and used a semi-structured interview to determine identity status (Marcia, 1967). The interview included questions on occupation, politics, and religion and was scored based on the presence or absence of crisis and commitment. The interview was later expanded to include questions on attitudes toward pre-marital sex because of studies that showed females scoring differently from males on the original version (Grotevant, et al., 1982; Marcia & Friedman, 1970). The revised interview operationalizes the constructs of identity formation, but it is time consuming to administer and requires trained raters for scoring. Therefore, an objective measure was used in this study because of the large sample size and time and financial constraints.

Adams and his colleagues have been working on refining an objective measure of the identity statuses (Adams, Bennion, & Huh, 1987; Adams, Shea, & Fitch, 1979; Bennion & Adams, 1986; Grotevant & Adams, 1984). The authors state that the measures are not intended to replace the interview, but do provide a measure which is easily administered and scored in large scale research situations. In addition, the objective measures are free of rater bias and interview effects and provide subscale scores for
different content areas. An additional advantage is that they give transition scores, as well as typology scores, so the data can be used in developmental studies or multivariate and path analysis (Bennion & Adams, 1986).

The objective measures have undergone two major revisions and validity and reliability studies have been conducted at each stage in the process of refining the instrument. The original instrument focused on occupational/ideological identity issues similar to Marcia's interview and showed good convergent-divergent correlation of items within stages compared to total scores for stages (p < 0.001), good internal consistency for each stage (Cronbach alphas of 0.68, 0.76, 0.67, and 0.67), and a relatively close parallel between outcomes on the objective measure and Marcia's interview (Adams, et al., 1979). Another study demonstrated an 80% agreement with the Ego Identity Interview (Adams, et al., 1984).

The instrument was later expanded to include the interpersonal domain (Grotevant & Adams, 1984). In a series of studies, the expanded instrument was shown to have acceptable reliability (internal consistency and test-retest) and validity (content, factorial, discriminant, and concurrent). In addition, the instrument was correlated with Marcia's Ego Identity Interview and six of eight correlations were significant for ideology, two of eight were significant for the interpersonal domain, and five of eight were significant for total identity status (Grotevant & Adams, 1984). Another study by Craig-Bray and Adams (1986) revealed low correlations with the extended version of the Ego Identity Interview, especially in the interpersonal domain.
As a result of the lower correlations in the interpersonal domain, the instrument was revised and tested for reliability and validity (convergent, discriminate, concurrent, and predictive) and the authors concluded that the instrument would adequately measure identity status (Bennion & Adams, 1986). Since then, over 30 studies have been done which support the reliability and validity of the instrument.

Reliability studies have been summarized in the manual for the instrument (Adams, et al., 1987). Internal consistency estimates have ranged from .30 to .89, with a median alpha of .66, but the internal consistency for the ideological subscales has been higher than for the interpersonal subscales. Test-retest reliability studies have produced correlations of .71 to .93 and split-half correlations ranged from .10 to .68.

In the manual, the authors also summarized the studies on predictive validity, construct validity, and concurrent validity. Predictive validity has been studied using measures of cognition, social cognitions, behaviors, family factors, and demographics. In most cases, the correlations were in the predicted directions. In five factor analyses to estimate construct validity, the results were consistent with theory, except that Diffusions and Moratoriums shared some variance. Correlations between the subscales also supported the construct validity of the instrument, showing a convergence between the interpersonal and ideological subscales and a divergence between statuses on the subscales, except that the Diffusion subscale often correlated with the Moratorium subscale. Concurrent validity has been measured using various measures of ego strength, Marcia's Incomplete Sentence Blank, and the Marcia Interview. Three studies correlating the instrument with Marcia's interview yielded agreement of 30%, 80%, and
100%. Two other studies found moderate agreement with the exploration and commitment scores on Marcia's interview (Adams, et al., 1987).

In this study, the recent version of the objective measure was used, The Revised Version of the Extended Objective Measure of Ego identity status (EOM-EIS2) developed by Bennion & Adams (1986). The instrument was designed to measure Total identity status and two subscales, ideological and interpersonal domains. The ideology subscale includes the domains of occupation, politics, religion and philosophical lifestyle. The first three of these parallel Marcia's interview and philosophical lifestyle was added because Erikson indicated it is central to identity. The second subscale measures four interpersonal domains; friendship, dating, sex roles, and recreation. These were included because of increasing evidence of the importance of interpersonal issues in identity formation and empirical studies which demonstrate gender differences in these domains (Bennion & Adams, 1986).

The instrument is designed so that subjects respond to a 6 point Likert scale of strongly disagree to strongly agree on 64 items, representing the 4 ideology domains (occupation, politics, religion, and philosophical lifestyle) and the 4 interpersonal domains (friendship, dating, sex roles, and recreation). Each of the four ideology domains and four interpersonal domains is measured by eight items, 2 for each of the four identity statuses described by Marcia. The instruments can be scored by optical scanning and computer. The scoring yields a typology score for total identity status and typology scores for each of the subscales. In addition, transition scores for total identity and the subscales are given so the data can be treated as interval data and used in parametric analyses (Bennion & Adams, 1986).
In this study, optical scanning was used to load the data onto the mainframe computer at The Ohio State University and the instruments were scored using the SPSS commands provided in the manual. This yielded pure scores for total identity status and the subscales (1=Diffusion, 2=Foreclosure, 3=Moratorium, 4=Achieved). Transition scores were also obtained (range of 1 to 16), but it was decided not to use these because they did not represent interval data that would fall along a developmental continuum and sixteen levels was too many for contingency tables.

Hypotheses

The following hypotheses were tested in this study:

1. Educational level is associated with cognitive-structural development, such that progressively higher levels of education are associated with more complex levels of cognitive development.

2. Educational level is associated with identity formation, such that higher levels of education are associated with higher levels of identity formation.

3. There is an association between cognitive level and identity status.

4. Specific cognitive-developmental positions are associated with specific identity statuses: Dualists are Foreclosed, Multiplists are Diffuse, Relativists are Moratorium, and Committed are Achieved.

5. Perry escape positions are associated with specific identity statuses; Retreats are Foreclosed, Escapes are Diffuse, and Temporizing is extended Moratorium.

6. Cognitive-structural development is a necessary but not sufficient condition for identity formation.
7. Educational level has a significant effect on cognitive-structural development and identity formation.

8. Cognitive-structural development and educational level have an interaction effect on identity formation.

9. Cognitive-structural development has a significant effect on identity formation after partialing out the effects due to educational level.

10. There are no gender effects on cognitive-structural development or total identity status.

11. There are gender effects on identity sub statuses, such that male development is associated with occupation/ideological issues and female development is associated with interpersonal issues.

12. Gender and cognitive-structural development have an interaction effect on identity formation, such that male cognitive-structural development is associated with ideological issues and female cognitive-structural development is associated with interpersonal issues.

13. Path diagrams can be used to depict the relationships between educational level, cognitive-structural development, gender, and identity formation (Fig. 2 & 3, p. 15).

Hypotheses 7 through 12 are inherent in the path diagrams in hypothesis 12. The solid arrows represent main effects, the dotted arrows represent interactions, and the absence of connecting arrows are indicative of no relationship between the two variables. For instance, in both diagrams, the solid arrows from educational level to identity status and from educational level to cognitive development indicate main effects for educational level and, if they are significant, hypothesis 7 is supported. The interaction between education and cognitive development is represented by dotted arrows and tests hypothesis 8. The arrow from cognitive
level to identity status, on the other hand, is an effect after partialing out
the effects due to educational level and it supports hypothesis 9. Hypothe­
sis 10 is depicted in the first path diagram by a lack of arrows connecting
gender to other variables. The same patterns exist in the second path
diagram, except that gender is expected to exhibit significant main effects
on identity formation (hypothesis 11) and interaction effects with cognitive-
structural development (hypothesis 12). No relationship between gender
and educational level or gender and cognitive-structural level was
anticipated.

It was recognized that there are limitations to the use of path modell­ing, primarily in terms of interpreting effects as causation, selecting the
model which best represents the data, and assuming that the paths are
non-recursive. But, path analysis is useful for depicting the interrela­tion­ships between variables, particularly if there is sufficient theoretical
support for the relationships tested in the model. It was also understood
that a causal model represents only one possible model and statistical
support for the model only means that it cannot be rejected, therefore, the
paths are not the only possible relationships between variables (Pascarella,
1987).

Method of Analysis

All of the variables in the study were categorical so multidimensional
contingency tables were generated and log-linear statistical procedures
were employed to test the hypotheses. A symmetrical three-way analysis
was used to test associations between variables in hypotheses one through
three. Three, four, and five-way asymmetrical analyses were performed to
test the path models and the corresponding hypotheses. The z scores from
the log linear models were used to determine the strength of the relationships between variables.

Definitions of Variables

The descriptions of the variables for this study are listed in Table 3 (Appendix D). Due to the limited sample size, educational level was
collapsed into three levels (freshmen, juniors, and seniors) and the identity
statuses and substatuses were collapsed into two levels (low and high).
This was done to reduce the number of cells with zero subjects, which is
problematic in log-linear analysis, and to increase the cell sizes and power
of the analyses. Perry positions were collapsed into pure scores based on
the dominant score (e.g., 3(4) = 3) and were handled as three levels
(Positions 2, 3, 4) because no subjects fell in position 1 or positions 6-9.
Only two subjects scored at Perry level 5, so they were eliminated from the
study. Gender was a two level variable; male and female. For asymmetri-
cal log linear analyses, it was assumed that educational level, cognitive
position and gender were independent variables and identity status was a
dependent variable.

Frequency Distributions

Frequency distributions were obtained for each of the variables in the
study. Cross-tabulations of the frequencies generated descriptive data
which was of interest in the study and the multidimensional contingency
tables for log-linear analysis.

Frequency distributions of cognitive levels by identity statuses were
examined to ascertain whether there was support for hypotheses 4, 5, and
6. Only two subjects were in Perry escape positions, so hypothesis 5 was
not testable. The expected associations between cognitive level and identity status described in hypotheses 4 and 6 are depicted in Fig. 9.

**Fig. 9 Predicted Association between Levels of Cognitive Development and Identity Statuses**

The main diagonal in the diagram represents the anticipated loading of the cell frequencies as predicted in hypothesis 4. Hypothesis 6 would be supported if the remaining individuals fell in the lightly shaded cells and no individuals occurred in the unshaded portions of the diagram.

**Log Linear Analysis**

Log-linear is a statistical method for analyzing qualitative data which tests a series of hierarchical "anova-like" models for goodness of fit. It is a procedure that is particularly appropriate for analyzing multidimensional contingency tables because multiple categorical variables can be handled simultaneously and in a fashion that is analogous to the analysis of variance. (Kennedy, 1983).
Log-linear analysis is similar to the analysis of variance in a number of ways, but it also differs in some respects. It is similar in that "anova-like" models which include main effects and interactions are generated from the data and each term in the model can be tested for significance. There are several differences, however. First, since log-linear procedures are used to analyze categorical data, geometric means (taus) are generated from the expected cell frequencies and the models are multiplicative. For example, a model which includes the grand mean and main effects for variable A would be represented as $TT\alpha$. The multiplicative models are converted to additive models by taking the natural logarithms of the taus (eg. $TT\alpha = \lambda + \lambda^\alpha$). Second, log-linear differs from the analysis of variance in that a series of hierarchical models are tested for goodness-of-fit and the goal is to select the most parsimonious model which fits the observed data well. The null model is the one which contains only the grand mean of the expected cell frequencies and it is generated using the total n for the sample. The next most restricted models incorporate effects for the individual variables being tested (eg. $\lambda + \lambda^\alpha$, $\lambda + \lambda^\alpha + \lambda^b$). More complex models include interactions (eg. $\lambda + \lambda^\alpha + \lambda^b + \lambda^{ab}$). As the number of terms in the model increases, more of the observed data are utilized in calculating the expected cell frequencies and the fit of the model to the data improves. The saturated model is generated from the observed cell frequencies and includes all the terms which would be in an analysis of variance model except for the error term. The saturated model fits the observed data exactly, so it is not particularly interesting. Third, the process of selecting the best fitting model requires some interpretation on the part of the researcher (Kennedy, 1983). The selection of the best fitting model is done in a series of steps. Initially,
a screening table of residual and component chi squares for the models is generated. If there are a large number of variables in the analysis, the screening table may only include "families" of models, such as first-order models and second-order models. The residuals are examined, starting at the top of the table, to eliminate the restricted models which have a large, significant chi square and do not fit the data well. The components are examined, starting at the bottom of the table, to eliminate less parsimonious models. A small component chi square indicates that a model does not fit the data any better than the more parsimonious model which precedes it in the hierarchy and therefore the added terms do not contribute to the overall fit. The model or family of models which is selected for further consideration includes terms with a significant component chi square (Kennedy, 1983).

The second step in model selection involves the examination of marginal and partial chi squares for each term. The marginal chi squares are calculated using the main marginals for each variable and the partials are calculated after partialling out the effects for other variables. Terms with significant chi squares are retained in the final model and others are eliminated. This stage of model selection may require some interpretation on the part of the investigator. Whether terms are retained in the model is determined by their statistical significance and the research interests. For instance, if a term is close to significance, the researcher can do one of three things. A term which is of little substantive interest in the study can be eliminated from further consideration. A second option is to eliminate other non-significant terms and rerun the analysis to see if the chi square associated with the term in question increases. Lastly, the term may be retained
in the model if it is of substantive interest and there are strong apriori hypotheses about the term. If the term is eliminated, the resulting model does not fit the data well (Kennedy, 1983).

The final step in log-linear analysis is to test the significance of the lambdas in the final model and interpret the results. This is done by converting the lambdas to z scores. If a symmetrical analysis is used, the results are interpreted as relationships or associations between variables. In an asymmetrical analysis, the results are interpreted as main effects or group differences relative to a dependent variable (Kennedy, 1983). Symmetrical log-linear models are used to examine the associations or relationships between variables and asymmetrical models are used to test effects or group differences, similar to an analysis of variance (Kennedy, 1983). In this study, a three-way symmetrical analysis was performed to test the associations between educational level, cognitive level, and identity status and answer questions 1 through 3. Asymmetrical log-linear models were used to test all the hypotheses inherent in the path diagrams because identity status was defined as a dependent or logit variable.

The asymmetrical analyses for testing the path models were done in a series of steps. First, a two-way asymmetrical analysis was performed to test for effects between education and gender, using a 3 x 2 contingency table. Since these are exogenous variables, no effects were expected. Second, a three-way analysis was conducted on educational level by gender by cognitive level, with cognitive level as the dependent variable. The contingency table for the three-way analysis was 3 x 2 x 3. Third, a four-way analysis was performed to test the effects of all variables on total
identity status. The four-way contingency table for path one was described as a $3 \times 3 \times 2 \times 2$ table (3 levels of education, 3 levels of cognitive development, 2 levels of gender, and 2 levels of identity status). Two separate four-way analyses were also performed as an initial screening for path two. In those analyses, ideological and interpersonal statuses were used as the logit variables. Subsequent to examining the results of the four-way analyses, a five-way analysis was performed using ideological and interpersonal statuses as a crossed-logit variable. The contingency table for the five-way analysis was $3 \times 3 \times 2 \times 2 \times 2$ (3 levels of education x 3 levels of cognitive development x 2 genders x 2 levels of ideological status x 2 levels of interpersonal status). The strengths of the effects in the path models were determined by the component chi squares.

Summary

One hundred-ninety-seven students from the Ohio State University participated in this study. The students fell into 5 grade levels and there were approximately two females to one male in the sample. They were administered two instruments: the Widick-Knefelkamp Sentence Stem and Essay Test to measure Perry positions and the Revised Extended Objective Measure of Ego identity status (EOM-EIS2) to measure identity status. The expected associations between educational level, gender, cognitive level, and identity status were presented in the form of hypotheses. Frequency distributions were sufficient for examining the relationships in
hypotheses 4, 5, and 6. Symmetrical and asymmetrical log-linear procedures have been described for testing the remaining hypotheses and path models.
CHAPTER IV
RESULTS

Introduction

This chapter summarizes the results of the study. The frequencies and percentages of subjects who scored in the different identity statuses and cognitive levels are presented to give an overview of the testing results. These data are used to identify patterns which emerged and to test hypotheses 4 through 6. Symmetrical and asymmetrical log-linear analyses of the relationships between variables are described and interpreted to determine whether the data support the remaining hypotheses.

Student Outcomes on Identity Statuses and Perry Positions

The frequencies and percentages of student scores on the identity statuses and Perry positions are summarized in Table 4 and Figures 10 and 11 (Appendix D). An examination of the data reveals that the majority (68%) of the students were in Moratorium on total identity status and that very few subjects (2%) were classified as identity Foreclosed. The remaining subjects were about evenly distributed between the Diffusion (13.2%) and Identity Achieved statuses (16.2%). The same pattern existed for the ideological and interpersonal substatuses, except that slightly more subjects were Foreclosed. No subjects scored in positions 1 or 6-9 on the measure of cognitive development and only two were scored at position 5. The largest
percentage (65.8%) of students were in Perry position 3 and the rest were distributed between positions 2 (19.4%) and 4 (13.8%).

The cross-tabulation of subjects in the identity statuses and cognitive levels by educational level are summarized in Table 5 (Appendix D). Those values were converted to percentages by grade level and depicted in Figures 12, 13, and 14 (Appendix D). As would be expected from the simple frequency distributions, the majority of the subjects were classified as in Moratorium and Perry position 3, but this was inconsistent across grade levels. The freshmen differed from the juniors and seniors in several respects. The highest percentage (37%) of freshmen were in Perry position 2 and Moratorium, while the highest percentage across other grade levels were in Perry position 3 and Moratorium. A higher percentage of freshmen than juniors or seniors at position 2 were in the Achieved status (freshmen = 8.3%, juniors=1.2%, and seniors = 0%). At position 3, the freshmen had a higher percentage of Diffusions than the Seniors (12.5% compared to 6.3%) and a lower percentage of Achieved than either the juniors or seniors (6.2% compared to 10.6% and 15.9%). The freshmen who were classified as position 4 were all in Moratorium, but juniors and seniors at position 4 were in both Moratorium and Achieved. These results indicate that freshmen in the cognitive position 2 scored at higher identity statuses relative to the juniors and seniors at position 2, but at positions 3 and four they scored lower. It was also noted that no individuals in Perry positions 4 and 5 were in the low identity statuses.

A further examination of Table 5 and Figure 15 shows varying patterns of cognitive levels across the educational levels. In the freshmen sample, the subjects are evenly distributed between Perry positions 2 and 3,
with only one subject in position 4 and no subjects in position 5. The junior sample, in contrast, had only 16.5% in Perry position 2, 67% in position 3, 15% in position 4, and one subject in position 5. In the senior sample, no subjects were scored at Perry position 2, 78% were position 3, and 20% were position 4, and one was position 5. Overall, there appeared to be a decrease in subjects in Perry position 2 and an increase in subjects in position 4 and 5 across educational levels.

The differences in the distribution of identity statuses across educational levels was less well defined (Table 5, Fig. 16). It was observed that no freshmen were in the Foreclosed status and that 3 of the 4 Foreclosures were juniors. The percentage of seniors in the Diffusion status was less than the freshmen or juniors: 16% for freshmen, 16% for juniors, and 6% for seniors. The distribution of Moratoriums was approximately the same across all grade levels (67%-69%). The seniors were more highly represented in the Achieved status: 14% of freshmen, 12% of juniors, and 24% of seniors were Achieved. Overall, the seniors had fewer subjects in the Diffuse status and more subjects in the Achieved status than the other classes.

**Descriptive Data and Tests of Hypotheses 4 - 6**

Table 6 (Appendix D) shows the cross-tabulations of the four identity statuses by the four Perry levels of Dualism, Multiplism, Relativism, and Committed. An examination of Table 6 reveals that neither hypothesis 4 nor hypothesis 6 is supported. Hypothesis 4 predicted an association between all four cognitive levels and all four identity statuses, such that the frequencies would load on the main diagonal, as shown in Figure 12.
Hypothesis 6 predicted that cognitive development would be a necessary but not sufficient condition for identity formation. It would be supported if no subjects fell in the upper right triangle of the contingency table. It is obvious from Table 6 that the results are almost the opposite of what was predicted. No further tests of significance were conducted.

Hypothesis 5 predicted an association between the Perry escape positions and the identity statuses. Only two subjects were classified as Perry escapes. They were both scored as Temporizing and one was in the Diffusion status and the other was in the Moratorium status. Although this is consistent with predictions, the hypothesis could not be supported with such a small sample size.

Tests of Associations between Educational Level, Cognitive Level, and Total Identity Status

Hypotheses 1, 2, and 3 predict associations between educational level, cognitive level, and total identity status. To test these hypotheses, a 3-way symmetrical log-linear analysis was performed, involving 3 levels of education, 3 cognitive levels, and 2 levels of total identity. The three levels of variable A were defined as freshmen, junior, and senior. The cognitive levels, Variable B, were Perry positions 2, 3, and 4. Position 5 was eliminated because there were only two subjects. Total identity status, Variable C, was collapsed into two levels, low and high. The frequency distribution for the analysis is shown in Table 7 (Appendix E).

The goal of the analysis was to determine the most parsimonious log-linear model which fits the observed data well. Table 8 shows the models which were fitted and the residual and component likelihood ratio
chi squares for each successive model. The first two models in the Table were eliminated from further consideration because they are a poor fit of the data, as is indicated by the high residual chi squares associated with them. The saturated model, ABC, was also eliminated in favor of a more parsimonious model because the component chi square is low and the term, therefore, contributes very little to the overall fit of the data. The remaining model (AB, AC, BC) was retained for further consideration.

Table 9 lists the partial and marginal associations for the terms in the analysis. An examination of AB shows a highly significant chi square ($L^2 = 44.82, 4 \text{ df}, p = .0000$) associated with this term, even after partialling out A, B, and C; therefore the term was retained. The chi square associated with AC is low ($L^2 = 2.90, 2 \text{ df}, p > .05$), so the term could be eliminated to produce a more parsimonious model. The marginal chi square for the BC term approached significance at the .05 ($L^2 = 5.08, 2 \text{ df}, p = 0.0787$). Even after partialling out the effects for AB and AC, the BC term approached significance at the .05 ($L^2 = 4.29, 2 \text{ df}, p = 0.1170$), but since it was not significant a decision had to be made as to whether to include it in the model.

Two factors were considered in deciding whether to include BC in the final model. First, the model which contains only AB is a poor fit because a significant amount of the chi square is unaccounted for. Second, the BC term was the one of most substantive interest in this study and a strong apriori hypothesis existed regarding that term. Consequently, the analysis was rerun with a model that eliminated AC and included AB and BC, so that BC could be examined more carefully. The residual chi square did not change dramatically in the second run ($L^2 = 10.23, 6 \text{ df}, p = 0.1153$).
The term was included in the final model because of the research interest associated with it. Table 10 (Appendix E) summarizes the results of the 3-way symmetrical analysis. In this table, the lambdas are converted to z scores for tests of significance. An examination of the z scores for educational level by cognitive position reveals that significantly more freshmen are at position 2 (z = 4.787) and fewer are at position 4 (z = -3.156) than would be expected by chance. The z scores for juniors are not significant at the .05. The seniors are significantly under-represented in position 2 (z = -3.437) and over-represented in positions 3 (z = 2.160) and 4 (z = 3.348). These results are consistent with theoretical expectations and support hypothesis one.

The z scores for cognitive level by identity status were not significant at the .05 (Table 10). They did, however, approach significance for Perry positions 2 and 4 and the relationship was in the direction anticipated. There was a positive relationship between the Perry position 2 and the low identity statuses (z = 1.828) and a negative relationship between position 2 and the high identity statuses (z = -1.828). There was also a negative relationship between Perry position 4 and the low identity statuses (z = -1.821) and a positive relationship between position 4 and the high statuses (z = 1.821). Despite the patterns indicated by the z scores, hypothesis two was not supported at the .05 level of significance.

Hypothesis 3, which predicted an association between educational level and the identity statuses was also not supported. The AC term was dropped from the model during the process of selecting a model because of the low chi square contribution by that term.
Tests of Path Model One and Corresponding Hypotheses

Path model one depicts the effects of educational level, cognitive level, and gender on total identity status. The path is set up in three parts so the analysis was done in three separate steps. Part one involves two exogenous variables, educational level and gender, which were not expected to be associated. This part was tested using a two-way symmetrical analysis. Part two incorporates the effects of educational level and gender on cognitive level. In analyzing part two, a three-way asymmetrical analysis was performed, with cognitive level as the logit variable. Part three involves a test of the effects of educational level, cognitive level, and gender on total identity status. The analysis for part three was a 4-way asymmetrical analysis with identity status as the logit variable. In all analyses, the variables were defined as follows: a) Variable A, three levels of education (freshmen, juniors, and seniors); b) Variable B, three levels of cognitive development (positions 2, 3, 4); c) Variable C, two levels of gender (male, female); and d) Variable D, two levels of total identity status (low, high). The component chi squares from the analyses were used to indicate the strengths of the paths in the path model.

Step One

The frequency distribution of subjects by educational level and gender is shown in Table 11 (Appendix E). The residual and component chi squares for the two-way analysis are listed in Table 12 (Appendix E). An examination of that table reveals that the null hypothesis and the saturated model can be eliminated. The model that fits the data best is model 1 (A,C) the model of mutual independence. The probability of educational level and
gender being mutually independent is significant at the .05 ($\chi^2 = 6.39, \text{df} = 2, p = 0.04095$).

**Step Two**

The frequency distribution by educational level by gender by cognitive level for the second part of the analysis is shown in Table 13 (Appendix E). Subsequent to running an asymmetrical analysis, the residual and component chi squares were obtained (Table 14, Appendix E). An examination of the residual chi squares reveals that the null model, saturated model, and model that includes main effects for gender (AB, CB) can be eliminated. The component chi square for AB, the relationship between educational level and cognitive level, is highly significant ($\chi^2 = 46.24, \text{df} = 4, p = 0.0000$). A review of the partial and marginal component chi squares in Table 15 (Appendix E) confirms the bold effect of Variable A (educational level) on the logit variable B (cognitive level).

**Step Three**

Table 16 (Appendix E) shows the frequency distribution (educational level by cognitive level by gender by identity status) that was used to run the 4-way asymmetrical analysis to complete the last part of path one. An examination of the residual and component chi squares in Table 17 (Appendix 17) reveals that none of the components were significant at the .05, but two models approached significance. The model for main effects for educational level on identity status has a component $\chi^2 = 4.99$ ($p = 0.0847$). The interaction between educational level and cognitive level (ABD, CD) also approached significance (component $\chi^2 = 8.38, \text{df} = 4, p = 0.0710$). The interaction term, however became less significant ($p = 0.1250$) after partialling out effects for C (Table 18, Appendix E).
Summary of Results from Path One

A summary of the component chi squares for the models in path one are shown in Table 19 (Appendix E). As indicated previously, the independence model for educational level and gender was accepted in step one and was statistically significant at the .05 (\(L^2 = 6.39, 2\text{df}, p = 0.04095\)). The only path in the model which tested as statistically significant was the main effect for educational level on cognitive level (\(L^2 = 46.24, 4\text{df}, p = 0.0000\)). This supported the first part of hypothesis 7, but the second part of hypothesis 7, main effects for education on identity, was not supported statistically. The main effects for educational level on identity status approached significance, however (\(L^2 = 4.99, 2, p = 0.0847\)). The interaction between educational level and cognitive level also approached significance (\(L^2 = 8.38, 4\text{df}, p = 0.0710\)), but was not bold enough to support hypothesis 8. Hypothesis 9, the effect of cognitive development on identity status was also not supported. Hypothesis 10 was supported; main effects for gender on cognitive level (CB) and gender on total identity status (CD) were not significant. The path model in hypothesis 13 was not supported statistically. The path model that emerged from the data contained only a path from educational level to cognitive level (Fig. 17).

![Figure 17. Path Model One from Observed Data](image-url)
Tests of Path Model Two and Corresponding Hypotheses

Path model two was tested in the same fashion as path model one, except for the last step in the process. Steps one and two were not repeated because they were already run for path one. Step three involved a 5-way asymmetrical analysis between three levels of education (Variable A), three levels of cognitive development (Variable B), two levels of gender (Variable C), and a cross-logit variable with two levels of ideology substatus (Variable D) and two levels of interpersonal substatus (Variable E). The levels of each variable were the same as described previously. The substatuses were categorized as low and high, the same as the total identity statuses in path one. Prior to performing the 5-way analysis, however, two 4-way analyses were run with ideological and interpersonal substatuses as logit variables in order to determine whether to proceed with the 5-way.

Four-Way Analysis with Ideology Substatus as the Logit Variable

The frequency distributions which were used in this analysis are shown in Table 20 (Appendix E). An examination of the residual and component chi squares in Table 21 (Appendix E) reveals that none of the components contribute a significant chi square. Model A,B,C approaches significance (component $L^2 = 2.20, 1 \text{df, } p = 0.1395$). Since gender is of particular interest in path two, this model was worth examining further. The partial and marginal chi squares are listed in Table 22 (Appendix E) and reveal about the same level of significance for Variable C after partialling out effects for A and B. Tests on the lambdas for gender effects on ideological substatus are shown in Table 23 (Appendix E). It was noted that males were more frequently in the low ideology substatus and females were more
frequently in the high status, but the difference was not statistically significant ($\lambda = 0.132, z = 1.487$).

**Four-Way Analysis with Interpersonal Substatus as the Logit Variable**

The frequency distribution for the asymmetrical analysis on the interpersonal logit variable is shown in Table 24 (Appendix E). An examination of the residual and component chi squares (Table 25, Appendix E) shows significant chi squares for model A,B,C, (component $L^2 = 4.33, 1\text{df}, p = 0.0371$) and for model AB,AC, (component $L^2 = 5.37, 2\text{df}, 0.0207$). A closer examination of the partial and marginal chi squares reveals that the main effect for gender on interpersonal substatus is significant (partial $L^2 = 4.34, 1\text{df}, p = 0.0371$) but the effect for the interaction between gender and educational level is not (partial $L^2 = 5.27, 2\text{df}, p = 0.0716$). Despite the fact that the partial chi square for the interaction approached significance, this term was not pursued because it was not of interest in the study. Therefore, the most parsimonious model to fit the data would include only main effects for gender. Table 27 shows the tests of significance on the lambdas for the gender effect on interpersonal substatus. The $z$ scores are significant ($z = 2.082$). Males are in the low interpersonal substatus and females are in the high interpersonal substatus more frequently than can be predicted by chance.

**Five-Way Analysis for Path Two**

Since the preceding 4-way analyses revealed a significant gender difference on the interpersonal substatus, a decision was made to proceed with the 5-way analysis, using the identity statuses as a crossed-logit variable. The frequency distribution for the 5-way asymmetrical analysis
with the crossed-logit variable is shown in Table 28 (Appendix E). It was noted that there were a large number of cells with zero subjects, which could affect the power of the analysis and the confidence that can be placed in the results. The residual and component chi squares are presented in Table 29 (Appendix E). None of the models in the screening table approach significance. The partial and marginal associations are shown in Table 30 (Appendix E). An examination of that table shows the marginal chi square for gender main effects (C) approaches significance ($L^2 = 3.53, 1 \text{df}, p = 0.0601$), but some of the significance is lost when the effects of A and B are partialled out ($L^2 = 2.50,1 \text{df}, p = 0.1140$). Since the gender effects are of primary interest in path two, the model that contains the CDE term was selected. The observed frequencies, lambdas, and z scores for the model which includes gender main effects are reported in Table 31 (Appendix E). The z scores approached significance at the .05 ($z = 1.876$), and the patterns of relationships were in the direction predicted. In the low interpersonal substatus, males were more frequently high on ideology and females were more often low on ideology. Females in the low interpersonal substatus were more predominant in the low ideology substatus. In the high interpersonal substatus, males were more often low on ideology and females were more frequently high on ideology.

Results of Path Two

Path model number two, as described in hypothesis 13, was not supported statistically. Table 32 (Appendix E) shows a summary of the resulting component chi squares. There was a bold effect for educational level on cognitive development, as indicated before in the 3-way analysis. When the 5-way analysis was performed, the statistical differences between
males and females were not confirmed, but the patterns were in the directions predicted. Males who were high on the ideological substatus were not necessarily high on interpersonal relationships, but if females were high, they were high on both substatuses. Despite the patterns indicated by the z scores, however, hypothesis 11 was not supported. No interaction effects were obtained between educational level and cognitive level. There were also no interaction effects between gender and cognitive development, so hypothesis 12 was also not supported. The path model which emerged from the data would look exactly like the first one.

Summary

The descriptive results presented in this chapter demonstrated that the majority of college students were in Perry position 3 and in Moratorium on the identity statuses, but there were different patterns across educational levels. A symmetrical log-linear analysis was performed which confirmed a strong relationship between educational level and cognitive level. A relationship between Perry positions and total identity status was not supported, but it was in the expected direction and approached significance. The association between total identity status and educational level was also not supported by the data. Two four-way asymmetrical analyses showed that the two genders exhibited the same response patterns on the substatuses, but the gender differences were significant for the interpersonal substatus and not for the ideological substatus. A five-way asymmetrical log-linear analysis did not show significant gender effects on the crossed substatuses, but the results approached significance and
followed predicted patterns. Neither of the path models were supported, but some of the results approached significance in the directions predicted.
CHAPTER V
DISCUSSION AND CONCLUSIONS

Introduction

This chapter discusses the results and implications of the study. Significant findings are presented and conclusions drawn. The research questions which were posed, but not supported statistically, are discussed along with possible limitations of the study. Some implications for student affairs and for future research are presented.

The Study

Identity formation and higher levels of cognitive-structural development are known to occur during the college years and theorists have predicted a relationship between the two (Erikson, 1968, Marcia, 1980, Perry, 1968). Specifically, it has been assumed that higher levels of complex reasoning are necessary for individuals to sort out alternatives and make commitments on identity issues.

This study was conducted on a cross-sectional sample of college students to determine whether there is support for the assumption of a relationship between cognitive-structural development and identity formation in the college years. Instruments which measure Marcia’s identity statuses and Perry’s scheme of intellectual and ethical development were used to assess identity levels and cognitive levels because of the strong theoretical
similarities between the two schemes and the extensive research on college students using both schemes. Educational level and gender are important factors in both lines of development, so they were also included in the study. It was anticipated that the research would demonstrate a correlation between the identity statuses and the Perry positions and, furthermore, that specific identity statuses would be correlated with specific cognitive-structural positions. A relationships was also expected between educational level and development on both schemes. It was predicted that gender would not be related to cognitive-structural development or total identity formation, but that males and females would differ developmentally on ideological and interpersonal identity issues.

Discussion of results

The main finding of the study was a significant relationship between educational level and cognitive-structural development. The descriptive data clearly showed that half the freshmen were at Perry position 2, but only 16% of the juniors and no seniors were at that level. In addition, only one freshman was at position 4, but 14% of the juniors and 20% of the seniors were at that level. Only two subjects were at position 5 and none were at the Committed levels. The performance of a symmetrical log-linear analysis further demonstrated a significant association between educational level and cognitive-structural development. Freshmen were significantly over-represented at position 2 \( (z = 4.787) \) and under-represented at position 4 \( (z = -3.156) \); juniors were distributed across all levels; and seniors were significantly fewer at position 2 \( (z = -3.437) \) and more frequently at position 4 \( (z = 3.348) \). These findings are consistent with previous research by
Baxter Magolda (1988) which showed most colleges students are in positions 2 to 4. The results do not document that students achieve the higher positions that Perry described (1968). The lower cognitive level observed in freshmen is probably due to developmental differences between younger and older students as would be expected, but it could also be attributed to a regression upon entry to college, as was suggested by Griffith (1980). That is difficult to determine using a cross-sectional design.

One of the surprising results of the study was that there was no relationship between educational level and identity status. The descriptive data showed that the majority of the students were in the Moratorium status, which is consistent with Erikson's (1968) observation that college provides a psychosocial moratorium. If educational level was associated with progressive development on the identity statuses, one would predict a decrease in the lower statuses and an increase in the higher statuses from the freshman to the senior years. In fact, fewer of the freshmen than the juniors were in the Foreclosed status and the frequency of individuals in the Achieved status only changed from 14% to 24% from the freshman year to the senior year. The percentage of subjects in the Diffusion status did drop by the senior year. These observations from the descriptive data were supported by the log-linear symmetrical analysis. The analysis showed no significant relationship between educational level and identity status. Therefore, significant progressive development on the identity statuses during college was not supported, contrary to the predictions of theorists (Marcia, 1980; Waterman, 1982). Several factors could account for this discrepancy between the observed data and the theoretical prediction. First, identity development is not linear and there are multiple possible
pathways, including progression, regression, and stability (Waterman, 1980, 1982; Adams, Bennion, & Huh, 1987). Therefore, it is not surprising that a cross-sectional study failed to demonstrate progressive development. A cross-sectional sample only takes a snapshot of the population at a certain point in time and no predictions can be made about development. For example, it would be impossible to determine whether upperclass students were only temporarily Diffuse or Foreclosed before resuming normal development. Second, an objective measure of identity statuses may not adequately measure the underlying ego level. In this study, 16% of the freshmen were Achieved, but it is not known whether they remained achieved or even whether they were actually Achieved. Conceivably, the freshmen who were scored as Achieved could have made premature commitments and been Foreclosed or they could have made a temporary choice within Moratorium. The only way to adequately measure development across educational level, especially when there are multiple possible pathways, is to use a longitudinal study.

The most disappointing result of the study was that the relationship between cognitive-structural development and identity status was not confirmed. The results of the symmetrical log-linear analysis did approach significance, however. Perry position 2 was positively correlated with low identity statuses ($z = 1.828$) and negatively associated with high identity statuses ($z = -1.828$). Perry position 4, in contrast, was positively associated with high statuses ($z = 1.821$) and negatively associated with low statuses ($z = -1.821$). Therefore, the patterns of the associations did conform to earlier predictions. If the sample size had been larger, the associations may have been significant. Several patterns emerged from the descriptive data.
which raised theoretical questions, particularly about the individuals who were in position 2 of the Perry scheme and scored in the high identity statuses. First, it was obvious that the majority of subjects were at Perry level 3 and in Moratorium, but freshmen Moratoriums were predominantly position 2 and upperclass Moratoriums were position 3. If the ability to recognize and consider various options were necessary for an exploration of identity issues, it is questionable whether individuals in position 2 have the cognitive complexity to be in the Moratorium status. Furthermore, since some of the factor analyses on the identity measure show Diffusions and Moratoriums loading the same, it is conceivable that the position 2 Moratoriums are actually in Diffusion. Second, a higher percentage of freshmen than juniors or seniors in position 2 were Achieved. If cognitive complexity were related to identity formation, one would question whether those freshmen were actually Achieved, rather than Foreclosed or at a choice point in Moratorium. Only a more precise measure of the underlying ego level would answer the these two questions. Last, it was interesting that no subjects who were in position 4 or 5 were in the low identity statuses, which suggests that an increase in relativistic thinking corresponds with a higher probability of exploring identity issues.

It was not possible to test whether specific Perry levels were associated with specific identity statuses, as predicted in hypothesis 4, or whether cognitive-structural development was a necessary but not sufficient condition for identity formation, as predicted in hypothesis 6, because no subjects were scored in the higher Perry positions. When the cross-tabulations were plotted, however, the opposite result seemed to occur. Subjects were distributed across all levels of the identity statuses,
but were concentrated in the lower Perry levels, predominantly position 3. This suggests that identity formation occurs at a faster rate in college than cognitive development. Since most college students are in the multiplistic Perry positions and in Moratorium, it would appear that multiplism is sufficient cognitive complexity for exploring identity issues. It may not be sufficient, however, for making permanent commitments on identity issues, as relatively few individuals in the study were Achieved and the stability of the Identity Achieved status is questionable.

The study of gender effects on cognitive-structural development and identity formation largely supported previous research and theoretical predictions, but it was not conclusive. In the log-linear analyses, no significant gender differences were observed for cognitive-structural development. This is consistent with the research of Baxter Magolda (1987, 1988, 1989) which demonstrated stylistic differences, but not structural differences between genders. Similarly, no gender differences were observed for total identity status, which is consistent with the prediction of hypothesis 10. Significant gender differences were observed for interpersonal identity formation when a four-way asymmetrical log-linear analysis was performed. Females scored in the higher statuses more frequently than males ($z = 2.082$). The differences between males and females on ideological identity formation was not significant ($z = 1.487$), but the pattern was the same as for the interpersonal substatuses, with females scoring higher than males. These findings partially supported hypothesis 11. A 5-way asymmetrical analysis tested the gender effects when interpersonal and ideological substatuses were crossed. The results approached significance ($z = 1.876$). The pattern that emerged suggested that males who are low on
interpersonal identity are high on ideological identity, and those that are high on interpersonal identity are low on ideological identity. The female pattern, in contrast, revealed that females would either be low on both substratuses or high on both. These differences suggest that males work on either ideology or interpersonal identity issues and females work on interpersonal identity at the same time they are forming an ideological identity. These findings were not significant, but the patterns are consistent with the theoretical assumptions that female identity formation is related to interpersonal relationships. The interaction between cognitive development and identity formation which was predicted in hypothesis 12 was not supported, so one can conclude that the gender differences in identity formation are not related to differences in cognitive-development.

Conclusions

The only conclusion that can be drawn with any certainty from this study is that there is an association between educational level and cognitive development. It could also be assumed that no relationships exist between educational level and total identity status, gender and total identity status, or gender and cognitive development, since tests of these relationships were highly insignificant. The study failed to adequately answer key questions about the relationship between cognitive development and identity formation or questions about gender and development on identity substratuses. The results indicated that associations may exist between cognitive development and identity formation, but the statistical tests were not significant. It was clear that specific identity statuses were not associated with specific cognitive positions and that individuals achieve
high levels of identity, but not high levels of cognitive development in college. A much lower cognitive level than was predicted may be sufficient for identity formation to occur. There also appeared to be differences between the genders on interpersonal and ideological identity formation, but the differences were not statistically significant. If differences occur, females may form a sense of identity on both ideological and interpersonal relationships simultaneously, while males form work on the issues independently. The sample size was not sufficiently large to provide the statistical power to test these last assumptions.

Limitations of the Study

The major limitations of the study were in the methodology: using a cross-sectional sample to study developmental processes, relying on volunteers to participate, limiting the sample size below the optimal level, and employing instruments which sacrifice some validity in order to fit the nature of the study. Difficulties also arose because of the differences between the two theory bases.

This study used a cross-sectional design to study two developmental processes. Cross-sectional designs are limited to studying and comparing different groups of individuals, rather than following the development of the same individuals across time. Therefore, assumptions about development within individuals could only be inferred. Time and financial constraints precluded the use of a longitudinal design in this study, but future research would benefit from a longitudinal design, especially since two developmental processes are being studied simultaneously and an attempt is being made to examine the relationship between them. In addition,
cross-sectional studies are subject to confounding due to cohort effects, changes in cultural and historical factors, and sampling bias. In this study, cohort and historical effects should have been minimal because the age groups were close chronologically and had experienced many of the same historical trends. There may have been some differences due to the fact that The Ohio State University imposed a selective admissions policy in 1987 and the students admitted after that time may have had different characteristics than those admitted earlier.

Sampling bias was a limiting factor because only volunteers from an initial random sample were solicited and when the response rate was low, other means of obtaining volunteers were used. The sampling also produced a greater number of females than males. These problems threaten the assumption of randomization, but the study was not entirely dependent upon obtaining a representative population. In addition, it is possible that subjects who volunteered shared common characteristics related to cognitive-structural development or identity formation. Sampling bias could also have occurred because of attrition from the freshman through the senior year of college.

The study was also limited by a sample size that was less than optimal. There were four categorical variables in the study, each with multiple levels. Since the analysis involved the use of contingency tables, a large number of subjects was needed to meet a minimum criterion of expected cell frequencies of five subjects per cell. This number was difficult to obtain, so most of the categories had to be collapsed in the analysis. An attempt was made to do this selectively, so as not to sacrifice meaning and so the analysis would still yield interpretable results. One category that was
particularly problematic was educational level. The initial sampling
produced subjects who fell outside the prescribed parameters and a
judgment had to be made about how to use that data. The sample size was
also too small to produce subjects in the lowest and highest levels of the
Perry scheme.

The size of the sample was even more problematic when the log-
linear analyses were run. Most of the contingency tables did not meet the
minimum criterion of 5 subjects per cell, even after collapsing within
variables. This was especially true in the 4-way and 5-way analyses where
many of the cells contained only one or two subjects. This may have caused
difficulties in the selection of the best fitting models. The relationship
between cognitive level and identity status in the symmetrical analysis
approached significance and a decision had to be made whether to include
the term in the final model. The term was not significant at the .05, but if
it were eliminated from the model, the resulting model did not fit the data
well. A similar situation arose regarding the effects of gender on the
identity substatuses in the 5-way analysis. In both instances, a larger
sample size would have increased the power of the analysis and the schi
squares for those terms probably would have been significant.

The choice of instruments for this study may have been another limi-
tation. The Revised Version of the Extended Objective Measure of Ego
Identity Status was selected because of the ease of administration and
simplicity of scoring the instrument for a large sample of students. It is
also free of rater bias, since it is an objective measure. It is a valid and
reliable instrument, but information is sacrificed when using an objective
measure rather than a production instrument or an interview. In addition,
this instrument combines occupational and ideological issues into one score and, since evidence suggests that development may be very different on these two identity issues, some discriminatory information about identity is lost. The Widick-Knefelkamp Sentence Stem and Essay Test was chosen for the determination of the Perry positions because it measures all nine positions and it was crucial to the research questions to be able to measure the higher existential stages which were assumed to be related to identity achievement. There are very few validity studies which have been published on this instrument, however. It was thought that the advantages of employing the instrument which measures higher Perry stages outweighed the disadvantages. The inter-rater agreement was good also.

When research is done on two overlapping, but different theoretical models, it can be assumed that the area of overlap will be small and the correlations will be low (Cote & Levine, 1988a). In this study, low correlations could have resulted from differences in how the two theories define “commitment.” In Maricia’s model, “commitment” seems to refer to what Perry would call “choice.” This is particularly evident when one considers that students can indicate that they are committed, but the internal processes by which they arrived at that commitment may not be readily apparent. On a self-report instrument, it is particularly difficult to ascertain the ego developmental level.

Implications for Student Affairs

This study did not reveal anything that was particularly new to student affairs professionals. It was already known that most college students are in the late dualistic and multiplistic stages of cognitive-structural
development and are in Moratorium on identity issues. This knowledge is useful, however, in understanding the students and in developing programs which fit their developmental levels. It is also important, if interventions are planned to intentionally promote student development.

Since most undergraduate students are dualistic or multiplistic, they will assume that right answers exist and that authorities have the answers. They will expect authority figures to either give them the answer or show them the right way to find it, consequently they will require a sufficient amount of structure and guidance in most activities. They can be encouraged to think relativistically by presenting them with options to explore and the support to do so.

The vast majority of students are actively exploring identity issues, consequently student affairs programs can be developed to facilitate this process, but student affairs professionals also need to be aware of the implications of working with individuals in the other identity statuses. Programs which would be of particular importance to undergraduates in Moratorium would address key identity issues, such as political or religious ideology and interpersonal relationships. The danger would be in providing too much challenge and causing the Moratoriums to regress into Diffusion. The most difficult students to work with may be those who are Foreclosed on identity issues because they would not be open to new perspectives. Foreclosed individuals, however, would be cooperative with authority figures. The Diffusions would be least likely to participate in student activities because they are typically alienated, withdrawn, and uninterested in identity issues. Diffusions conform to peer pressure, so the environmental milieu will likely determine their behavior. Programming for
Identity Achieved individuals would be most appropriate if it was designed to help them solidify their commitments. Student affairs professionals also need to be aware of the differences between students in the low statuses and the high statuses on such characteristics as locus of control, impulsivity, and self esteem.

It would be important for student affairs professionals to know whether there are gender difference on identity formation. If females form a sense of identity on ideological and interpersonal issues simultaneously, it would be helpful to include interpersonal questions in the exploration of other issues. For instance, interpersonal considerations would be important for females when exploring careers, recreational activities, and political or religious ideology. If males work on the ideological and interpersonal issues separately, the relationship between the two would not be so critical.

Implications for Research

Since some of the key questions in this research remain unanswered, it would be appropriate to follow-up the study with a larger sample size to increase the power of the statistical analyses or with a longitudinal study which would track both developmental processes across time. The statistical results for the relationship between cognitive development and identity formation warrant further investigation of that question. Similarly, the analyses of gender differences on identity formation approached statistical significance and should be investigated further.

One other significant question arose in the course of this project. Perry (1968) predicted that there was a shift that begins at stage 3 or 4 on characteristics such as locus of control, reflectivity, self-esteem, and field
dependence-independence. Most of those characteristics have been shown to be related to the high identity statuses. This research showed that individuals can be in the high statuses at the same time they are in Dualism or Multiplicity on Perry's scheme. Therefore, it would be worth investigating at what Perry levels students develop the above-mentioned characteristics.

Summary

The research described here provided evidence of a relationship between educational level and cognitive level, but the effects of cognitive level and gender on identity formation remain unclear. These relationships are useful for professionals working in student affairs, so additional research on this topic would be warranted.
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APPENDIX A

TABLE OF RELATIONSHIP BETWEEN THE PERRY SCHEME
AND MARCIA'S IDENTITY STATUSES
Table 1. Characteristics of the Identity Statuses and Perry Positions

<table>
<thead>
<tr>
<th>Identity Statuses</th>
<th>Perry Positions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreclosure</td>
<td>Dualism</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>authoritarian (l,m,n,o,p); closed (a); rigid problem-solving (l); impulsive (cc); can't tolerate ambivalence (k); low autonomy (q,r,bb); likes structure (h); not decentered (a) external locus control (b); dependent (f); low self esteem (l)</td>
<td>authoritarian (s,t), thinks in absolutes (s,t); agency “out there” (s,t); external locus of control (s,t); likes structure (z); low cognitive complexity (s,t); low self-esteem (s,t), not decentered (s,t); low involvement (j); field dependent (s,t)</td>
</tr>
<tr>
<td>Diffusion</td>
<td>Multiplicity</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>cherish possibilities (k): low autonomy (o); Field Dependent (o); impulsive (cc); cognitively complex (o,aa); respectful of authority (h,o); not engaged in identity issues, but aware alternatives exist (o); external locus of control (b); low self esteem (m)</td>
<td>uncertainty is legitimate (s,t); opinions without pattern (s,t); external locus of control (s,t,f); field dependent (s,t); sees teacher as Authority (s,t); aware of multiple alternatives (s,t); low self esteem (s,t)</td>
</tr>
<tr>
<td>Moratorium</td>
<td>Relativism</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>high self-esteem (m); internal locus of control (b); integratively complex (o,aa); reflective (cc); may be anxious and guilty (m); exploring identity issues (o); high self esteem (l); open (a); independent (f); high achievement (c); responsible (o); high moral reasoning (u,x)</td>
<td>responsible (e,f); internal locus of control (f,z,s,t); relativistic and contextual (s,t); analytical and evaluative (d,c); engaged in identity issues (s,t); high self-esteem (s,t); reflective (s,t); field independent (s,t); open (z) high self esteem (s,t); high achievement (j); high moral reasoning (s,t)</td>
</tr>
</tbody>
</table>

continued on next page
Table 1 continued

<table>
<thead>
<tr>
<th>Identity Statuses</th>
<th>Perry Positions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Achieved</strong></td>
<td><strong>Committed</strong></td>
</tr>
<tr>
<td>internal locus control (b);</td>
<td>internal locus control (f,s,t);</td>
</tr>
<tr>
<td>integratively complex (o);</td>
<td>cognitively complex (s,t);</td>
</tr>
<tr>
<td>open (a); reflective (cc);</td>
<td>open (z); reflective (z);</td>
</tr>
<tr>
<td>field independent (o);</td>
<td>field independent (s,t);</td>
</tr>
<tr>
<td>respect authority (h);</td>
<td>respect authority (s,t);</td>
</tr>
<tr>
<td>committed identity (l,o);</td>
<td>affirmation, choice, commitment (s,t);</td>
</tr>
<tr>
<td>high self-esteem (l,o);</td>
<td>high self esteem (s,t);</td>
</tr>
<tr>
<td>high achievement (c);</td>
<td>high achievement (j);</td>
</tr>
<tr>
<td>high moral reasoning (u,x);</td>
<td>high moral reasoning (s,t);</td>
</tr>
<tr>
<td>ability to analyze &amp; synthesize (aa);</td>
<td>ability to analyze &amp; synthesize (s,t,z); responsible (e)</td>
</tr>
<tr>
<td>responsible (o)</td>
<td></td>
</tr>
<tr>
<td><strong>Foreclosure</strong></td>
<td><strong>Retreat</strong></td>
</tr>
<tr>
<td>same as above; rigid (l);</td>
<td>stubborn entrenchment in</td>
</tr>
<tr>
<td>closed (m); can’t tolerate</td>
<td>dualism (s,t); avoid complexity</td>
</tr>
<tr>
<td>ambivalence (k)</td>
<td>and ambivalence (s,t)</td>
</tr>
<tr>
<td><strong>Diffuse</strong></td>
<td><strong>Escape</strong></td>
</tr>
<tr>
<td>withdrawn, angry, hostile (h);</td>
<td>detach (s,t); abandon</td>
</tr>
<tr>
<td>alienated (w)</td>
<td>responsibility; forget about</td>
</tr>
<tr>
<td></td>
<td>deciding, withdrawn, hostile (s,t)</td>
</tr>
<tr>
<td><strong>Moratorium</strong></td>
<td><strong>Temporizing</strong></td>
</tr>
<tr>
<td>aware of alternatives, but feel guilty if don't decide, anxious if stay in crisis long time (o)</td>
<td>pause (s,t); Postpone (s,t); may feel guilt and anxiety (s,t)</td>
</tr>
</tbody>
</table>

APPENDIX B

COPYRIGHT AND CONSENT LETTERS
Dear Dr. Adams:

I phoned you last Fall to inquire about using the Revised Version of the Extended Objective Measure of Ego Identity Statuses for my study of the relationship between Perry’s Scheme of Intellectual and Ethic Development and the Identity Statuses. Since that time, I have received a grant to conduct the research and intend to do my first sampling in May.

You indicated to me that I need to send you $15.00 for the manual and copy of the instrument, therefore I am enclosing it with this letter. I would appreciate your sending the materials as soon as possible.

I am excited about this research and will be willing to provide you with my data for your use in validating the instrument. Thank you for your help and I’ll keep you posted on my progress.

Sincerely,

Frances C. Pearson
Graduate Administrative Assistant
January 19, 1988

Behavioral and Social Sciences
Human Subject Review Committee (HSRC)
The Ohio State University

Dear Committee Members:

I have reviewed the research proposal from Robert Rogers and Frances Stroud of Educational Policy and Leadership titled "The Relationship Between Cognitive and Psychosocial Development" (#87BO156). The Colleges of the Arts and Sciences supports the project and approves of the use of our students in this study.

Sincerely,

Donald W. Good
Acting Dean of Undergraduate Studies

DWG:cb
Jossey Bass Inc.
433 California St.
San Francisco, CA 94104

May 26, 1969

To Whom It May Concern:

I am writing to ask for permission to use the copyright figure entitled "Map of Development" on page 60 of the following publication:


I will be using the figure in the literature review section of my dissertation on the relationship between cognitive and psychosocial development of college students. Thank you for your consideration.

Sincerely,

Frances C. Pearson
PhD Candidate
The Ohio State University

6/5/89 Permission is granted for dissertation use of the above referenced material. Please give full bibliographic credit.

Alice S. Morrow
Permissions Editor
August 8, 1989

Francis Pearson
1378 Presidential Drive
Columbus, Ohio 43212

Dear Ms. Pearson:

I am writing as a follow up to our telephone conversation this morning in which you requested permission to include APA-copyrighted material in your dissertation for Ohio State University. Specifically, you requested permission to reprint figure 1 ("A model of the sequential patterns of ego identity development") from an article authored by Alan S. Waterman entitled "Identity Development From Adolescence to Adulthood: An Extension of Theory and a Review of Research" published in Developmental Psychology, 1982, Vol. 18, No. 3, 341-358.

The American Psychological Association routinely grants permission for use of APA-copyrighted material published in our journals, for research and dissertation purposes, provided the material is properly referenced and author permission is obtained. We understand that you have made a good faith effort to obtain author permission, but that it has been well over a month and you have yet to receive a response from Dr. Waterman. In view of these circumstances, APA (as publisher and copyright owner) is now in a position to grant permission for use of APA-copyrighted material waiving the author-permission contingency. Therefore, you are free to include material from Dr. Waterman's article provided the material is referenced.

Good luck with your dissertation!

Sincerely,

Donna J. Beavers
Copyrights & Permissions
APA Publications
APPENDIX C
LETTERS TO STUDENTS AND
PACKET OF FORMS AND INSTRUMENTS
Dear

The purpose of this letter is to invite you to participate in a research study at The Ohio State University. The project is designed to answer several questions about how college students make meaning of their experiences and how that relates to making decisions about careers, relationships, and political or religious issues.

The sample of students for this study has been carefully selected, so that we can obtain information that is generalizable to the student population as a whole. It is important that you participate so that we are not forced to draw another sample. Your name was chosen randomly from the list of students in the Colleges of the Arts and Sciences. Freshmen, juniors, and seniors are being asked to participate and we need a minimum of 160 for meaningful results. If you agree to participate, you can attend a group session to fill out questionnaires or you will be mailed two questionnaires to fill out and return to us. The total process will only take about 1 1/2 hours of your time and you will be paid $5 for your effort.

There is no stress or risk involved in this study and you will not be submitted to any treatment. We are only interested in how you generalize things. In addition, your responses will be completely confidential and will not become part of any college record. The questionnaires will be numbered rather than having your name on them. We are interested in group data rather than individual scores; consequently, your name will not appear in conjunction with the information collected or in the report of the results.

This research is being conducted by Dr. Robert F. Rodgers, Associate Professor of Educational Policy and Leadership, and Frances Pearson, a Ph.D. student in the same department. The project has been favorably reviewed by an independent review committee and has the support of the College of Education and the Colleges of the Arts and Sciences. It is being funded by the American College Personnel Association.
Your participation in the study will enable us to learn more about students and how they make difficult career decisions and other choices. Therefore, we encourage you to assist us with this project. Your participation in this project is entirely voluntary and you are free to withdraw from the study at any time. If you decide to participate, please fill out the enclosed stamped postcard and return it to us by May 18th to indicate which group session you can attend. If you cannot attend, we will then mail you the two questionnaires to do at home and ask you to return them to us in 301 Ramseyer Hall by Dec. 30th. Five dollars ($5.00) will be given to you upon receipt of your completed questionnaires.

If you have any further questions, please contact Dr. Robert F. Rodgers (292-7703) or Frances Pearson (486-7511). Thank you for your time and attention. Your participation will be greatly appreciated.

Sincerely,

Robert F. Rodgers, Ph.D.
Associate Professor
Educational Policy & Leadership

Frances C. Pearson
Graduate Administrative Assistant

RPR/FCS:dm
Enclosures
Name:
Address:

_____ YES, I will participate in the study

I will attend (check one):
_____ The session on Nov. 14, 6-7:30 pm. Ohio Suite B, Ohio Union
_____ The session on Nov. 16, 4-6 pm, Ohio Suite B, Ohio Union
_____ Cannot attend, please mail packet to me
_____ Cannot attend, I will pick up packet in Rm 201 Ohio Union

_____ NO, I will not participate in the study

(Mail by Nov 11)
Summary of Oral/Enclosed Instructions

The purpose of this study is to examine how students make meaning of their experiences. In order to study this, two instruments need to be administered. They are:

1. The Widick-Knefelkamp Sentence Stem and Essay Test
2. The Revised Version of the Extended Objective Measure of Ego Identity Status.

Enclosed in your packet you will find both of these. Please complete each one in the order in which you find them. Instructions are on the front of each one. They are easy to read and understand, however, if you have any questions regarding them, please feel free to ask or call me at the numbers listed on this handout.

Also, in your packet you will find two copies of a consent to participate form. Please read over the form carefully and feel free to ask any questions you may have regarding this research. If you have no questions, please sign the form and return it to me. The other copy is for you to keep.

In order to keep track of some important information about the participants in the study, I also request that you fill out the sheet that asks about your year in school and sex. You can return it with the instruments.

Thank you.
Information about participant:

Year graduated from High School ___
Number of years at OSU ___
Have you been enrolled as a full-time student all quarters at OSU (excluding summer)? yes____  NO____
Class rank at OSU ____  Age____

If Freshman, are you in?  UVC Arts and Sciences____ (or)  directly enrolled in Arts and Sciences____

Gender:  Male_______  Female____

If you have questions, please call:

Frances Pearson
292-7703 or 486-7511
CONSENT FOR PARTICIPATION IN
SOCIAL AND BEHAVIORAL RESEARCH

I consent to participating in (or my child's participation in) research entitled:

The Relationship between Cognitive and Psychosocial Development

Dr. Robert F. Rodgers or his/her authorized representative has explained the purpose of the study, the procedures to be followed, and the expected duration of my (my child's) participation. Possible benefits of the study have been described as have alternative procedures, if such procedures are applicable and available.

I acknowledge that I have had the opportunity to obtain additional information regarding the study and that any questions I have raised have been answered to my full satisfaction. Further, I understand that I am (my child is) free to withdraw consent at any time and to discontinue participation in the study without prejudice to me (my child).

Finally, I acknowledge that I have read and fully understand the consent form. I sign it freely and voluntarily. A copy has been given to me.

Signed: ____________________________

Signed: ____________________________

Signed: ____________________________

Signed: ____________________________

Witness: ____________________________

HS-027 (Rev. 3/87) — (To be used only in connection with social and behavioral resea )
PERRY SCHEME ASSESSMENT

INSTRUCTIONS: This questionnaire explores how you as an individual think about various knowledge issues and valuational concerns. There are no right or wrong responses to any of the items or questions. What is important is the way you think about the items or questions or what they mean to you. Please be as complete as possible when you respond. PLEASE WRITE IN INK. Thank you.

NAME ____________________________

AGE ____________________________

SEX MALE________ FEMALE________

DATE____________________________
INSTRUCTIONS: On the next two pages there are five short "Sentence Stems". Please respond to each of these stems by writing down (a) "What comes to your mind" and (b) "the meaning of that for you". PLEASE WRITE IN INK.

1. My main concern...
   a.
   b.

2. When I think about my future...
   a.
   b.

3. Choices...
   a.
   b.
4. For me to say "I believe"...
   a. 

   b. 

5. Choosing a career...
   a. 

   b.
SECTION II

INSTRUCTIONS: We would like you to write short essay responses to the questions posed on the next 5 pages. It will help greatly if you can be as specific and complete in your answers as possible. Use the back if needed. PLEASE WRITE IN INK.

1. First, describe an ideal learning situation (such as an ideal class) for you. Be as specific and complete as possible.

Why is this situation ideal? What makes it ideal for you?

2. If there is a teacher (instructor) in your ideal environment, what is the ideal teacher like? If not, why not?

Why is this ideal for you?
3. What is the ideal "atmosphere" in your learning situation?

4. What would be ideal relationships among learners and between the teacher (instructor) and learners in your situation?

Why are these kinds of relationships ideal for you?
5. What kind of teaching or learning methods would you prefer in your ideal learning situation?

Why are these methods ideal for you?
6. If you had to be evaluated in your ideal learning situation, how would you ideally want to be evaluated?

Why is this ideal for you?

7. Within the past year, think about the last time you had to make a decision about something that had importance to you or the time you had to choose between some significant alternatives. What was the situation?

How did you make your decision?
Identity Status

OBJECTIVE MEASURE OF EGO IDENTITY STATUS

BENNION & ADAMS (1986)

Read each item and indicate to what degree it reflects your own thoughts and feelings. If a statement has more than one part, please indicate your reaction to the statement as a whole. Indicate your answer on the answer sheet by choosing one of the following responses. Do not write on the questionnaire itself.

Note: Each item is designed according to the domain area (Occupation, Religion, Politics, Philosophical Life Style, Friendship, Dating, Sex Roles, or Recreation) and Ego Identity Status (Identity Achievement, Moratorium, Diffusion or Foreclosure). When actually administering the EDMEIS-2, do not include this note or the domain and status designations after each item.

A = strongly agree
B = moderately agree
C = agree
D = disagree
E = moderately disagree
F = strongly disagree

1. I haven't chosen the occupation I really want to get into, and I'm just working at whatever is available until something better comes along.

2. When it comes to religion I just haven't found anything that appeals and I don't really feel the need to look.

3. My ideas about men's and women's roles are identical to my parents'. What has worked for them will obviously work for me.

4. There's no single "life style" which appeals to me more than another.

5. There are a lot of different kinds of people. I'm still exploring the many possibilities to find the right kind of friends for me.

6. I sometimes join in recreational activities when asked, but I rarely try anything on my own.

7. I haven't really thought about a "dating style." I'm not too concerned whether I date or not.
Identity Status

2

For all the questions on this page, choose from the following responses.

A  =  strongly  agree
B  =  moderately  agree
C  =  agree
D  =  disagree
E  =  moderately  disagree
F  =  strongly  disagree

8. Politics is something that I can never be too sure about because things change so fast. But I do think it's important to know what I can politically stand for and believe in.

9. I'm still trying to decide how capable I am as a person and what jobs will be right for me.

10. I don't give religion much thought and it doesn't bother me one way or the other.

11. There's so many ways to divide responsibilities in marriage, I'm trying to decide what will work for me.

12. I'm looking for an acceptable perspective for my own "life style" view, but haven't really found it yet.

13. There are many reasons for friendship, but I choose my close friends on the basis of certain values and similarities that I've personally decided on.

14. While I don't have one recreational activity I'm really committed to, I'm experiencing numerous leisure outlets to identify one I can truly enjoy.

15. Based on past experiences, I've chosen the type of dating relationship I want now.

16. I haven't really considered politics. It just doesn't excite me much.

17. I might have thought about a lot of different jobs, but there's never really been any question since my parents said what they wanted.
Identity Status

For all the questions on this page, choose from the following responses.

A  = strongly agree  
B  = moderately agree  
C  = agree  
D  = disagree  
E  = moderately disagree  
F  = strongly disagree

18. A person's faith is unique to each individual. I've considered and reconsidered it myself and know what I can believe.

19. I've never really seriously considered men's and women's roles in marriage. It just doesn't seem to concern me.

20. After considerable thought I've developed my own individual viewpoint of what is for me an ideal "life style" and don't believe anyone will be likely to change my perspective.

21. My parents know what's best for me in terms of how to choose my friends.

22. I've chosen one or more recreational activities to engage in regularly from lots of things and I'm satisfied with those choices.

23. I don't think about dating much. I just kind of take it as it comes.

24. I guess I'm pretty much like my folks when it comes to politics. I follow what they do in terms of voting and such.

25. I'm really not interested in finding the right job, any job will do. I just seem to flow with what is available.

26. I'm not sure what religion means to me. I'd like to make up my mind but I'm not done looking yet.

27. My ideas about men's and women's roles have come right from my parents and family. I haven't seen any need to look further.
For all the questions on this page, choose from the following responses.

A = strongly agree 
B = moderately agree 
C = agree 
D = disagree 
E = moderately disagree 
F = strongly disagree

28. My own views on a desirable life style were taught to me by my parents and I don't see any need to question what they taught me.

29. I don't have any real close friends, and I don't think I'm looking for one right now.

30. Sometimes I join in leisure activities, but I really don't see a need to look for a particular activity to do regularly.

31. I'm trying out different types of dating relationships. I just haven't decided what is best for me.

32. There are so many different political parties and ideals. I can't decide which to follow until I figure it all out.

33. It took me a while to figure it out, but now I really know what I want for a career.

34. Religion is confusing to me right now. I keep changing my views on what is right and wrong for me.

35. I've spent some time thinking about men's and women's roles in marriage and I've decided what will work best for me.

36. In finding an acceptable viewpoint to life itself, I find myself engaging in a lot of discussions with others and some self exploration.

37. I only pick friends my parents would approve of.

38. I've always liked doing the same recreational activities my parents do and haven't ever seriously considered anything else.
For all the questions on this page, choose from the following responses.

A = strongly agree
B = moderately agree
C = agree
D = disagree
E = moderately disagree
F = strongly disagree

39. I only go out with the type of people my parents expect me to date.

40. I've thought my political beliefs through and realize I can agree with some and not other aspects of what my parents believe.

41. My parents decided a long time ago what I should go into for employment and I'm following through their plans.

42. I've gone through a period of serious questions about faith and can now say I understand what I believe in as an individual.

43. I've been thinking about the roles that husbands and wives play a lot these days, and I'm trying to make a final decision.

44. My parents' views on life are good enough for me, I don't need anything else.

45. I've had many different friendships and now I have a clear idea of what I look for in a friend.

46. After trying a lot of different recreational activities I've found one or more I really enjoy doing by myself or with friends.

47. My preferences about dating are still in the process of developing. I haven't fully decided yet.

48. I'm not sure about my political beliefs, but I'm trying to figure out what I can truly believe in.

49. It took me a long time to decide but now I know for sure what direction to move in for a career.
For all the questions on this page, choose from the following responses.

A = strongly agree  
B = moderately agree  
C = agree  
D = disagree  
E = moderately disagree  
F = strongly disagree

50. I attend the same church as my family has always attended. I've never really questioned why.

51. There are many ways that married couples can divide up family responsibilities. I've thought about lots of ways, and now I know exactly how I want it to happen for me.

52. I guess I just kind of enjoy life in general, and I don't see myself living by any particular viewpoint to life.

53. I don't have any close friends. I just like to hang around with the crowd.

54. I've been experiencing a variety of recreational activities in hopes of finding one or more I can really enjoy for some time to come.

55. I've dated different types of people and know exactly what my own "unwritten rules" for dating are and who I will date.

56. I really have never been involved in politics enough to have made a firm stand one way or the other.

57. I just can't decide what to do for an occupation. There are so many that have possibilities.

58. I've never really questioned my religion. If it's right for my parents it must be right for me.

59. Opinions on men's and women's roles seem so varied that I don't think much about it.

60. After a lot of self-examination I have established a very definite view on what my own life style will be.
For all the questions on this page, choose from the following responses.

A = strongly agree
B = moderately agree
C = agree
D = disagree
E = moderately disagree
F = strongly disagree

61. I really don't know what kind of friend is best for me. I'm trying to figure out exactly what friendship means to me.

62. All of my recreational preferences I got from my parents and I haven't really tried anything else.

63. I date only people my parents would approve of.

64. My folks have always had their own political and moral beliefs about issues like abortion and mercy killing and I've always gone along accepting what they have.
Phone call follow-up to non-respondents

Hello, this is Frances Pearson calling from Dr. Rodgers’ office.

As you may recall, we sent you a letter recently describing a research project we are doing at Ohio State. We have not received a response from you and would like to encourage you to assist us with the study in case you had forgotten. It is important that we get a large enough sample for meaningful results.

Do you have any questions about the study?
(Explain)
If a “no” response: “Thank you for your time.”

If a “yes” response:
Do you still have the postcard we sent?
If so, please return it tomorrow and we will send you the questionnaires.

If not, I will go ahead and send the questionnaires and expect them to be returned by April 20th.
Dear Student:

During Autumn Quarter, I attended your UVC 100 class to explain the study I am doing for my dissertation and to ask for volunteers to fill out the questionnaires. I have received very few of them back and am very concerned about not being able to complete the study.

If you took one of the packets of questions, I would still appreciate getting them back. Perhaps you could complete it during the break and return it to me in the Ohio Union, Rm 201 during the first week of Winter Quarter. I am willing to pay you $5 for your time and effort. If you are not interested, would you please return the blank packet, so I can reuse it with other students.

If you did not take one of the packets and are interested in participating, I can give you one in 201 Ohio Union and you can return it there. I will also pay you $5 for your time and effort.

If you have any questions, please call me at 486-7511 or 292-9334.

Sincerely,

Frances Pearson
I Need your help! I am doing a dissertation study on how college students perceive their college experience, how they make meaning of that experience, and how they make decisions about their lives. To do the study, I need at least 80 freshman to take the time to fill out two questionnaires. It will take about 1 1/2 hours and PIZZA AND SOFT DRINKS will be served.

Where: Lincoln Smoking Lounge 15th Floor
When: Sunday, January 29th, 8:30 to 10:00 p.m.

Please sign up below so I know how many people are coming and how much pizza to order.

<table>
<thead>
<tr>
<th>Name</th>
<th>Room Number</th>
</tr>
</thead>
</table>
REMINDER!

There will be a session to fill out questionnaires for my dissertation study on Sunday January 29 from 8:30 to 10:00 p.m. in the Smoking Lounge of Lincoln House. It will take about 1 1/2 hours of your time and we will have PIZZA AND SOFT DRINKS. Please plan to attend.

If you know of any other Arts and Sciences Freshmen (UVC or Direct Enrolled) who would like to participate, please bring them along. I still need about 30 people to be able to complete the study.

Thank you for your help. I'll see you Sunday!

Frances Pearson
APPENDIX D

DESCRIPTIVE TABLES
Table 2. Observed Frequencies by Grade and Gender

<table>
<thead>
<tr>
<th>Grade</th>
<th>Male f</th>
<th>Female f</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshmen</td>
<td>15</td>
<td>34</td>
<td>49</td>
</tr>
<tr>
<td>Juniors</td>
<td>20</td>
<td>27</td>
<td>47</td>
</tr>
<tr>
<td>Junior-Senior</td>
<td>21</td>
<td>17</td>
<td>38</td>
</tr>
<tr>
<td>Senior</td>
<td>12</td>
<td>33</td>
<td>45</td>
</tr>
<tr>
<td>5th Year Senior</td>
<td>7</td>
<td>11</td>
<td>18</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>75</strong></td>
<td><strong>122</strong></td>
<td><strong>197</strong></td>
</tr>
</tbody>
</table>
Fig. 8. Percentages by Grade and Gender
Table 3. Description of Variables used in the Analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Variable Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational</td>
<td>A</td>
<td>3 levels</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = freshmen, 2 = juniors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&amp; Jr-Sr., 3 = seniors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&amp; 5th year</td>
</tr>
<tr>
<td>Cognitive Level</td>
<td>B</td>
<td>3 levels</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = position 2, 2 = position 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 = position 4</td>
</tr>
<tr>
<td>Gender</td>
<td>C</td>
<td>2 levels</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = males, 2 = females</td>
</tr>
<tr>
<td>Total Identity Status</td>
<td>D</td>
<td>2 levels</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = low, 2 = high</td>
</tr>
<tr>
<td>Ideological Substatus</td>
<td>D²</td>
<td>2 levels</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = low, 2 = high</td>
</tr>
<tr>
<td>Interpersonal Substatus</td>
<td>E</td>
<td>2 levels</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = low, 2 = high</td>
</tr>
</tbody>
</table>
Table 4. Observed Frequencies and Percentages of Subjects in the Identity Statuses, Identity Substatus, and Cognitive Levels

<table>
<thead>
<tr>
<th>Category</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Identity Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diffusion</td>
<td>26</td>
<td>13.2</td>
</tr>
<tr>
<td>Foreclosure</td>
<td>4</td>
<td>2.0</td>
</tr>
<tr>
<td>Moratorium</td>
<td>135</td>
<td>68.5</td>
</tr>
<tr>
<td>Identity Achieved</td>
<td>32</td>
<td>16.2</td>
</tr>
<tr>
<td><strong>Ideological Substatus</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diffusion</td>
<td>25</td>
<td>12.7</td>
</tr>
<tr>
<td>Foreclosure</td>
<td>8</td>
<td>4.1</td>
</tr>
<tr>
<td>Moratorium</td>
<td>130</td>
<td>66.0</td>
</tr>
<tr>
<td>Identity Achieved</td>
<td>34</td>
<td>17.3</td>
</tr>
<tr>
<td><strong>Interpersonal Substatus</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diffusion</td>
<td>28</td>
<td>14.2</td>
</tr>
<tr>
<td>Foreclosure</td>
<td>11</td>
<td>5.6</td>
</tr>
<tr>
<td>Moratorium</td>
<td>127</td>
<td>64.5</td>
</tr>
<tr>
<td>Identity Achieved</td>
<td>31</td>
<td>15.7</td>
</tr>
<tr>
<td><strong>Cognitive Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Position 2</td>
<td>38</td>
<td>19.4</td>
</tr>
<tr>
<td>Position 3</td>
<td>129</td>
<td>65.8</td>
</tr>
<tr>
<td>Position 4</td>
<td>27</td>
<td>13.8</td>
</tr>
<tr>
<td>Position 5</td>
<td>2</td>
<td>1.0</td>
</tr>
</tbody>
</table>
Fig. 10. Percentage of Identity Statuses and Substatuses
Fig. 11. Percentage of Cognitive Positions
Table 5. Observed Frequencies by Educational Level, Cognitive Level, and Total Identity Status

<table>
<thead>
<tr>
<th>Grade</th>
<th>Cognitive Level</th>
<th>Total Identity Status</th>
<th>Dif</th>
<th>For</th>
<th>Mor</th>
<th>Ach</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A:_ Freshmen</td>
<td>B:_ Position 2</td>
<td>C1 2, C2 0, C3 18, C4 4</td>
<td>18</td>
<td>4</td>
<td>24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A:_ Freshmen</td>
<td>B:_ Position 3</td>
<td>C1 6, C2 0, C3 14, C4 3</td>
<td>14</td>
<td>3</td>
<td>23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A:_ Freshmen</td>
<td>B:_ Position 4</td>
<td>C1 0, C2 0, C3 1, C4 0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A:_ Freshmen</td>
<td>B:_ Position 5</td>
<td>C1 0, C2 0, C3 0, C4 0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A:_ Juniors</td>
<td>B:_ Position 2</td>
<td>C1 4, C2 2, C3 7, C4 1</td>
<td>7</td>
<td>1</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A:_ Juniors</td>
<td>B:_ Position 3</td>
<td>C1 10, C2 1, C3 37, C4 9</td>
<td>37</td>
<td>9</td>
<td>57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A:_ Juniors</td>
<td>B:_ Position 4</td>
<td>C1 0, C2 0, C3 12, C4 1</td>
<td>12</td>
<td>1</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A:_ Juniors</td>
<td>B:_ Position 5</td>
<td>C1 0, C2 0, C3 1, C4 0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A:_ Senior</td>
<td>B:_ Position 2</td>
<td>C1 0, C2 0, C3 0, C4 0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A:_ Senior</td>
<td>B:_ Position 3</td>
<td>C1 4, C2 1, C3 34, C4 10</td>
<td>34</td>
<td>10</td>
<td>49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A:_ Senior</td>
<td>B:_ Position 4</td>
<td>C1 0, C2 0, C3 10, C4 3</td>
<td>10</td>
<td>3</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A:_ Senior</td>
<td>B:_ Position 5</td>
<td>C1 0, C2 0, C3 0, C4 1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total                                                                 26  4  134  32  196
Fig. 12. Freshmen Percentages by Cognitive Level and Identity Status
Fig. 13. Junior Percentages by Cognitive Level and Identity Status
Fig. 14. Senior Percentages by Cognitive Level and Identity Status
Fig. 15. Percentages by Educational by Cognitive Level
Fig. 16. Percentages by Educational Level by Identity Status
Table 6. Observed Frequencies by Cognitive Level and Identity Status

<table>
<thead>
<tr>
<th>Cognitive</th>
<th>Identity Status</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Diffusion</td>
<td>Foreclosed</td>
<td>Moratorium</td>
<td>Achieved</td>
</tr>
<tr>
<td>Dualism</td>
<td>6</td>
<td>2</td>
<td>25</td>
<td>5</td>
</tr>
<tr>
<td>Multiplism</td>
<td>20</td>
<td>2</td>
<td>108</td>
<td>26</td>
</tr>
<tr>
<td>Relativism</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Committed</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
APPENDIX E

LOG-LINEAR RESULTS
Table 7. Frequency Distribution by Educational Level by Cognitive Level by Total Identity

<table>
<thead>
<tr>
<th>Ed. Level</th>
<th>Cognitive</th>
<th>( D_1: \text{low} )</th>
<th>( D_2: \text{High} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1: Freshmen</td>
<td>B1: Position 2</td>
<td>2</td>
<td>22</td>
</tr>
<tr>
<td>A2: Juniors</td>
<td>B1: Position 2</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>A3: Seniors</td>
<td>B1: Position 2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>A1: Freshmen</td>
<td>B2: Position 3</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>A2: Juniors</td>
<td>B2: Position 3</td>
<td>11</td>
<td>46</td>
</tr>
<tr>
<td>A3: Seniors</td>
<td>B2: Position 3</td>
<td>5</td>
<td>44</td>
</tr>
<tr>
<td>A1: Freshmen</td>
<td>B3: Position 4</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>A2: Juniors</td>
<td>B3: Position 4</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>A3: Seniors</td>
<td>B3: Position 4</td>
<td>0</td>
<td>13</td>
</tr>
</tbody>
</table>
Table 8. Adequacy-of-Fit of Log-Linear Models for the 3-Way Symmetrical Analysis

<table>
<thead>
<tr>
<th>Model</th>
<th>Residual</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$L^2$</td>
<td>df</td>
</tr>
<tr>
<td>0</td>
<td>255.26</td>
<td>17</td>
</tr>
<tr>
<td>1</td>
<td>60.92</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>7.33</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>0.0</td>
<td>0</td>
</tr>
</tbody>
</table>

* $p < .001$
Table 9. Partial and Marginal Associations for the 3-Way Symmetrical Analysis of Educational Level by Cognitive Level by Total Identity Status

<table>
<thead>
<tr>
<th>Effect</th>
<th>Partial $L^2$</th>
<th>df</th>
<th>p</th>
<th>Marginal $L^2$</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>9.11</td>
<td>2</td>
<td>0.0105*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>87.86</td>
<td>2</td>
<td>0.0000*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>97.37</td>
<td>1</td>
<td>0.0000*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AB</td>
<td>44.82</td>
<td>4</td>
<td>0.0000*</td>
<td>45.61</td>
<td>4</td>
<td>0.0000*</td>
</tr>
<tr>
<td>AC</td>
<td>2.90</td>
<td>2</td>
<td>0.2351</td>
<td>3.69</td>
<td>2</td>
<td>0.1582</td>
</tr>
<tr>
<td>BC</td>
<td>4.29</td>
<td>2</td>
<td>0.1170</td>
<td>5.08</td>
<td>2</td>
<td>0.0787</td>
</tr>
<tr>
<td>ABC</td>
<td>7.33</td>
<td>4</td>
<td>0.1193</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < .05
Table 10. Observed Frequencies, Lambdas, and Tests on Lambdas for the Model Fitted in the Three-Way Symmetrical Analysis

| Position 2 | 24 | 1.432 | 4.787* | 14 | 0.162 | 0.585 | 0 | -1.594 | -3.437* |
| Position 3 | 24 | -0.323 | -1.426 | 57 | -0.240 | -1.321 | 49 | 0.563 | 2.160* |
| Position 4 | 1  | -1.109 | -3.156* | 13 | 0.078 | 0.319 | 13 | 1.030 | 3.348* |

(cont.)
Table 10. (cont).

<table>
<thead>
<tr>
<th>Cognitive Level</th>
<th>Low</th>
<th></th>
<th></th>
<th>High</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$f_{ab}$</td>
<td>$\lambda_{ab}$</td>
<td>$z$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Position 2</td>
<td>24</td>
<td>0.348</td>
<td>1.828</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Position 3</td>
<td>24</td>
<td>0.178</td>
<td>1.042</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Position 4</td>
<td>1</td>
<td>0.525</td>
<td>-1.821</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$p<.05$
Table 11. Frequency Distribution by Educational Level by Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ed Level</th>
<th>$C_1$: Males</th>
<th>$C_2$: Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aj: freshmen</td>
<td>15</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Ag: juniors</td>
<td>41</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>Ag: seniors</td>
<td>19</td>
<td>44</td>
</tr>
</tbody>
</table>
Table 12. Adequacy-of-Fit of Log-Linear Models for the 2-Way 
Analysis of Educational Level by Gender

<table>
<thead>
<tr>
<th>Model</th>
<th>Residual</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$L^2$</td>
<td>df</td>
</tr>
<tr>
<td>0</td>
<td>27.34</td>
<td>5</td>
</tr>
<tr>
<td>1</td>
<td>6.39</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>0.00</td>
<td>0</td>
</tr>
</tbody>
</table>

* p < .05
Table 13. Frequency Distribution by Educational Level by Gender by Cognitive Level

<table>
<thead>
<tr>
<th>Ed Level</th>
<th>Gender</th>
<th>B₁</th>
<th>B₂</th>
<th>B₃</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Position 2</td>
<td>Position 3</td>
<td>Position 4</td>
</tr>
<tr>
<td>A1: Freshmen</td>
<td>C1: Males</td>
<td>7</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>A2: Juniors</td>
<td>C1: Males</td>
<td>7</td>
<td>27</td>
<td>6</td>
</tr>
<tr>
<td>A3: Seniors</td>
<td>C1: Males</td>
<td>0</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>A1: Freshmen</td>
<td>C2: Females</td>
<td>17</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>A2: Juniors</td>
<td>C2: Females</td>
<td>7</td>
<td>30</td>
<td>7</td>
</tr>
<tr>
<td>A3: Seniors</td>
<td>C2: Females</td>
<td>0</td>
<td>34</td>
<td>10</td>
</tr>
</tbody>
</table>
### Table 14. Adequacy-of-Fit of Log-Linear Models for the 3-Way Asymmetrical Analysis

<table>
<thead>
<tr>
<th>Model</th>
<th>Residual</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\chi^2$</td>
<td>df</td>
</tr>
<tr>
<td>Null</td>
<td>46.87</td>
<td>10</td>
</tr>
<tr>
<td>AB</td>
<td>0.63</td>
<td>6</td>
</tr>
<tr>
<td>AB/CB</td>
<td>0.44</td>
<td>4</td>
</tr>
<tr>
<td>ACB</td>
<td>0.00</td>
<td>0</td>
</tr>
</tbody>
</table>

* *p < .05*
Table 15. Partial and Marginal Associations for the 3-Way Asymmetrical Analysis of Educational Level by Gender by Cognitive Level

<table>
<thead>
<tr>
<th>Effect</th>
<th>Partial L²</th>
<th>df</th>
<th>p</th>
<th>Marginal L²</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>46.26</td>
<td>4</td>
<td>0.0000*</td>
<td>46.24</td>
<td>4</td>
<td>0.0000*</td>
</tr>
<tr>
<td>CB</td>
<td>0.19</td>
<td>2</td>
<td>0.9075</td>
<td>0.17</td>
<td>2</td>
<td>0.9179</td>
</tr>
<tr>
<td>ACB</td>
<td>0.44</td>
<td>4</td>
<td>0.9794</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < .05
Table 16. Frequency Distribution by Educational Level by Cognitive Level by Gender by Total Identity

<table>
<thead>
<tr>
<th>Ed Level</th>
<th>Cognitive</th>
<th>Gender</th>
<th>Total Identity</th>
</tr>
</thead>
<tbody>
<tr>
<td>A&lt;sub&gt;1&lt;/sub&gt;</td>
<td>B&lt;sub&gt;1&lt;/sub&gt;</td>
<td>C&lt;sub&gt;1&lt;/sub&gt;</td>
<td>1</td>
</tr>
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<tr>
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<td>13</td>
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<td>0.9287</td>
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<td>0.8747</td>
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* $p < .05$
Table 18. Partial and Marginal Associations for the 4-Way Asymmetrical Analysis of Educational Level by Cognitive Level by Gender by Total Identity Status

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<td>df</td>
<td>p</td>
<td>$L^2$</td>
<td>df</td>
<td>p</td>
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<td></td>
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<tr>
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<td></td>
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* p < .05
Table 19. Summary of Results of Log-Linear Analyses for Path One.

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<th>p</th>
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<td><strong>Step One: Two-Way</strong></td>
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<td>A,C</td>
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<td>0.04095*</td>
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<td><strong>Step Two: Three-Way</strong></td>
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<tr>
<td>AB</td>
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<td>0.0000*</td>
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<td>CB, given A</td>
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<td>0.9075</td>
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<td><strong>Step Four: Four Way</strong></td>
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<td></td>
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<td>4.99</td>
<td>0.0847</td>
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<td>2.58</td>
<td>0.2844</td>
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<td>4</td>
<td>10.28</td>
<td>0.0710</td>
</tr>
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<td>CD, given A &amp; B</td>
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<td>0.1697</td>
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* p < .05
Table 20. Frequency Distribution by Educational Level by Cognitive Level by Gender by Ideological Status

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<th>Gender</th>
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<th>D₂: High</th>
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<td>4</td>
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<td>A₃</td>
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<td>A₃</td>
<td>B₂</td>
<td>C₁</td>
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<td>13</td>
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<tr>
<td>A₁</td>
<td>B₃</td>
<td>C₁</td>
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<td>0</td>
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<td>A₂</td>
<td>B₃</td>
<td>C₁</td>
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<td>5</td>
</tr>
<tr>
<td>A₃</td>
<td>B₃</td>
<td>C₁</td>
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<tr>
<td>A₁</td>
<td>B₁</td>
<td>C₂</td>
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<td>15</td>
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<td>A₃</td>
<td>B₁</td>
<td>C₂</td>
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<td>B₂</td>
<td>C₂</td>
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<td>B₂</td>
<td>C₂</td>
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<td>C₂</td>
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Table 21. Adequacy-of-Fit of Log-Linear Models for the 4-Way Asymmetrical Analysis where Ideological Substatus is the Logit Variable

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<th>Component</th>
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<td>AD,BD</td>
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<td>13</td>
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<td>AD,BD,CD</td>
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* $p < .05$
Table 22. Partial and Marginal Associations for the 4-Way Asymmetrical Analysis of Educational Level by Cognitive Level by Gender by Ideological Substatus

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<tr>
<th>Effect</th>
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<td>df</td>
<td>p</td>
<td>$L^2$</td>
<td>df</td>
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* $p < .05$
Table 23. Observed Frequencies, Lambdas, and Tests on Lambdas for the Model Fitted in an Asymmetrical Analysis with Ideological Substatus as the Logit Variable

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<th>λ^cd</th>
<th>z</th>
<th>High f^d</th>
<th>λ^cd</th>
<th>z</th>
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<td>-1.487</td>
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<tr>
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<td>-1.487</td>
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<td>0.132</td>
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p < .05
Table 24. Frequency Distribution by Educational Level by Cognitive Level by Gender by Interpersonal Substatus

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<th>Cognitive</th>
<th>Gender</th>
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<th>D₂: High</th>
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<tr>
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<td>A₂</td>
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Table 25. Adequacy-of-Fit of Log-Linear Models for the 4-Way
Asymmetrical Analysis where Interpersonal Substatus is the Logit Variable

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<th>Component</th>
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</tr>
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<td>AE,BE,CE</td>
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<td>ABE/CE</td>
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</tr>
<tr>
<td>ABE/ACE</td>
<td>2.44</td>
<td>6</td>
</tr>
<tr>
<td>ABE/ACE/BCE</td>
<td>1.22</td>
<td>4</td>
</tr>
<tr>
<td>ABCE</td>
<td>0.00</td>
<td>0</td>
</tr>
</tbody>
</table>

* \( p < .05 \)
Table 26. Partial and Marginal Associations for the 4-Way Asymmetrical Analysis of Educational Level by Cognitive Level by Gender by Interpersonal Substatus

<table>
<thead>
<tr>
<th>Effect</th>
<th>L²</th>
<th>df</th>
<th>p</th>
<th>L²</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>AE</td>
<td>1.74</td>
<td>2</td>
<td>0.4199</td>
<td>2.48</td>
<td>2</td>
<td>0.2894</td>
</tr>
<tr>
<td>BE</td>
<td>2.49</td>
<td>2</td>
<td>0.2875</td>
<td>2.30</td>
<td>2</td>
<td>0.3173</td>
</tr>
<tr>
<td>CE</td>
<td>4.34</td>
<td>1</td>
<td>0.0371*</td>
<td>5.35</td>
<td>1</td>
<td>0.0207*</td>
</tr>
<tr>
<td>ABE</td>
<td>2.65</td>
<td>4</td>
<td>0.6177</td>
<td>2.73</td>
<td>4</td>
<td>0.6036</td>
</tr>
<tr>
<td>ACE</td>
<td>5.27</td>
<td>2</td>
<td>0.0716</td>
<td>5.50</td>
<td>2</td>
<td>0.0638</td>
</tr>
<tr>
<td>BCE</td>
<td>1.22</td>
<td>2</td>
<td>0.5436</td>
<td>0.89</td>
<td>2</td>
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</tr>
<tr>
<td>ABCE</td>
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<td>4</td>
<td>0.8743</td>
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<td></td>
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</tr>
</tbody>
</table>

* p < .05
Table 27. Observed Frequencies, Lambdas, and Tests on Lambdas for the Model Fitted in an Asymmetrical Analysis with Interpersonal Substatus as the Logit Variable

<table>
<thead>
<tr>
<th>Gender</th>
<th>Low</th>
<th></th>
<th>Low</th>
<th>High</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$f^d$</td>
<td>$\lambda^d$</td>
<td>$z$</td>
<td>$f^d$</td>
<td>$\lambda^d$</td>
</tr>
<tr>
<td>Males</td>
<td>21</td>
<td>0.177</td>
<td>2.082*</td>
<td>52</td>
<td>-0.177</td>
</tr>
<tr>
<td>Females</td>
<td>18</td>
<td>-0.177</td>
<td>-2.082*</td>
<td>104</td>
<td>0.177</td>
</tr>
</tbody>
</table>

*p < .05
<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E₁</th>
<th>E₂</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E₁</th>
<th>E₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>A₁</td>
<td>B₁</td>
<td>C₁</td>
<td>D₁</td>
<td>1</td>
<td>2</td>
<td>A₁</td>
<td>B₁</td>
<td>C₁</td>
<td>D₂</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>A₂</td>
<td>B₁</td>
<td>C₁</td>
<td>D₁</td>
<td>2</td>
<td>2</td>
<td>A₂</td>
<td>B₁</td>
<td>C₁</td>
<td>D₂</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>A₃</td>
<td>B₁</td>
<td>C₁</td>
<td>D₁</td>
<td>0</td>
<td>0</td>
<td>A₃</td>
<td>B₁</td>
<td>C₁</td>
<td>D₂</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>A₃</td>
<td>B₂</td>
<td>C₁</td>
<td>D₁</td>
<td>0</td>
<td>3</td>
<td>A₁</td>
<td>B₂</td>
<td>C₁</td>
<td>D₂</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>A₂</td>
<td>B₂</td>
<td>C₁</td>
<td>D₁</td>
<td>2</td>
<td>1</td>
<td>A₂</td>
<td>B₂</td>
<td>C₁</td>
<td>D₂</td>
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<td>17</td>
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<tr>
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<td>C₁</td>
<td>D₁</td>
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<td>B₂</td>
<td>C₁</td>
<td>D₂</td>
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<tr>
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<td>C₁</td>
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<td>0</td>
<td>A₁</td>
<td>B₃</td>
<td>C₁</td>
<td>D₂</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>A₂</td>
<td>B₃</td>
<td>C₁</td>
<td>D₁</td>
<td>0</td>
<td>1</td>
<td>A₂</td>
<td>B₃</td>
<td>C₁</td>
<td>D₂</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>A₃</td>
<td>B₃</td>
<td>C₁</td>
<td>D₁</td>
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<td>0</td>
<td>A₃</td>
<td>B₃</td>
<td>C₁</td>
<td>D₂</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>A₁</td>
<td>B₁</td>
<td>C₂</td>
<td>D₁</td>
<td>1</td>
<td>1</td>
<td>A₁</td>
<td>B₁</td>
<td>C₂</td>
<td>D₂</td>
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<td>13</td>
</tr>
<tr>
<td>A₂</td>
<td>B₁</td>
<td>C₂</td>
<td>D₁</td>
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<td>0</td>
<td>A₂</td>
<td>B₁</td>
<td>C₂</td>
<td>D₂</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>A₃</td>
<td>B₁</td>
<td>C₂</td>
<td>D₁</td>
<td>0</td>
<td>0</td>
<td>A₃</td>
<td>B₁</td>
<td>C₂</td>
<td>D₂</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>A₁</td>
<td>B₂</td>
<td>C₂</td>
<td>D₁</td>
<td>1</td>
<td>2</td>
<td>A₁</td>
<td>B₂</td>
<td>C₂</td>
<td>D₂</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>A₂</td>
<td>B₂</td>
<td>C₂</td>
<td>D₁</td>
<td>4</td>
<td>2</td>
<td>A₂</td>
<td>B₂</td>
<td>C₂</td>
<td>D₂</td>
<td>2</td>
<td>22</td>
</tr>
<tr>
<td>A₃</td>
<td>B₂</td>
<td>C₂</td>
<td>D₁</td>
<td>2</td>
<td>2</td>
<td>A₃</td>
<td>B₂</td>
<td>C₂</td>
<td>D₂</td>
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<td>29</td>
</tr>
<tr>
<td>A₁</td>
<td>B₃</td>
<td>C₂</td>
<td>D₁</td>
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<td>0</td>
<td>A₁</td>
<td>B₃</td>
<td>C₂</td>
<td>D₂</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>A₂</td>
<td>B₃</td>
<td>C₂</td>
<td>D₁</td>
<td>0</td>
<td>0</td>
<td>A₂</td>
<td>B₃</td>
<td>C₂</td>
<td>D₂</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>A₃</td>
<td>B₃</td>
<td>C₂</td>
<td>D₁</td>
<td>0</td>
<td>1</td>
<td>A₃</td>
<td>B₃</td>
<td>C₂</td>
<td>D₂</td>
<td>0</td>
<td>9</td>
</tr>
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</table>
Table 29. Adequacy-of-Fit of Log-Linear Models for the 5-Way Asymmetrical Analysis

<table>
<thead>
<tr>
<th>Model</th>
<th>Residual</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$L^2$</td>
<td>df</td>
</tr>
<tr>
<td>Null</td>
<td>41.54</td>
<td>51</td>
</tr>
<tr>
<td>ADE</td>
<td>35.73</td>
<td>45</td>
</tr>
<tr>
<td>ADE,BDE</td>
<td>36.75</td>
<td>45</td>
</tr>
<tr>
<td>ADE,BDE,CDE</td>
<td>31.85</td>
<td>48</td>
</tr>
<tr>
<td>ABDE</td>
<td>22.76</td>
<td>27</td>
</tr>
<tr>
<td>ABDE/ACDE</td>
<td>18.85</td>
<td>36</td>
</tr>
<tr>
<td>ABDE/ACDE/BCDE</td>
<td>22.85</td>
<td>36</td>
</tr>
<tr>
<td>ABCDE</td>
<td>0.00</td>
<td>0</td>
</tr>
</tbody>
</table>

* p < .05
Table 30. Partial and Marginal Associations for the 5-Way Asymmetrical Analysis

<table>
<thead>
<tr>
<th>Effect</th>
<th>Partial</th>
<th>Marginal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$L^2$</td>
<td>df</td>
</tr>
<tr>
<td>ADE</td>
<td>1.17</td>
<td>2</td>
</tr>
<tr>
<td>BDE</td>
<td>0.65</td>
<td>2</td>
</tr>
<tr>
<td>CDE</td>
<td>2.50</td>
<td>1</td>
</tr>
<tr>
<td>ABDE</td>
<td>2.44</td>
<td>4</td>
</tr>
<tr>
<td>ABDE/ACDE</td>
<td>1.26</td>
<td>2</td>
</tr>
<tr>
<td>ABDE/ACDE/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BCDE</td>
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<td>2</td>
</tr>
<tr>
<td>ABCDE</td>
<td>0.18</td>
<td>4</td>
</tr>
</tbody>
</table>

* p < .05
Table 31. Observed Frequencies, Lambdas, and Tests on Lambdas for the Model Fitted in an Asymmetrical Analysis with Ideological and Interpersonal Substatuses as the Crossed Logit Variable

<table>
<thead>
<tr>
<th>Substatus</th>
<th>Males</th>
<th></th>
<th>Females</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f₁₀</td>
<td>λ₁₀</td>
<td>z</td>
<td>f₁₀</td>
</tr>
<tr>
<td>Low Interpersonal X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Ideology</td>
<td>7</td>
<td>-0.161</td>
<td>-1.876</td>
<td>14</td>
</tr>
<tr>
<td>High Ideology</td>
<td>9</td>
<td>0.161</td>
<td>1.876</td>
<td>9</td>
</tr>
<tr>
<td>High Interpersonal X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Ideology</td>
<td>9</td>
<td>0.161</td>
<td>1.876</td>
<td>43</td>
</tr>
<tr>
<td>High Ideology</td>
<td>8</td>
<td>-0.161</td>
<td>-1.876</td>
<td>95</td>
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</table>

p < .05
Table 32. Summary of Results of Log-Linear Analyses for Path Two.

<table>
<thead>
<tr>
<th>Path</th>
<th>df</th>
<th>Component $L^2$</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step One: Two-Way</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A, C</td>
<td>3</td>
<td>6.39</td>
<td>0.04095*</td>
</tr>
<tr>
<td><strong>Step Two: Three-Way</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AB</td>
<td>4</td>
<td>46.24</td>
<td>0.0000*</td>
</tr>
<tr>
<td>CB, given AB</td>
<td>2</td>
<td>0.19</td>
<td>0.9075</td>
</tr>
<tr>
<td><strong>Step Four: Five-Way</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADE</td>
<td>6</td>
<td>35.73</td>
<td>0.270</td>
</tr>
<tr>
<td>BDE, given ADE</td>
<td>0</td>
<td>-.98</td>
<td></td>
</tr>
<tr>
<td>ADE,BDE,CDE</td>
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<td>4.90</td>
<td>0.170</td>
</tr>
<tr>
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<td>3.32</td>
<td>0.480</td>
</tr>
<tr>
<td>ACDE, given ABDE</td>
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<td>1.55</td>
<td>0.750</td>
</tr>
<tr>
<td>BCDE, given ABDE,ACDE</td>
<td>0</td>
<td>2.55</td>
<td></td>
</tr>
</tbody>
</table>

*p < .05