



A descriptive case study of learning abilities of college students who experienced childhood maltreatment
by Christopher Frank Mulrine

A thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Education
Montana State University
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Abstract:

The purpose of this study was to determine how the effects of childhood maltreatment carry over into adult life and impact the learning abilities of college students.

The data were collected from two sources, a demographic survey and a Learning and Study Strategies Inventory (LASSI). The sample consisted of 198 participants enrolled in the 1993 summer class sessions at Montana State University. Childhood maltreatment was defined for this study to include sexual, psychological, and physical abuse or a combination of each. Frequency counts and percentages were used to describe the differences existing in the demographic variables. A one-sample t-test was used to determine if a significant difference existed between the normed LASSI mean scores and the total group, maltreated, and non-maltreated group mean scores. The t-test for independent samples was then used to determine if a significant difference existed in the demographic variables and the LASSI subscale scores between the total group, maltreated, and non-maltreated groups. Three separate discriminant analyses were conducted to determine if maltreated and non-maltreated participants differed in their interaction on the demographic variables, on each of the ten subscales on the LASSI, and on the combined variables of the demographics and the LASSI.

Of the 198 respondents, 14 males and 36 females reported being maltreated in childhood. The one sample t-tests revealed the total group of participants scored better than the normed group on half of the LASSI subscales. The independent samples t-test revealed significant differences in 9 of the 19 demographic variables and no significant differences on the LASSI variables between the maltreated and non-maltreated groups. The discriminant analyses resulted in one discriminant function, named Maltreatment Realities, that produced recognizable predictive variables that were 80.8% accurate and explained prediction above chance level of maltreated and non-maltreated groups. The 5 demographic variables used to name this function were counseling, perfectionistic, behavior disorder, psychological health, and socio-economic status.

This study has shown that the effects of childhood maltreatment carry over into the adult educational environment through persistence of poor self-concept and psychological health, but the negative effects of the maltreatment on intellectual development appear to have been overcome for many students successfully completing college.

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OF COLLEGE STUDENTS WHO EXPERIENCED
CHILDHOOD MALTREATMENT

by

Christopher Frank Mulrine

A thesis submitted in partial fulfillment
of the requirements for the degree

of

Doctor of Education

MONTANA STATE UNIVERSITY
Bozeman, Montana

November 1993

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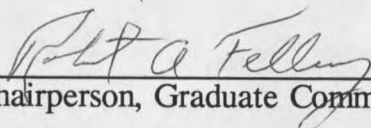
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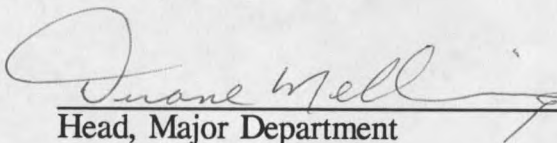
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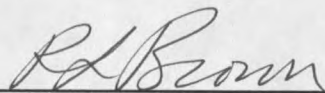
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ACKNOWLEDGEMENTS

This study was conducted primarily for those people maltreated in their youth. Special thanks is given to the students at Montana State University who participated in the study and to the deans and professors who allowed for the class time needed to collect the data.

I would like to extend special thanks to Dr. Robert Fellenz and Dr. Gary Conti for the time and late hours expended on the study. I would also like to thank the rest of my committee, Dr. Ardy Clarke, Dr. Carmen Knudson-Martin, Dr. Douglas Herbster, and Dr. Norman Eggert, whose advice, honesty, and guidance have made this research effort possible.

I would also like to extend thanks to my family for their support and to dedicate this dissertation to my son, Joshua Mulrine.

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ABSTRACT

The purpose of this study was to determine how the effects of childhood maltreatment carry over into adult life and impact the learning abilities of college students.

The data were collected from two sources, a demographic survey and a Learning and Study Strategies Inventory (LASSI). The sample consisted of 198 participants enrolled in the 1993 summer class sessions at Montana State University. Childhood maltreatment was defined for this study to include sexual, psychological, and physical abuse or a combination of each. Frequency counts and percentages were used to describe the differences existing in the demographic variables. A one-sample t -test was used to determine if a significant difference existed between the normed LASSI mean scores and the total group, maltreated, and non-maltreated group mean scores. The t -test for independent samples was then used to determine if a significant difference existed in the demographic variables and the LASSI subscale scores between the total group, maltreated, and non-maltreated groups. Three separate discriminant analyses were conducted to determine if maltreated and non-maltreated participants differed in their interaction on the demographic variables, on each of the ten subscales on the LASSI, and on the combined variables of the demographics and the LASSI.

Of the 198 respondents, 14 males and 36 females reported being maltreated in childhood. The one sample t -tests revealed the total group of participants scored better than the normed group on half of the LASSI subscales. The independent samples t -test revealed significant differences in 9 of the 19 demographic variables and no significant differences on the LASSI variables between the maltreated and non-maltreated groups. The discriminant analyses resulted in one discriminant function, named Maltreatment Realities, that produced recognizable predictive variables that were 80.8% accurate and explained prediction above chance level of maltreated and non-maltreated groups. The 5 demographic variables used to name this function were counseling, perfectionistic, behavior disorder, psychological health, and socio-economic status.

This study has shown that the effects of childhood maltreatment carry over into the adult educational environment through persistence of poor self-concept and psychological health, but the negative effects of the maltreatment on intellectual development appear to have been overcome for many students successfully completing college.

CHAPTER 1

INTRODUCTION

The effects of childhood maltreatment are well documented as having profound adverse effects on children's cognitive, psychosocial, and academic development (Barahal, Waterman, & Martin, 1981; Cryan, 1985; Einbender & Friedreich, 1989; Fatout, 1990; Halpern, 1987). The majority of this research, however, has concentrated on assessing the impact of the maltreatment with children from infancy through high school (Cryan, 1985; Culp, Heide, & Taylor-Richardson, 1987; Ivey & Ivey, 1990; Oates & Peacock, 1984).

Childhood maltreatment also impacts an adult's cognitive and psychosocial functioning. The effects of childhood maltreatment do not cease once an individual reaches adulthood. The long-term effects of childhood maltreatment, for example, sexual abuse, evolve and vary with the individual's awareness and with the experiences, demands, and contexts of his or her life (Alexander, 1992). In a recent paper presented at the annual meeting of the Midwestern Psychological Association, it was found that people who have experienced traumatic life events often have resulting psychological symptoms associated with these events.

The long-term effects associated with childhood maltreatment, especially in the case of sexual abuse, can cause unique negative effects in the domains of self

and social functioning, specifically in jeopardizing self-definition and integration, self-regulatory processes, and a sense of security and trust in relationships (Cole & Putnam, 1992; Wyatt, 1992). If childhood maltreatment has these resulting psychological symptoms, how might these symptoms affect the cognitive abilities of the college-aged learner?

Background of the Problem

Studies show that children demonstrate the negative impacts of childhood maltreatment in the educational setting through aggressive or withdrawn behaviors, defiant acts, poor academic performance, chronic absences, and through assertive and manipulative behaviors (Montana School Guidelines, 1990). These students may be diagnosed as having a learning difficulty or a behavior disorder. The research findings show that "abused children are placed more in classes for the emotionally disturbed, educable mentally retarded and learning disabled classes" (Heilig, 1990, p. 43) than their non-abused cohorts. The research clearly demonstrates the problems associated with maltreated younger children in the educational setting, but currently there are no research studies on the specific educational problems faced by adults maltreated as children in the educational setting.

The specific barriers affecting adult learning are an inadequate sense of self and negative aspirations (Fellenz, 1992), which are symptoms of childhood maltreatment that can be associated with psychosocial development. The research

also strongly suggests that there is a positive relationship between childhood maltreatment and the negative repercussions it has on academic achievement (Heilig, 1990). These repercussions can be directly linked to problems affecting a person's cognitive development. If childhood maltreatment affects cognitive development and if specific barriers to learning are caused by childhood maltreatment effects on psychosocial development, how might these be impacting an adult's learning abilities in the post-secondary educational setting?

Problem Statement

Since many adults maltreated as children are enrolled in college and since learning does not cease once a person graduates from high school, information is needed on the effects of childhood maltreatment on college students' cognitive abilities. The effects of childhood maltreatment may still be impacting the student in the college setting because childhood maltreatment's effects carry over into the adult classroom environment. Very few studies deal with this venue. There is a need to study how childhood maltreatment affects the learning abilities of college students. This investigation focused on the overlapping effects of childhood maltreatment (sexual, physical, and/or psychological abuse), the normal developmental processes involved with cognitive and psychosocial development, and how the long-term effects of this maltreatment might have impacted the learning and study strategies of college students.

Purpose of the Study

The purpose of this study was to investigate the relationship between the long-term effects of childhood maltreatment and learning and study strategies of a group of college students. Frequency counts and percentages were used to describe the demographic data collected for the study. Statistical procedures were used to explore for relationships existing between the demographic data, a learning and study strategy inventory (LASSI), and both of these together with self-identified groups of maltreated and non-maltreated college students.

Questions To Be Answered

This study was a descriptive case study. Descriptive research studies involve "collecting data in order to test hypothesis and to answer questions concerning the current status of the subjects" (Gay, 1987, p. 189). Case studies are a bounded system which is "an examination of a specific phenomenon such as a program, an event, a person, a process, an institution, or a social group" (Merriam, 1988, p. 10). The group of maltreated and non-maltreated respondents were the social group that this case study analyzed.

Research Questions

1. Is there a difference between the demographic variables of age, gender, marriage, ethnicity, year in college, grade point average, geographic area, socio-economic status, psychological counseling, diagnosis of learning disabled, and

behavior disorder, if as a student they would classify themselves as being organized, perfectionistic, persistent, motivated, low achiever, and on ratings of self-concept, psychological health, and grades with the maltreated and non-maltreated participants? This research question was answered by using frequency counts.

2. The following research question was answered by using a one sample t -test: Is there a significant difference between the total, maltreated, and non-maltreated groups subscale mean scores measured by the LASSI inventory and the normed group subscale mean scores measured by the LASSI inventory?

3. The following research question was answered by using a t -test for independent samples: Is there a significant difference between the maltreated and non-maltreated groups' subscale mean scores measured by the LASSI inventory.

4. The following research question was answered by using discriminate analysis: Can the group of the maltreated and the non-maltreated participants be discriminated based on the demographic variables and each of the 10 LASSI subscale scores?

Definitions of Terms

The following definitions applied to these terms used throughout the study and represent the definitions obtained from the literature.

Sexual Abuse: Sexual abuse is defined as contacts or interactions between a child (male or female under the age of 18) and an adult (more than 5 years older than the victim) when the child is being used for the sexual stimulation of the

perpetrator or another person. A perpetrator is defined as a person who is in a position of power or control over the victim such as a family member, relative, friend, stranger, teacher, minister, baby sitter. Sexual abuse means sexual assault, sexual intercourse without consent, indecent exposure, deviate sexual conduct, or incest (Montana School Guidelines, 1990). Included in this definition is fondling, masturbation, oral sex, or the use of the child for pornography (Authier, 1986).

Physical Abuse: Physical abuse includes any non-accidental physical injury caused by the child's caretaker. By definition the injury is not an accident. Physical abuse may result from over-discipline or from punishment. It may include burning, beating, branding, punching, bruises, or broken and fractured bones (Montana School Guidelines, 1990).

Psychological Abuse: Psychological abuse as defined for this study is both emotional abuse and neglect. Psychological abuse is behavior that is sufficiently threatening to limit the capacity to work or to enjoy good physical or mental health (Patrick-Hoffman, 1982). Included in this definition is verbal abuse, rejection, ignoring, bizarre acts of nonphysical torment, or constant lack of concern by the caretaker for the child's welfare (Authier, 1986). Neglect involves constant hunger, poor hygiene, chronically being dirty and unbathed, and having unattended to physical problems or medical needs. Emotional abuse involves being blamed, belittled, or rejected as a child; or constantly being treated unequally to other siblings (Montana School Guidelines, 1990).

Cognitive Abilities: A person's general aptitude in many areas of intellectual functioning for formal school learning.

Cognitive Development: Cognitive development is the development of a person's intellectual or cognitive abilities (Slavin, 1992) that allow for higher order thinking skills which guide one's actions as adults.

Cognitive Learning Theory: This learning theory is "concerned almost exclusively with human learning, particularly with the unobservable mental processes individuals use to learn and remember new information or skills" (Slavin, 1992, p. 99).

Learning Strategies: According to Jarvis, learning styles are the cognitive styles that have characteristic modes of functioning revealing a person's perceptual and intellectual activities in highly consistent and pervasive ways. Learning strategies are the techniques or skills that an individual elects to use in order to accomplish a specific learning task (Fellenz & Conti, 1989).

Learning and Study Strategies Inventory (LASSI): An "assessment tool designed to measure students' use of learning and study strategies and methods. The focus is on both covert and overt thoughts and behaviors that relate to successful learning and that can be altered through educational interventions" (Weinstein, 1987, p. 2).

Learning Disability: "A disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which

may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations" (Slavin, 1992, p. 409).

Behavior Disorder: The definition of behavior disorder specifies marked and persistent characteristics having to do with (a) school learning problems, (b) unsatisfactory interpersonal relationships, (c) inappropriate behavior and feelings, (d) pervasive unhappiness or depression, and (e) physical symptoms or fears associated with school or personal problems (Kaufman, 1989).

Limitations

A limitation inherent in this study is the insightfulness and honesty of the participants. Human error of respondents is always a factor in self-reported data. Related to this study, there may have been varying interpretations for the definitions on the demographic categories requested from the respondents. As in all studies, there may also have been some responses that were not credible.

CHAPTER 2

REVIEW OF LITERATURE

Introduction

It is estimated that "nearly a fifth of all families in the United States experience a form of family violence" (Miller, 1989, p. 413), and between 1.4 million and 1.9 million children in the United States are intentionally injured by their parents (Fatout, 1990). "In fact, children are affected by all forms of violence in the family, whether they are directly involved in sexual or physical abuse or are witnesses to violence inflicted on others, as in wife beating and rape, abuse of pets, and violence against personal property" (Miller, 1989, p. 413).

The National Center on Child Abuse and Neglect estimates that at least 1,584,700 children are harmed by child maltreatment annually. In 1988, the Montana Department of Family Services received approximately 8,800 referrals for child abuse or neglect. Of these referrals 4,600 were substantiated including 600 cases of sexual abuse, 1,700 cases of physical and emotional abuse, and 2,400 cases of neglect. No geographic setting is free from child abuse and neglect. Based on a 1986 National Study of the Incidence and Severity of Child Abuse and Neglect, the

rates are similar for urban, suburban and rural communities (Montana School Guidelines, 1990).

Educators are closely involved in the process of student learning. Educational psychology, the study of learners and teaching, has as its principle focus "the process by which information, skills, values, and attitudes are transmitted from teachers to students in the classroom, and on applications of principles of psychology to the practice of instruction" (Slavin, 1992, p. 3). Educational psychology offers instructional methods and strategies for educating special needs students, who are students with physical, emotional, or biological handicaps. Each of these handicapping conditions have their own specific instructional specializations that augment the learning styles and study strategies utilized by students for the absorption and retention of subject matter. It is through this educational approach, using both the principles of psychology and specific instructional methodology, the effects of childhood maltreatment in the classroom can be addressed.

Childhood maltreatment may cause an overt or covert physical, biological or emotional handicap which will effect learning. The effects of childhood maltreatment as discussed by Roscoe (1985) are:

- (1) intellectually disadvantaged as measured by intelligence test scores, academic performance, and readiness to learn.
- (2) emotionally immature while possessing poor self-concepts and reduced attachment to others.
- (3) socially unable to interact in a positive manner with peers and teaching staff. (p. 392)

Studies have shown that there are "higher percentages of special education and institutional placements for abused children than for non-abused children. The evidence also points to higher frequencies of academic difficulties and behavior problems among these children" (Heilig, 1987 p. 90).

These students may appear in the educational environment to be experiencing learning problems caused by a learning disability or a behavior disorder. A learning disability can be defined as "a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations" (Slavin, 1992, p. 409). A behavior disorder can be defined as persistent characteristics having to do with school learning problems, unsatisfactory interpersonal relationships, inappropriate behavior and feelings, pervasive unhappiness or depression, and physical symptoms or fears associated with school or personal problems (Kaufman, 1989). The parallels existing between the definitions for a learning disability and a behavior disorder are closely related to the symptoms associated with childhood maltreatment.

In an effort to better understand this relationship a more detailed explanation of childhood maltreatment was defined. This study then assessed participants' sense of self and competence in the intellectual and educational domains through the collection of demographic data and through a learning and

study strategy inventory. This data was then analyzed and a descriptive report of the findings was compiled.

Childhood Maltreatment

John Briere (Briere & Runtz, 1990, p. 360) in his study on university women's historical reports of childhood maltreatment states that there are

substantial, unique relationships between retrospective reports of parental psychological abuse and subsequent low self-esteem, controlling for all other forms of abuse and types of symptoms, followed by a smaller but significantly unique relationship between sexual abuse and dysfunctional sexual behavior, and between physical abuse and later anger/aggression.

Childhood maltreatment can be divided into the three major categories of sexual, physical, and psychological abuse. Each of these abuses has their own specific symptoms associated with them and each may contribute to inadequate academic abilities in the educational environment. These inadequate academic abilities can be observed at all educational levels.

Effects of Psychological Abuse

"Psychological attacks and criticism by one's parents appear to be specifically associated with subsequent low self-evaluation, probably as a result of the child's internalization of parental statements as a basis for self-perception" (Briere, 1992, p. 361). The general symptoms for both adults and children who were psychologically abused include stress disorders and psychosomatic complaints,

sadness and depression, low self-esteem, uncertainty of own ego needs, a high risk for alcohol and drug dependency, loneliness, and fear (Boyd & Klingbiel, 1990).

Psychological abuse includes the negative ramifications associated with emotional abuse and physical neglect. Emotional abuse involves blaming, belittling, or rejecting a child, constantly treating siblings unequally or constant lack of concern by the caretaker for the child's welfare. Physical neglect involves inattention to a child's basic needs such as food, clothing, shelter, medical care, education, and supervision (Montana School Guidelines, 1990). There are certain behavioral characteristics associated with psychological abuse. These behaviors may be demonstrated in the following ways: conduct disorders, habit disorders, sleep disorders, psychoneurotic reactions including hysteria, lags in emotional and intellectual development, and suicide (Montana School Guidelines, 1990).

Effects of Sexual Abuse

The empirical study of adult survivors of childhood sexual victimization is a newly emerging field" (Beutler & Hill, 1992, p. 210). This literature indicates that "early sexual abuse evokes profound and often lasting effects" (p. 204). The research findings show that one-sixth of men and one-third of women in our culture have experienced sexual contact with someone substantially older by their mid-teens (Briere, 1992).

"Treatment issues for the sexually abused person address the 'damaged goods' syndrome, guilt, fear, depression, low self-esteem, poor social skills,

repressed anger and hostility, impaired ability to trust, blurred boundaries and role confusion, pseudomaturity coupled with failure to accomplish developmental tasks, and self-mastery and control" (Sgroi, Blick, & Porter, 1990, p. 109).

The general symptoms for adults sexually abused as children include "major depression, generalized anxiety, phobias, cognitive disturbance, and personality disorder" (Beutler & Hill, 1992, p. 204). The general symptoms for children who were sexually abused include acting out behaviors, suicidal ideation, self-mutilation, anger, guilt, fear of authority, shame, and trust problems with the forming of and in the maintaining of relationships (Inter-Ministry Child Abuse Handbook, 1985).

Effects of Physical Abuse

Physical abuse includes any non-accidental physical injury to a child caused by the child's caretaker. By definition the injury is not an accident. "Physical abuse may result from over-discipline or from punishment that is inappropriately harsh considering the child's age or offense" (Montana School Guidelines, 1990, p. 9). Physical abuse is often easily detected since you can see the burns, cuts, or bruises inflicted. In certain extreme cases physical abuse can result in death.

The effects of physical abuse include psychological symptoms, sexual problems, and aggression and criminality (Briere & Runtz, 1990). These symptoms manifest themselves in people being wary of physical contact and closeness with adults. The physically abused child will also demonstrate extremes in behavior that lie outside the range expected for the child's age group (Montana School

Guidelines, 1990). The result of physical abuse "may produce aggression toward others as the child generalizes from experiences with abusers and assumes aggression to be an appropriate form of interpersonal behavior when angry or distressed" (Briere & Runtz, 1990, p. 361).

Educational Environment Effects

"Incest is a social process, and its survivors continue their lives in an intricate social world. While it is clearly useful to catalog victim's reactions, to study families, and to examine their treatment in the social services, these approaches forget that survivors carry this unique experience with them in everyday life" (Tomlin, 1991, p. 564). The educational setting is one environment where maltreated people carry these experiences. These unique experiences will have a direct impact in the educational environment which is part of a college student's everyday life.

The traits most frequently observed in clinical settings dealing with the educational symptoms of maltreated children are learning disabilities, excessive aggression or impulsiveness, interpersonal conflict, and social isolation (Barahal et al., 1981). The evidence comparing groups of abused children with non-abused children demonstrates that there are "detrimental consequences for not only these students' intellectual development, but also for their social and emotional development" (Roscoe, 1985, p. 392). In the classroom, most children accept

physical closeness to a teacher; the abused child avoids it, sometimes even shrinking at the touch or approach of an adult.

Negative life experiences like those associated with childhood maltreatment effect the normal development processes involved with learning. These associations can lead to "less productive intellectual skills and fewer social cognitive competencies" (Barahal et al., 1981, p. 512). "Kinard (1980) and Martin and Breezley (1976) have assessed the self-concepts of abused children and found that not only do they possess lower self-concepts, they are more likely to maintain these negative self-concepts" (Cryan, 1985, p. 388) through life.

Long-Term Effects of Childhood Maltreatment in the Educational Environment

The evidence showing the negative consequences of childhood maltreatment for adults in the educational setting are scarce. It is reported that "the various types of child abuse have both specific and overlapping effects on later psychosocial functioning" (Briere & Runtz, 1990, p. 361), but the reports of its effects on adult cognitive functioning are uncommon. The research does indicate that academic skills deprivation can be associated with childhood maltreatment. Those adults who have never developed compensatory educational skills related to their maltreatment are without the means to develop self-esteem (Phipps, 1981). The academically unprepared adult who has compensated for the maltreatment will need remedial assistance in post-secondary education while the adult who has not compensated will need counseling and personal help (Phipps, 1981).

Academic skills deprivation may be more symptomatic of other learning deficiencies, such as those that deal with the specific unobservable cognitive processes involved with learning. These unobservable mental processes are the aspects of learning that are most difficult to diagnose because they are part of the cognitive learning process. The cognitive learning process can best be explained through a description of cognitive learning theory.

Principles of Cognitive Learning Theory

One of the learning theories discussed in educational psychology is the cognitive learning theory. Cognitive learning theorists "are concerned almost exclusively with human learning, particularly with the unobservable mental processes individuals use to learn and remember new information or skills" (Slavin, 1992, p. 99). For optimal learning to occur the Sensory Information System is utilized. The Sensory Information System is the specific biological and physiological functions used for learning. These functions include the use of sensation, perception, motivation, and short-term and long-term memories to acquire and retain information. It is a developmental process whose pinnacle is higher order thinking skills, the skills needed to succeed in higher education.

Cognitive Development and Learning

Jean Piaget, a child psychologist, describes cognitive development as progressing through four distinct stages. It is through these stages that allow for

"major reorganizations in the child's thinking" (Slavin, 1992, p. 26) as the child develops. The stages of cognitive development are sensori-motor (birth to 2 years), pre-operational (2 to 7 years), concrete operational (7 to 11 years), and formal operational (11 years to adulthood) (p. 27).

Learning for the college student takes place at the formal operational stage of development. At this stage abstract thought and reasoning abilities, which are higher order thinking skills, are utilized for learning. These include intelligence, aptitude or ability, and the attitudes and behaviors a person brings to the learning environment. For actual learning to occur at this stage of development there are five cognitive components involved. These cognitive components are sensation, attention, perception, short-term memory, and long-term memory. Sensation can be described as information being processed through visual, auditory or kinesthetic (motor) sense areas. People pay 'attention' to this information, screening out useless information through this process, for example, environmental noise. People pay attention to the information that will be useful for them. Attention to these stimuli is motivated by alertness, selectivity, and sensitivity (Slavin, 1992). Without attending to a source of information, learning is not likely to occur.

The next step of the process involves one's perceptions of the stimuli to which one attends. Perception is influenced by mental state, past experiences, knowledge, and motivation (Slavin, 1992). Perception deals with perceiving or interpreting the information received through the senses. It is the part of the cognitive process where one relates new information to previously stored feelings

and memories. If one perceives this stimuli as being useful by applying it to past experiences, this information is transferred to short-term memory. If one perceives the new information as being threatening or harmful, it is often distorted or rejected.

Short-term memory is a storage system that allows the individual to decide whether perceptions should be retained. It is the passageway to the long-term memory. Short-term memory is the working area in which we decide which perceptions need to be processed further. In this processing, past experiences, memories, self-concept, and self-actualization affect decisions regarding storage in the long-term memory.

The long-term memory is divided into three major processing areas. These are the episodic, semantic, and procedural. These areas involve the storage and retrieval of our past experiences. Episodic memory "stores our memories and personal experiences" (Slavin, 1992, p. 157). It contains past images and experiences organized by where and when they happened. Semantic memory "stores facts and generalized knowledge" (p. 157). Semantic memory involves the organized networks of connected ideas and relationships called schemata. "Schemata are networks of related ideas that guide our understanding and action" (p. 157). It is the part of our memory process that allows for the integration of information with previously stored information. The third part of the long-term memory is procedural memory. Procedural memory stores "knowledge of how to do

things" (p. 157). It allows for the recall of how to do something, especially physical tasks.

The effects of maltreatment cause impairments in cognitive development, but the processes involved in learning are not only cognitive. Learning is an interrelated process involving other elements. One of these elements is psychosocial development. Psychosocial development is the process in which a person develops a realistic picture about him/herself.

Psychosocial Development and Learning

Psychosocial development is the psychological and social development of a person, or the development of self-concept. "Self-concept or our sense of self includes the way we perceive our strengths, weaknesses, abilities, attitudes, and values" (Slavin, 1992, p. 74). Self-concept formation is highly dependent on the way a person was raised. Self-concept is the total effect of experiences with peers, family, school, and adults which result in a mental image of ourselves. "The influence of the child's family, which was the major force during the early childhood years, continues in importance as parents provide role models in terms of attitudes and behaviors" (p. 74). The families of maltreated children send the wrong collection of beliefs about the kind of person they are. This "lack of a positive self-concept can severely damage a child's social development" (p. 74).

The effects associated with childhood maltreatment will have an impact on an adult's self-concept which will affect learning. "Research in developmental

psychology reveals that self and social development are important, continuing themes throughout infancy, childhood, adolescence, and adulthood and that each developmental transition is associated with revision and change in one's self-definition and integration, in the self-regulation of behavior and affect, and in the scope and quality of one's social relationships (Cole & Putnam, 1992, p. 180). If a person does not feel loved and protected, this will have a profound effect on their learning. "The pain of facing extreme narcissism in a parent or parental figure activates repressive mechanisms, eventual sexual and interpersonal inhibitions, and self-loathing and masochism" (Stearns, 1986, p. 465). These characteristics are not the most conducive characteristics for the learning of subject content.

Another component of learning on which childhood maltreatment may have an effect is with motivation and personality development. This component of the developmental process influences self-actualization. Self-actualization is the process of becoming who one can become in life. "The coordination of a secure, integrated sense of self and meaningful interpersonal relationships forms the core of the maturely functioning adult" (Cole & Putnam, 1992, p. 176).

Motivation and Personality Development

Abraham Maslow's theory of personality and motivation development is important when discussing childhood maltreatment and its influence on cognitive abilities. The effects of childhood maltreatment impact the very core of a person's

development. "Motivation is one of the most important prerequisites for learning" (Slavin, 1992, p. 318); "it is the drive, need or desire to do something" (p. 328).

"One use of the concept of motivation is to describe a general tendency to strive toward certain types of goals" (p. 328). Personality development can be viewed as having "traits that are reinforced over a long period of time" (p. 328). An example of this would be a love of school. The person who gets positive strokes in school for performing well will tend to enjoy school more and be motivated more than the person who does not. The student's personality will be motivated to achieve life goals through school, in many cases college, as the avenue needed to achieve their life's goals.

Maslow describes two types of human needs that have to be satisfied so that motivation and personality development can proceed normally. He divides these needs into two categories; deficiency needs and growth needs. Deficiency needs (physiology, safety, love, and esteem) are those needs that are critical to physical and psychological well being. Growth needs (the needs to know and understand, to appreciate beauty, and to grow and develop in appreciation of others) lead to what Maslow calls self-actualization. "Self-actualization is characterized by acceptance of self and others, spontaneity, openness, relatively deep but 'democratic' relationships with others, creativity, humor, and independence, in essence psychological health" (Slavin, 1992, p. 322).

The characteristics associated with maltreatment impact self-actualization. For abused children, the failure to develop a sense of self is a major deterrent in

forming relationships with others because of the constant fear of physical assault or abandonment (Fatout, 1990). Sexually abused individuals have trouble forming stable relationships because of the early message that people who love you will hurt you. The implications for learning deficits are apparent. If the consequences of maltreatment cause "a hyper-vigilant preoccupation with the behavior of others, which leaves little time or energy for exploring and enjoying the world or relationships with others" (Fatout, 1990, p. 77), the child will not be able to focus on learning subject content.

The consequences of abuse for children's social development are many. They become asocial, lonely children who need attention of others yet who act in ways that insure their isolation. Abused children tend to antagonize their peers and teachers and avoid interacting with them when possible. This self-imposed segregation continues to inhibit the development of more mature and appropriate social skills, and simultaneously limits their intellectual and emotional progress. (Roscoe, 1985, p. 392)

In the educational setting maltreated students may not perform adequately. Their innate aptitude and abilities for achieving in school will not be nurtured and develop normally. Their school grades will not mirror their ability. Abraham Maslow believes that healthy children will, much of the time during their development, choose what is good for their growth. The question that arises here is what could have the unhealthy or maltreated child attained if childhood maltreatment had not been a factor in motivation and personality development.

Childhood Maltreatment Effects on Learning Abilities

The effects of childhood maltreatment are well documented as having profound adverse effects on a young student's intellectual, emotional and social development (Aber, 1987; Cryan, 1985; Einbender & Friedreich, 1989; Fatout, 1990; Ivey & Ivey, 1990; Oates & Peacock, 1984). Some of the effects on very young children are developmental lags, lower IQs, deficits in gross motor development, and speech and language delays. The literature shows that children from maltreating families score lower than their peers on several measures of cognitive and physical competence and on ratings of motivation (Vondra, Barnett, & Cicchetti, 1990). "A battered child's intellectual development has been demonstrated as having significantly lower mean scores than comparison groups on the verbal performance and the full scale scores on the WISC-R and the WPPSI" (Oates & Peacock, 1984, p. 27). In their studies, Oates and Peacock found "that children who have suffered from physical abuse have lower mean intelligence quotients on follow up at an average of five and one half years, than a group of comparison children from the same social class" (Oates & Peacock, 1984, p. 28).

The research consistently demonstrates how the detrimental consequences of sexual abuse affect young children in the cognitive areas (Cryan, 1985; Ivey & Ivey, 1990; Heilig, 1990). The specific problems related to success in school for the maltreated child include distractibility, resistance, rebellion, and extreme manipulation. "These children are often very concrete, responding only to what

they can immediately see and hear. They have little ability to fantasize, are easily confused, and are apt to react to situations they perceive as stressful with increasing anxiety" (Fatout, 1990, p. 80). Their behavior extremes at times will appear inappropriate causing reactions to situations that most people cannot understand. This is understandable because "children exposed to an atypical environment may attempt to adapt by turning away from external stimuli so as to reduce their impact" (Reider & Cicchetti, 1989, p. 390).

Learning and Memory

The effects of childhood maltreatment may impact learning and memory. "Learning and memory are facilitated when the learner constructs images and verbal representations that relate old memories to new information, especially in organized or sequenced ways" (Whittrock, 1986, p. 311). The maltreated child may have some interruption in the learning process due to developmental lags caused by the maltreatment. If one is being maltreated that person's thoughts, feelings, and emotions are focused on the maltreatment and not on the absorption of subject content. Curricula in schools are structured to build on previously learned information or facts. Maltreatment can cause gaps in this hierarchical learning process. The skills being taught will be overshadowed by the affective consequences of the maltreatment, resulting in deficit learning. Maltreated children will not perform adequately when new information is being presented because they are constantly on guard, or in a hyper-vigilant state, waiting for adversity even in

the classroom setting. "Children who have been battered become watchers. They learn to observe acutely and to be highly sensitive to adults and any sudden or inexplicable changes in the environment" (Roscoe, 1985, p. 391).

"To further insure their safety, abused children learn to change and shift their behaviors to be in accord with expectations of the adults around them. They learn to be flexible and to be what they perceive adults want them to be; hence they are like chameleons taking on the various characteristics of their settings" (Roscoe, 1985, p. 392). This could account for the reason why some maltreated students are doing well in the educational environment. Many maltreated students have learned to appease adults. Appeasing teachers equates to success in the educational environment. These students have become perfectionists and overachievers.

Perfectionism and Overachievement

There are several reasons many maltreated students are underachievers in the educational setting, but many of these students have also become overachievers. The sexual abuse survivor has learned that "because he cannot adequately protect himself, he is inferior, and no one can preserve positive self-esteem while feeling powerless and inferior" (Lew, 1990, p. 118). "In these ways, feeling flawed and incomplete, believing that his only protection lies in complete power, strength, intelligence, and competence" (p. 118), the maltreated child has become a

perfectionist. "In order to be OK, he must be perfect and do everything right" (p. 119).

One of the outcomes of perfectionism is overachievement. For example, "the perfectionistic incest survivor remains driven, lest he lose what he has attained and thereby reveal his true nature to the world -- a failure" (Lew, 1990, p. 120). The perfectionistic and overachieving student is rewarded in the educational environment and may be hiding the effects of the maltreatment under this facade of perfectionism. The enlightened teacher needs to be aware that childhood maltreatment can also be the circumstance for the non-problematic overachieving student.

Long-Term Effects of Childhood Maltreatment

The psychological symptoms associated with the long-term effects of childhood maltreatment are clearly documented in the literature. The long-term impacts of childhood sexual abuse have been linked "to a variety of later problems and symptoms including depression, interpersonal difficulties, sexual problems, and suicide" (Briere & Runtz, 1990, p. 357). The long-term impacts of physical abuse have been linked to "psychological symptoms, sexual problems, and aggression and criminality," and the long-term impacts of psychological child abuse, with almost no empirical research studies completed, "have been linked to suicidal ideation, and a variety of other psychological symptoms" (p. 357).

These long-term psychological effects of childhood maltreatment reflect a stark reality for these victims, but adulthood affords the "physical distance that can promote and pave the path for the ability to reflect on and to reason about the childhood sexual experience" (Cole & Putnam, 1992, p. 179). This is the process involved in healing from the maltreatment. "The average age of the adult incest survivor in retrospective studies other than college samples, 32-38, suggests that the incest victims enter a period of self-reflection" (p. 179). It is through this introspection that these people can assess their abusive childhood situation and reflect on its effects.

Learning and Study Strategies

According to Weinstein (1990), college and university students learn by the way they process information and in the way they transform that information. Learning involves the use of specific learning styles and strategies that are used for this process. "Learning strategies are the techniques or skills that an individual elects to use in order to accomplish a specific learning task" (Fellenz & Conti, 1989).

The learning strategies used by college students involve "comprehension monitoring, knowledge acquisition, active study skills, and support strategies" (Weinstein, 1990, p. 18). Comprehension monitoring strategies are your "executive control function; knowing when you know, knowing when you don't know, and knowing what to do about it" (p. 18). Knowledge acquisition strategies are "the

building of connections between what you already know and what you are trying to learn" (p. 19). "Active study skills means putting more active information processing constructs into study skills" (p. 19). "Internal support strategies "relate to the way that we help to create and to maintain internal climates for learning" (p. 20).

Support strategies involve internal and external strategies that are involved in learning. According to Weinstein, external strategies are lighting, room environments, paper and books. Internal support strategies involve the affective variables involved with learning. These are attention, perception, motivation, and concentration. These "internal support strategies relate to the way that we help to create and to maintain internal climates for learning" (Weinstein, 1990, p. 20). Internal support strategies include being able to focus attention, which helps to generate motivation and interest. They include diligence and motivation, time management, and the internal strategies a person uses when dealing with anxiety related to learning (Weinstein, 1990).

CHAPTER 3

METHODOLOGY

Research Design

This research study is a descriptive case study. Descriptive research studies involve "collecting data in order to test hypothesis and to answer questions concerning the current status of the subjects" (Gay, 1987). This study is also a "bounded system" case study. "The bounded system, or case, is an examination of a specific phenomenon such as a program, an event, a person, a process, an institution or a social group" (Merriam, 1988, p. 10). A description of the demographic variables is provided in percentages and frequency counts along with a description of the learning style and study strategy inventory results.

The key variables examined were those students who experienced childhood maltreatment and those students that were not maltreated. The results of participant self-identification of non-maltreated, physical abuse, sexual abuse, and psychological abuse or a combination of each is reported.

The demographic variables in the study were examined by computing percentages and frequencies. *t*-tests were used to compute mean scores on the demographic variables and on the LASSI subscales for the three groups. The

demographic variables potentially related to student learning included age, gender, marriage (single, married, divorced, separated, widowed), ethnicity (African American, Asian, Caucasian, Native American, Hispanic, Other), year in college (Freshman, Sophomore, Junior, Senior, Graduate), grade point average (4.0-3.6, 3.5-3.1, 3.0-2.1, 2.0-1.1), geographic area (rural, suburban, urban, combination), socio-economic status (wealthy, middle class, poor), psychological counseling (yes, no), diagnosis of learning disabled and behavior disorder (yes, no), whether as a student they would classify themselves as being organized (yes, no), perfectionistic (yes, no), persistent (yes, no), motivated (yes, no), low achiever (yes, no), and on ratings of self-concept (excellent, good, fair, poor), psychological health (excellent, good, fair, poor), and if grades equal ability (yes, no) with the maltreated and non-maltreated participants.

The Learning Styles and Study Strategy Inventory (LASSI) mean scores for each of the groups were also examined. The LASSI subscale scores examined were attitude, motivation, time management, anxiety, concentration, information processing, selecting main ideas, study aids, self-testing, and test strategies. *t*-tests were used to describe differences among the total, maltreated, and non-maltreated group scores.

Population Description

The study was conducted at Montana State University, a 1,170 acre campus with a total student enrollment of approximately 10,000, located in western Montana. Montana State University, which had its conception as a land-grant

institution, "is a four year, public comprehensive land grant University with undergraduate and graduate programs in liberal arts, basic sciences, the professional areas, agriculture, architecture, business, nursing, education, and engineering" (Montana State University Undergraduate Bulletin, 1993-1994, p. 1).

The population for the study consisted of 198 students enrolled for the 1993 summer session at Montana State University. The population was selected from classes in several of the colleges within the university. These were the College of Letters and Science (Public Communication, SPCM 110); College of Engineering (Rigid Body Mechanics, EM 252); College of Business (Managerial Accounting, BUS 222); and College of Education, Health and Human Development (Counseling and Family Enrichment, HDCO 415; Introduction to Multicultural Education, EDCI 240; Foundations of Instructional Computing, EDCI 320; and Exceptional Needs, HDCF 356).

Instrument

The Learning and Study Strategy Inventory (LASSI) is an "assessment tool designed to measure students' use of learning and study strategies and methods. The focus is on overt thoughts and behaviors that relate to successful learning and that can be altered through educational interventions" (Weinstein, 1987, p. 2). There are 10 learning and study strategy subscales measured by the LASSI. These are Attitude, Motivation, Time Management, Anxiety, Concentration, Information Processing, Selecting Main Ideas, Study Aids, Self Testing and Test Strategies.

The Learning and Study Strategies Inventory (LASSI), according to Weinstein (1987), is meant to be used as:

- (1) a diagnostic measure to help identify areas in which students could benefit most from educational interventions;
- (2) a basis for planning individual prescriptions for both remediation and enrichment;
- (3) a pre-post achievement measure for students participating in programs or courses focusing on learning strategies and study skills;
- (4) an evaluation tool to assess the degree of success of intervention courses or programs; and
- (5) a counseling tool for college orientation programs, developmental education programs, learning assistance programs, and learning centers. (p. 2)

Validity

The validity of an instrument "deals with whether the instrument is truly measuring the specific trait that it is supposed to measure" (Huck, Cormier, & Bounds, 1974, p. 9). Although Weinstein does not specifically report construct, content, and criterion-related validity, she argues that the LASSI is valid because

A number of different approaches have been used to examine the validity of the LASSI. First, the scale scores have been compared, where possible, to other tests or subscales measuring similar factors. Second, several of the scales have been validated against performance measures. Finally, the LASSI has been subjected to repeated tests of user validity. Professors, advisors, developmental educators, counselors, and learning center specialists at more than 30 colleges and universities have used the LASSI advisors on a trial basis. They report few, if any, administration problems and a high degree of usefulness in their settings. (Weinstein, 1987, p. 6)

Such a statement leaves the validity of the LASSI up for question when dealing with the affective variables of attention, motivation, anxiety, and concentration in measuring the cognitive processes involved with learning.

Reliability

"The reliability of an instrument deals with whether or not the instrument can measure the same trait consistently upon repeated measures" (Huck et al., 1974, p. 9). The reliability of the LASSI was established through the test-retest procedure. The reliability scores for the 10 LASSI subscales are as follows: Attitude = .75; Motivation = .84; Time Management = .85; Anxiety = .83; Concentration = .85; Information Processing = .72; Selecting Main Ideas = .78; Study Aids = .75; Self Testing = .78; Test Strategies = .81 (Weinstein, 1987, p. 6-10).

Norm scores were developed using a "sample of 880 incoming freshman from a large southern university" (Weinstein, 1987). Coefficient Alpha's for the scales range from a low of .72 to a high of .85, demonstrating a high degree of stability for each of the scale scores (Weinstein, 1987).

LASSI Scales

The first scale of the LASSI is the Attitude Scale which assesses a student's general attitude towards school and their general motivation for succeeding in school. "If the relationship between school and their life goals and attitudes about themselves and the world are not clear, then it is difficult to maintain a mind-set

that promotes good work habits, concentration, and attention to school and its related tasks" (Weinstein, 1987, p. 6). Childhood maltreatment affects a person's attitude about themselves. Does the maltreated college student have the mind-set to achieve in this setting?

The second scale of the LASSI is the Motivation Scale which assesses student willingness to put forth the effort to achieve in school. Childhood maltreatment may affect motivation in the way that certain psychological symptoms associated with childhood maltreatment affect the motivation needed to complete course work (e.g., depression or low self-esteem).

The third scale is Time Management. This scale assesses what students know about time management and what they do about it. Students who score low on this measure may need to learn about how to create a schedule and how to deal with distractions and competing goals. The residual effects of childhood maltreatment may impact time management skills since these students may not have developed the skills needed to use their time effectively.

The fourth scale on the LASSI is the Anxiety Scale. "One of the most common things that decrease the effectiveness of student performance is anxiety or worry" (Weinstein, 1990, p. 24). "Worry is often manifested in something we call negative self-talk which feeds on itself" (p. 25) or negative personal axioms. Negative axioms lead to irrational beliefs or irrational anxieties about school and life and are detrimental to learning. "Individuals who endorsed having experienced physically abusive childhoods were more likely to agree with self-depreciative

statements" (Muller, 1991, p. 1). If a college student believes that he/she cannot do something, this self-fulfilling prophecy will be carried out.

The fifth scale on the LASSI is Concentration. This scale looks at those things students do to help themselves concentrate and those things they do that may distract them from the learning situation. Childhood maltreatment effects may inhibit concentration on the learning task. Memories or hyper-vigilant states may impact the focus needed for attention to the learning task.

The sixth scale is the Information Processing Scale. This scale looks at how well students incorporate the memory strategies of elaboration, comprehension monitoring, and reasoning when learning new information. Childhood maltreatment may have impaired a person's ability to learn the processing strategies which will affect the retrieval and storage of information in the short-term and long-term memory.

The seventh scale of the LASSI is Selecting Main Ideas. This scale measures skills at selecting important information to concentrate on for further study in either classroom lecture or autonomous learning situations. The maltreated participants may have missed learning these skills if the environment in which they grew up in was not safe.

The eighth Student scale on the LASSI is Study Aids. This scale measures student ability to use or create study aids that support and increase meaningful learning and retention. Again, due to their maltreated backgrounds these students

may not have learned skills used for effective study or may be distracted by content that reminds them of abusive situations.

The ninth scale of the LASSI is Self Testing. This scale measures student awareness of the importance of self testing and reviewing and the degree to which they use these methods. This skill may have not been learned adequately due to an abusive childhood where extenuating circumstances overshadowed the learning of this skill.

The tenth scale of the LASSI is Test Strategy. This skill uses both preparation and test-taking strategies for adequate test performance. The maltreatment may have affected the actual learning of this skill which is vital for success in college.

Demographic Survey

Demographic variables were gathered using a survey form. This survey form consisted of one of three pages handed out to the participants. The first page was a definition of terms sheet; this sheet contained the definitions of childhood maltreatment used for the study (see Appendix A). The second page was the demographic survey form (see Appendix B). The demographic information requested on this second page was age, gender, marital status, ethnicity, grade point average, family economic status, geographics, and year in college. Additional demographics from the survey form requested information on psychological counseling, learning disabilities, behavior disorders, self-concept, psychological

health, grades, perfectionism, organization, motivation, persistence, and low achievement. The population was also asked to self-identify if they had been maltreated as a child or not. If they had, they were asked to identify the maltreatment as either sexual, physical, psychological or combination of each. The third sheet was the answer sheet used for the LASSI inventory answers.

Methods of Data Collection

Data were collected from 227 students enrolled for the 1993 summer semester at Montana State University. The participants were handed three forms stapled together along with the LASSI inventory which were used for the collection of the data. The population was then given a uniform explanation on (a) the purpose of the study, (b) the voluntary nature of the study (c) the anonymity of the study, (d) the demographic survey form, (e) the LASSI inventory, (f) the definitions used for designating childhood maltreatment, and (g) the request to complete the instrument one time only.

The survey was not timed. The participants were allowed up to 45 minutes to complete the entire survey. On the average it took respondents this much time to complete the survey and complete the LASSI. Some of the participants may have refused to take the LASSI since participation was voluntary.

The data was then entered into a data base (D-Base III) program and analyzed using SPSS/PC.

Statistical Procedures

There were 19 demographic variables used in this study for participant description. Frequencies distributions and percentages were used to describe the differences existing in the demographic variables between the maltreated, non-maltreated, and total participants of the study.

A one-sample t -test was used to determine whether a significant difference existed between the normed LASSI mean scores and the mean scores for those who participated in the study. A t -test is "a procedure that is used to determine whether the population of interest differs significantly from the norm group used in standardizing the test instrument" (Roscoe, 1975, p. 214). Three independent sample t -tests were calculated. Separate comparisons to the normed group were made for the total group of participants, for those who were maltreated, and those who were non-maltreated. t -tests were also used to compare group means between the maltreated and non-maltreated groups.

A discriminate analysis was used to determine whether maltreated and non-maltreated participants differed in their interaction on the demographic variables, on each of the 10 subscales on the LASSI, and then the combined variables of the demographics and LASSI. Discriminate analysis is "a statistical technique which allows the researcher to study the differences between two or more groups of objects with respect to several variables simultaneously" (Klecka, 1980, p. 7). In discriminate analysis the emphasis is on analyzing the variables together

rather than singly. By considering the variables at the same time, it is possible to include valuable data about how the variables relate to one another. There are two purposes for using discriminate analysis: (a) prediction of group membership and (b) describing the way groups differ (Huberty & Barton, 1989). In this study, discriminant analysis was used to describe the groups.

CHAPTER 4

FINDINGS

Introduction

Data was collected from two sources. One was a demographic survey and the other was from the LASSI inventory. The demographic data was explored for differences between groups on the demographic variables of age, gender, ethnicity, year in college, grade point average, socio-economic status, psychological counseling, diagnosis as learning disabled or behavior disorder, self-concept, psychological health, grades, geographics, perfectionism, organization, motivation, persistence, low achievement, and maltreated and non-maltreated participants. A t -test was used to compare the means of the maltreated and non-maltreated groups with the demographic variables. "Researchers use the t -test most often to compare the means of two groups" (Huck et al., 1974, p. 50).

A t -test was also used to compare the LASSI scores of the respondents to the norm scores from the inventory. The subscale scores were explored for differences of Attention, Motivation, Time Management, Anxiety, Concentration, Information Processing, Selecting Main Ideas, Study Aids, Self-Testing, and Test Strategies between the maltreated and non-maltreated participants.

Both the demographic data and LASSI scores were used as variables to determine if it was possible to discriminate between the maltreated and non-maltreated groups. A discriminant analysis was used to find "linear combinations of the independent, sometimes called predictor, variables are formed and serve as the basis for classifying cases into one of the groups" (Norusis, 1988, p. B-1). Three separate discriminant analyses were calculated: the first with demographic variables, the second with the LASSI subscales as discriminating variables, and the third with both demographic variables and LASSI scores.

Survey of Participants

A total of 229 college students completed the demographic survey and LASSI inventory for the study. However, two of the surveys were not used due to improper completion procedures. In addition, 16 individuals did not respond to the question on maltreatment, and 13 were unsure on this issue. Since these 31 cases were not used in the study, data from 198 voluntary participants were analyzed for this study.

Of the total 198 participants, 82 were males and 116 were females. Fifty participants, 14 males and 36 females, indicated they were maltreated as children either sexually, physically, psychologically, or in a combination of ways. Thus, 27% of the participants in the study were maltreated as children. The seven categories of childhood maltreatment reported by the respondents were Sexual Abuse--8 (4%); Physical Abuse--3 (2%); Psychological Abuse--21 (11%); both Physical and

Psychological 7--(4%); both Sexual and Physical--5 (3%); and Sexual, Physical and Psychological--6 (3%).

The year in college of the participants was described as being 70 Seniors (35%), 54 Juniors (27%), 34 Graduate Students (17%), 19 Sophomores (10%), and 9 Freshman (5%) with 12 (6%) of the respondents not reporting their year in college. The year in college for the maltreated participants consisted of 19 Seniors (38%), 16 Juniors (32%), 5 Graduates (10%), 4 Sophomores (8%), 3 Freshman (6%), and 3 not indicating their year in college. The non-maltreated group's year in college were 51 Seniors (35%), 38 Juniors (26%), 29 Graduates (20%), 15 Sophomores (10%), 6 Freshman (4%) and 9 (6%) not indicating their year in college.

The respondents to the survey had a mean age of 28.4 years with the oldest participant being 52 and the youngest 18. The mean age for the maltreated participants was 31 with the oldest participant being 49 and the youngest 19. The mean age for the non-maltreated participants was 27.5. The age group with the highest reported frequency of childhood maltreatment were the 20 and 21-year-olds.

The majority (56%) of the 198 participants in the study were single while one-third were married. There were 18 (9%) divorced participants, 3 (2%) separated, and 1 (1%) widowed. Of the 50 that were maltreated, 24 (48%) were single, 17 (34%) were married, 14 (14%) were divorced, and 2 (4%) were separated. For the non-maltreated group, there were 84 (57%) single, 48 (32%)

married, 11 (7%) divorced, 1 (1%) separated, 1 (1%) widowed, and 3 (2%) not responding.

Reflecting the makeup of Montana, the ethnic background of the participants were overwhelmingly Caucasian (93%). Minority groups in the study included African American (2%), Native American (2%), Hispanic (2%), Asian (1%) and Other (1%). The breakdown for the ethnic groups maltreated as children was Caucasian (92%), Hispanic (6%), and Asian (2%). The non-maltreated group reported their ethnic backgrounds as Caucasian (93%), African Americans (3%), Native Americans (2%), Asian (1%) and Other (1%).

The maltreated group had better GPA's than the non-maltreated group. There were 62% of the maltreated group with GPA's in the A to B range compared with only 50% of the non-maltreated GPA's in this range. The participants' grade point averages (GPA) on a 4 point scale were as follows: 4.0 - 3.6 (22%), 3.5 - 3.1 (31%), 3.0 - 2.1 (41%), 2.0 - 1.1 (2%), and Unsure of GPA (2%). The grade point average findings for the 50 maltreated students were as follows: 4.0 - 3.6 (20%), 3.5 - 3.1 (42%), 3.0 - 2.1 (32%), 2.0 - 1.1 (4%), and Unsure (2%). The non-maltreated GPA's were between 4.0 - 3.6 (23%), 3.5 - 3.1 (27%), 3.0 - 2.1 (44%), 2.0 - 1.1 (4%), and Unsure (2%).

Very few in the group had been diagnosed as having a learning disability. Only 11 (6%) of the 198 respondents were diagnosed as learning disabled while growing up. Among the maltreated group, there were only 2 (4%) that identified themselves as having a learning disability. In the non-maltreated group, 9 (6%) had

been diagnosed as learning disabled. The maltreated group reported less learning disabilities than the non-maltreated group which is a contradiction to the literature.

Over one-fourth (26%) of the total group reported having received psychological counseling. For the maltreated group 60% had received psychological counseling while 15% of the non-maltreated group received psychological counseling.

In response to the question dealing with being diagnosed as behavioral disordered, 5 (3%) of the total group had been so diagnosed. Four (8%) were from the maltreated group, and 1 was from the non-maltreated group.

Overwhelmingly, those in the study characterized themselves as middle class (84%) with only 10% saying they grew up poor and 4% wealthy. The maltreated individuals' socio-economic status was reported as middle class 74%, poor 18%, and wealthy 2%. Two of the respondents answered in a combination of these classes. The non-maltreated group reported being raised as middle class 88%, poor 7% and wealthy 5%.

Montana is a rural state and this status was reflected in the geographic background of the participants. The response to the geographic area where the respondents were as follows: rural--49%, suburban--29%, urban--19%, and combined--2%. The maltreated group was distributed as follows: rural--42%, suburban--34%, and urban--20%. The non-maltreated respondents reported rural--51%, suburban--28%, urban--20%, and combined--2%.

The demographic survey dealt with questions concerning student approaches to learning and studying. For the question, "Are you organized?," the responses were 77% answering Yes, and 19% answering No. There were 5% of respondents that did not answer this question. The maltreated participants' responses were 70% Yes and 18% No. The non-maltreated responses were 79% Yes and 19% No.

For the question, "Are you motivated?," 85% of the total group answered Yes and 12% No. The maltreated participants answered 82% Yes and 12% No. The non-maltreated participants answered with 86% Yes and 12% No.

For the question, "Are you persistent?," the total participant response was 161 (81%) Yes and 31 (16%) No. There were six cases missing for this question. The maltreated group answered 41 (82%) Yes and 6 (12%) No. The non-maltreated group responded with 120 (81%) Yes and 25 (17%) No.

Perfectionism can be viewed in a negative or positive light. In the educational setting perfectionism is rewarded and can be viewed as a positive academic quality. The maltreated group appears to be more perfectionistic in the educational setting than the non-maltreated group. For the question, "Are you a perfectionist?," the total group's response was 47% Yes and 47% No with 12 participants not answering. The maltreated participants answered with 64% Yes and 26% No. The non-maltreated participants answered with 41% Yes and 54% No.

Low achievement in school may be a symptom caused by childhood maltreatment. Delays in cognitive or psychosocial development may be related to

low school achievement. Both groups reported that they felt as though they were not low achievers. For the question, "Are you a low achiever?," the total group responded with 10% Yes and 83% No with 7% not answering this question. The maltreated group responded with 10% Yes and 78% No with 12% not answering. The non-maltreated group responded with 10% Yes and 85% No with 5% not answering this question.

Self-concept as reported in the literature is perceived to be low for those people who were maltreated. For the question, "How would you rate your self-concept?," the overall responses by the participants were positive. The maltreated group reported lower self-concepts than the non-maltreated group, which is consistent with the findings from the literature. The total group responded with 26% excellent, 55% good, 14% fair, and 4% reporting poor self-concepts. For the maltreated participants the frequencies for self-concept were 16% excellent, 52% good, 26% fair, and 6% reporting poor self-concepts. For the non-maltreated participants the responses were 30% excellent, 56% good, 10% fair, and 3% poor.

Overall, the psychological health of the maltreated respondents was lower than the non-maltreated participants. The total group reported their psychological health as 29% excellent, 55% good, 14% fair and 2% poor. For the maltreated participants, psychological health was presented as 14% excellent, 58% good, 22% fair, and 6% poor. The non-maltreated group reported their psychological health as 34% excellent, 54% good, 12% fair, and 1% poor.

Grades report how well a student is doing in college. "Do your grades represent your abilities?" is a question that asks if preparation equals performance. Does the student feel that grades are an adequate representation of their abilities? The overall response to this question was that all groups felt their grades were not an adequate representation of their abilities. The responses were for the total group 47% Yes, and 53% No. The maltreated group responded with 40% Yes, and 60% No, and the non-maltreated group's response was 49% Yes, and 51% No.

t-Test Results from the LASSI

Participants' scores on the Learning and Study Strategies Inventory (LASSI) were analyzed using *t*-tests to determine if there were significant differences in the total, maltreated, and non-maltreated groups' mean scores. Two different types of *t*-tests were used for the study. A one-sample *t*-test was used to compare the mean scores of the total, the maltreated, and the non-maltreated groups' scores with the normed LASSI scores reported by Weinstein (1987, p. 3). One-sample *t*-tests are "used to determine whether the population of interest differs significantly from the norm group used in standardizing the measuring instrument" (Roscoe, 1975, p. 212). A second series of *t*-tests for independent samples was used to test for significant differences in the maltreated and non-maltreated group means for each of the demographic variables and for the LASSI subscale scores. The *t*-test for independent samples is used when "the members of one group are not related to

members of the other group in any systematic way other than that they are selected from the same population" (Gay, 1987, p. 390).

The one-sample t -test results showed significant differences from the total group's scores and the LASSI normed scores in Attitude ($t = 1.76$, $df = 194$, $p < .05$), Time Management ($t = 2.65$, $df = 191$, $p < .05$), Concentration ($t = 4.66$, $df = 194$, $p < .05$), Information Processing ($t = 2.10$, $df = 191$, $p < .05$), and Selecting Main Ideas ($t = 3.99$, $df = 193$, $p < .05$). Thus, as a group the respondents in this study differed from the normed group on 5 out of the 10 learning and study strategies.

In addition to comparing the total group to the LASSI norms, the maltreated and non-maltreated groups were independently compared to the norms. The maltreated group differed from the normed group on four subscales: Time Management ($t = 2.28$, $df = 47$, $p < .05$), Concentration ($t = 2.49$, $df = 48$, $p < .05$), Information Processing ($t = 1.76$, $df = 47$, $p < .05$), and Study Aids ($t = 1.85$, $df = 47$, $p < .05$).

Likewise, the non-maltreated group differed from the normed group on four subscales. They were Time Management ($t = 1.77$, $df = 144$, $p < .05$), Concentration ($t = 3.94$, $df = 146$, $p < .05$), Selecting Main Ideas ($t = 4.51$, $df = 147$, $p < .05$), and Test Strategies ($t = 1.86$, $df = 148$, $p < .05$).

For comparison to the normed scores, the LASSI raw scores are converted to percentiles to represent how the participants responded in comparison to the norm-group (see Table 1). The total group of participants at Montana State

Table 1. Percentiles for the LASSI variables for total, maltreated, and non-maltreated groups.

Scale	Total Group Percentiles	Norm Group Percentiles
Attitude	60.4	51.1
Time Management	62.0	51.8
Concentration	62.3	50.6
Information Processing	61.1	53.1
Selecting Main Ideas	65.2	52.5

Scale	Maltreated Percentiles	Norm Group Percentiles
Time Management	62.0	51.8
Concentration	62.3	50.6
Information Processing	61.1	53.1
Study Aids	63.0	54.9

Scale	Non-Maltreated Percentiles	Norm Group Percentiles
Time Management	57.3	51.8
Concentration	62.3	50.6
Selecting Main Ideas	65.2	52.5
Test Strategies	72.0	51.5

University scored significantly better on half of the LASSI subscale scores than the normed group. These subscales were Attitude, Time Management, Concentration, Information Processing, and Selecting Main Ideas. The subscales in which the total group scored lower than the normed group were Motivation, Anxiety, Study Aids, Self-Testing, and Test Strategies.

The *t*-test for independent samples was used to compare the means between the maltreated and non-maltreated groups in relation to the variables obtained from the demographic data and the LASSI inventory. The demographic data showed significant differences between the maltreated and non-maltreated group means in approximately half of the items. These nine variables were Age ($t = 2.27$, $df = 189$, $p = .024$), Gender ($t = 2.24$, $df = 196$, $p = .026$), Year in College ($t = 2.27$, $df = 189$, $p = .024$), Psychological Counseling ($t = 6.97$, $df = 196$, $p = .001$), Behavior Disorder ($t = 2.90$, $df = 196$, $p = .004$), Socio-Economic Status ($t = 3.53$, $df = 194$, $p = .001$), Perfectionist ($t = 3.33$, $df = 184$, $p = .001$), Self-Concept ($t = 2.88$, $df = 195$, $p = .004$), and Psychological Health ($t = 3.64$, $df = 196$, $p = .001$). The means for each group are reported in Table 2. The means for the maltreated participants were higher in Age, Gender, Socio-Economic Status, Self-Concept, and Psychological Health.

Table 2. Demographic variable means for the maltreated and non-maltreated groups.

	Maltreated	Non-Maltreated
Age	31.0	28.0
Gender	1.7	1.6
Year in College	3.4	3.6
Psychological Counseling	1.4	1.8
Behavior Disorder	1.9	2.0
Socio-Economic Status	2.3	2.0
Perfectionist	1.2	1.5
Self-Concept	2.2	1.8
Psychological Health	2.2	1.7

When the maltreated and non-maltreated groups were compared on the LASSI subscale, no significant differences were found: Attitude ($t = .68$, $df = 193$, $p = .495$), Motivation ($t = .83$, $df = 192$, $p = .407$), Time Management ($t = .94$, $df = 190$, $p = .350$), Concentration ($t = .20$, $df = 193$, $p = .841$), Information Processing ($t = .85$, $df = 190$, $p = .396$), Selecting Main Ideas ($t = 1.77$, $df = 192$, $p = .078$), Study Aids ($t = 1.95$, $df = 192$, $p = .052$), Self Testing ($t = .05$, $df = 195$, $p = .958$), and Test Strategies ($t = 1.52$, $df = 195$, $p = .129$). Thus, the differences between the means of the two groups on the LASSI could have happened by chance. Because there are no significant differences, the groups can be considered the same.

Discriminant Analysis

Discriminate analysis is "a statistical technique which allows the researcher to study the differences between two or more groups of objects with respect to several variables simultaneously" (Klecka, 1980, p. 7). Discriminate analysis is used for two purposes. It can be used to (a) identify the variables that are important for distinguishing among data cases (group differences) (Norusis, 1988, B-1) and (b) for classification in which the discriminating variables or canonical functions are used to predict to which group a case will belong (group membership) (Klecka, 1980, p. 42).

In this study, three separate discriminate analyses were conducted. For each analysis, the participants were divided into the maltreated and non-maltreated groups. The first analysis used the variables from the demographic data sheet to

see if they differentiated between the maltreated and non-maltreated groups. The second analysis used the 10 LASSI subscales as the discriminating variables. The third analysis used both the variables from the demographic data sheet and the LASSI subscales as the discriminating variables.

In the first discriminant analysis, the demographics variables obtained from the participants were used as the discriminating variables distinguishing between groups. "The first step in discriminant analysis is to select cases to be included in the computations" (Norusis, 1988, B-2). There were 198 cases processed in the first analysis. The total group consisted of 50 maltreated participants and 148 non-maltreated participants. The variables used for discrimination were Age, Gender, Marital Status, Ethnicity, Grade Point Average, Family Economic Status, Year in College, Psychological Counseling, Learning Disability, Behavior Disorder, Self-Concept, Psychological Health, and School Performance.

In the second analysis, LASSI subscale scores were used as the discriminating variables to distinguish between the maltreated and non-maltreated groups. There were a total of 176 cases included in the analysis. There were 42 maltreated and 134 non-maltreated participants. A total of 22 participants were not used in the analysis because at least one of the discriminating variables were missing from the respondents' data. The LASSI subscales used as discriminating variables were Attention, Motivation, Time Management, Anxiety, Concentration, Information Processing, Selecting Main Ideas, Study Aids, Self-Testing, and Test Strategies.

The third discriminate analysis included all the variables from both the LASSI and the demographic data. For this third discriminate analysis, there were a total of 176 cases. Of these 42 were maltreated, and 134 were non-maltreated. A total of 22 cases were not used due to missing discriminate variables.

Discriminant Analysis and Demographic Data

"It is often helpful to begin analyzing the differences between groups by examining univariate statistics" (Norusis, 1988, B-3). In the first discriminant analysis the demographic data were the variables used to analyze the differences between the maltreated and non-maltreated group means. The distribution of the variables in the groups helps identify the differences between these two groups (see Table 3).

A test of univariate equality was used as the measure to differentiate between the group means on each variable. The f values were tested at the .05 significance level. This test was conducted to test the hypothesis that all group means are equal (see Table 4).

There were eight variables that had observed significance levels less than the criterion level of .05. These were Age, Behavior Disorder, Counseling, Gender, Perfectionist, Psychological Health, Self-Concept, and Socio-Economic Status. Thus, the means of the maltreated and non-maltreated groups were not the same in almost half of the demographics variables.

Table 3. Group means and standard deviations for maltreated and non-maltreated demographic data.

	Maltreated		Non-Maltreated	
	Mean	SD	Mean	SD
Age	30.00	10.600	26.50	10.200
Behavior	1.92	.274	1.99	.082
Counseling	1.40	.495	1.85	.357
Ethnicity	3.10	.505	3.00	.508
Geographic	1.90	1.020	1.70	.907
Gender	1.72	.454	1.54	.500
GPA	2.16	.866	2.35	.947
Grades	1.60	.495	1.51	.502
Learning Disabled	1.96	.198	1.93	.288
Low Achiever	1.66	.688	1.80	.521
Marriage	1.74	.853	1.50	.751
Motivated	1.06	.424	1.09	.368
Organized	1.06	.545	1.19	.442
Perfectionist	1.16	.584	1.49	.589
Persistent	1.06	.424	1.15	.410
Psychological Health	2.20	.756	1.79	.662
Self-Concept	2.22	.790	1.86	.738
Socio-Economic Status	2.28	.927	2.01	.378
Year in College	3.20	1.280	3.40	1.350

The next step in discriminant analysis involves distinguishing within-groups interdependencies "since interdependencies among the variables affect most multivariate analysis" (Norusis, 1988, p. B-5). A pooled within-groups correlation matrix of predictor variables was obtained "by averaging the separate covariance matrices for all groups and then computing the correlation matrix" (p. B-5). This shows the proportion of the total variance in the discriminant scores not explained by differences among groups. "Each correlation coefficient is an estimate of the

Table 4. Tests for univariate equality of demographic group means.

Variable	F	Significance
Age	5.38	.021
Behavior	8.41	.004
Counseling	48.56	.001
Ethnicity	1.45	.230
Geographic	1.66	.199
Gender	5.04	.026
GPA	1.59	.209
Grades	1.30	.256
Learning Disabled	.61	.435
Low Achiever	2.19	.141
Marriage	3.56	.061
Motivated	.20	.657
Organized	2.81	.095
Perfectionist	12.01	.001
Persistence	1.72	.192
Psychological Health	13.28	.001
Self-Concept	8.67	.004
Socio-Economic Status	8.67	.004
Year in College	.62	.431

strength of the relationship between the corresponding pair of variables within the groups" (Klecka, 1980, p.20). These correlations show how strongly the demographic variables are related within the maltreated and non-maltreated groups. The analysis involves comparing the group centroids which are imaginary points with coordinates determined from the group means for each of the variables. The group centroid serves as the indicator of the interaction of individual mean scores (p. 16).

The pooled within-groups correlation matrix of predictor variables was inspected for interaction within the groups. The results showed that almost all of the demographic variables were not strongly correlated when divided into maltreated and non-maltreated groups. The 171 possible correlations were distributed as follows: 7.0 to 6.1--1, 6.0 to 5.1--0, 5.0 to 4.1--3, 4.0 to 3.1--4, 3.0 to 2.1--17, 2.0 to 1.1--35, 1.0 to .0--111. Because the within-group correlations were so weak, the variables from the demographic survey are good variables to be used as predictors of relationships between the maltreated and non-maltreated groups.

In discriminant analysis the emphasis is on analyzing the variables together rather than singly. By considering the variables simultaneously, it is possible to include valuable data about the relationships of the variables (Hill, 1992). "In discriminant analysis a linear combination of the independent variables is formed and serves as the basis for assigning cases to groups. Thus, information contained in multiple independent variables is summarized in a single index" (Norusis, 1988, B-6). In the first analysis, demographic variables were used to distinguish which participants fit into the maltreated and non-maltreated groups.

"A variety of potentially useful variables are included in the data set. It is not known in advance which of these variables are important for group separation and which are, more or less extraneous" (Norusis, 1988, B-17). In order to do this a stepwise procedure was used to discriminate which demographic variables "are identified as good predictor variables" (Norusis, 1988, B-17). In essence, stepwise selection is an elimination of unnecessary variables needed to provide the greatest

discrimination between the maltreated and non-maltreated groups. The stepwise procedure "begins by selecting the most useful discriminating variables and then pairing this first variable with each of the remaining variables, one at a time, to locate the combination which produces the greatest discrimination" (Klecka, 1980, p. 53).

The analysis stopped at Step 8 because the f levels for the remaining variables indicated the variance discrimination beyond this point was too small to be significant for further inclusion in the stepwise analysis. Table 5 lists the final action taken in the analysis and contains the variables that discriminated between the maltreated and non-maltreated groups.

Table 5. Summary of selected demographic discriminate variables.

Variables	Wilks's Lambda	Significance
Counseling	.801	.001
Psychological Health	.762	.001
Perfectionist	.733	.001
Socio-Economic Status	.717	.001
Behavior Disorder	.707	.001
Organized	.691	.001
Grades	.685	.001
GPA	.677	.001

"The discriminant function coefficients are used to compute the position of the data cases in the discriminant space" (Klecka, 1980, p. 24). "These coefficients

are a measure of association which summarizes the degree of relatedness between the groups and the discriminant function" (p. 35). To do this, a linear discrimination equation which computes independent variables by the coefficients is estimated from the data. Based on these coefficients it is possible to calculate the discriminant score for each case. "The discriminant score is calculated by (a) multiplying the unstandardized coefficients, which are the standard deviations from the grand centroid, (b) by the values of the variables, and (c) by summing these products and adding the constant" (Norusis, 1988, B-7).

Eight variables contributed to the function for discriminating between the maltreated and non-maltreated groups. "By looking at the groups of variables which have coefficients of different signs, we can determine which variable values result in large and small function values" (Norusis, 1988, B-15). The discriminant function for demographic variables is:

$$d = 1.71 (\text{Counseling}) + 1.45 (\text{Behavior Disorder}) + .48 (\text{Perfectionist}) + .34 (\text{Organized}) + .27 (\text{GPA}) - .50 (\text{Grades}) - .53 (\text{Socio-Economic}) - .54 (\text{Psychological Health}) - 4.7.$$

"The standardized canonical discriminant function coefficients are used to determine the relative importance of each variable to the overall discriminant function" (Klecka, 1980, p. 29). Standardizing the discriminant function coefficient adjusts for the unequal units of measurement of the variables. This is done to better judge the variable values than by using the unstandardized function coefficients which are used in the discriminant function. This examination "involves observing the magnitude of the standardized coefficients, ignoring the sign to find

the variables offering the greatest contribution" (Klecka, 1980, p. 29). As Table 6 indicates, counseling made the largest contribution to this function. Each of the other variables is only about one-half, one-third, or one-fourth as strong as counseling in magnitude.

Table 6. Standardized canonical discriminant function coefficients.

Variable	Function 1
Counseling	.677
Psychological Health	.371
Socio-Economic Status	.300
Perfectionist	.281
GPA	.254
Grade	.250
Behavior Disorder	.228
Organized	.161

"A canonical discriminant function is a way of geometrically defining the influence of groups using the group centroids to study the nature of group differences" (Klecka, 1980, p. 17). The canonical discriminant function is used to study the nature of group differences by analyzing the coefficients of group means for their differences. "A good discriminant function is one that has much between-groups variability when compared to within-groups variability" (Norusis, 1988, B-13). Since there are two groups in this analysis, "it was possible to derive one discriminant function that maximized the ratio of the between to the within-groups sums of squares which gave the 'best' separation between the two groups" (B-23).

The total structure matrix is another way of "assessing the contribution of a variable to the discriminant function" (Norusis, B-15). The structure matrix contains the structure coefficients which show the similarity between each individual variable and the total discriminant function (see Table 7). The variables with the highest coefficients have the strongest correlation with the discriminant function. These coefficients can be used to name the discriminant function by showing "how closely the variable and function are related" (Klecka, 1980, p. 31).

Table 7. Structure matrix of standardized canonical discriminant function coefficient for demographics.

Variable	Function 1
Counseling	.736
Psychological Health	-.385
Perfectionist	.367
Socio-Economic	-.311
Behavior Disorder	.307
Self-Concept	-.261
Organized	.177
Low Achiever	.163
Gender	-.142
GPA	.133
Age	-.132
Grade	-.120
Motivation	.118
Persistence	.113
Ethnicity	-.086
Marriage	-.080
Year of College	.078
Geographic	-.045
Learning Disabled	-.037

In this interpreting process, variables with coefficients of .30 and above are generally considered adequate for consideration as close correlations. These coefficients are estimates of the relationship strength between the corresponding variables within the groups. The five variables with correlations above the .30 criterion level were Counseling, Perfectionist, Behavior Disorder, Psychological Health, and Socio-Economic Status.

Based on these variables this discriminant function was named Maltreatment Realities. Over half (60%) of the maltreated participants received psychological counseling while the non-maltreated group reported 14% receiving psychological counseling. Over half (64%) of the maltreated participants reported being perfectionistic as compared to the less than half (41%) of their non-maltreated peers. There were 8% of the maltreated participants reporting being diagnosed as having behavior disorders compared with only 1% of the non-maltreated group.

The psychological health of the maltreated group was reported as lower than the non-maltreated group. There were more fair to poor reports of psychological health for the maltreated groups (28%) than reported by the non-maltreated group (13%). The socio-economic status reported by the maltreated group was lower than the non-maltreated. The maltreated group reported 18% coming from a poor socio-economic background while 7% of the non-maltreated group reported coming from a poor socio-economic background.

Discriminant analysis is also used to classify cases into groups. Classification is "a separate activity in which either the discriminating variables or canonical

discriminant functions are used to predict the group to which a case most likely belongs" (Klecka, 1980, p. 42).

Classification based on the discriminant function uses a linear combination of the variables to maximize the group differences. The average score for a group is called the group centroid. The group centroids for the demographic variables were 1.16 for the maltreated group and .390 for the non-maltreated group. These group centroids are quite distant and good indicators for classification into groups.

Another indicator of effectiveness of the discriminant function is the actual discriminant scores in the group (Norusis, 1988, p. B-13). Separation between the groups is defined by the eigenvalue. The eigenvalue is the statistic that gives the ratio of the between-groups sums of squares to the within groups sums of squares. When there are more than two groups in the analysis, "the function with the largest eigenvalue is the most powerful discriminator, while the function with the smallest eigenvalue is the weakest" (Klecka, 1980, p. 34); however, in this analysis there were only two groups and therefore only one function. Here the eigenvalue was .457, which is a moderate value for classification into maltreated and non-maltreated groups.

In order to gain a better understanding of this discriminant function, the canonical correlation and the Wilks's Lambda also were examined. The canonical correlation is used as the measure for distinguishing the differences between the groups discriminant scores and "is the measure of the degree of association between the discriminant scores and the groups" (Norusis, 1988, B-14). This measure is

"based on a dividing point between the two groups being one half the sum of the discriminant scores for the two group centroids" (Klecka, 1980, p. 49). It is equivalent to eta from the one-way analysis of variance. The canonical correlation of this study was .56. This correlation can be squared to explain "the proportion of variation in the discriminant function explained by the groups" (Klecka, 1980, p. 37). Thus, 31.4% of the variance in this discriminant function is explained by the maltreated and non-maltreated groups.

The Wilks's Lambda is then used as the statistic which takes into consideration both the differences between groups and the cohesiveness or homogeneity within groups (Klecka, 1980, p. 54). It is different from the canonical correlation because it explains "the ratio of the within-groups sum of squares to the total sum of squares" (Norusis, 1988, B-14). "It is the proportion of the total variance in the discriminant scores not explained by differences among groups" (p. B-14). "Values of lambda which are near zero denote high discrimination. As lambda increases toward its maximum value of 1.0 it is reporting progressively less discrimination" (Klecka, 1980, p. 39). "A lambda of one occurs when the mean of the discriminant scores is the same in all groups and there is no between groups variability (Norusis, 1988, p. 14). The Wilks's Lambda obtained from the demographic variables was .687, which shows moderate variability between and within the maltreated and non-maltreated groups.

The classification results for the demographics included all 198 cases. The discriminant score was 80.8% accurate in classifying cases. For Group 1, the

maltreated group, 72% (36) out of the 50 participants were correctly placed within this group, and 28% (14) were incorrectly placed. For classification into Group 2 the non-maltreated group, 84% (124) of the 148 participants were correctly placed and 16% (24) were incorrectly placed. "The proportion of cases correctly classified indicates the accuracy of the procedure and indirectly confirms the degree of group separation" (Klecka, 1980, p. 49). Based on a chance placement of 50% for two groups, the discriminant function was a 30.3% improvement over chance placement into either group. The discriminant variable scores above .30 demonstrated that this discriminant function could produce recognizable predicative variables that are accurate and which will explain prediction above chance level into maltreated and non-maltreated groups.

Discriminant Analysis and LASSI Data

In the second analysis, the LASSI subscale scores were used as the discriminating variables to distinguish between the maltreated and non-maltreated groups. There were a total of 176 cases included in the analysis. There were 42 maltreated and 134 non-maltreated participants. A total of 22 participants were not used because at least one of the discriminating variables was missing from the respondents data. The LASSI subscales scores used as discriminating variables were Attention, Motivation, Time Management, Anxiety, Concentration, Information Processing, Selecting Main Ideas, Study Aids, Self-Testing, and Test Strategies. Table 8 contains the calculated means and standard deviations for these groups.

Table 8. Group means and standard deviations for maltreated and non-maltreated LASSI data.

	Maltreated		Non-Maltreated	
	Mean	SD	Mean	SD
Anxiety	24.8	7.88	26.6	6.80
Attention	33.1	4.48	32.5	4.89
Concentration	26.9	5.82	26.9	5.51
Information Processing	28.4	5.81	27.4	5.42
Selecting Main Ideas	18.4	4.17	19.3	3.48
Motivation	31.1	5.47	30.4	5.67
Self Testing	24.9	5.68	25.2	5.62
Study Aids	25.9	5.25	24.7	4.92
Time Management	25.1	6.54	24.2	6.88
Test Strategies	29.8	5.81	30.7	4.91

A significance test of univariate equality was used as the measure to differentiate between the group means on each variable. The f values and their significance for these means were tested at the .05 significance level. This test was conducted to test the hypothesis that all group means are equal (see Table 9).

There were no variables that had observed significance levels less than the criterion level of .05. The hypothesis that all group means were equal was accepted. Thus, the means of the maltreated and non-maltreated groups were the same in all of the LASSI variables. Thus, univariate analysis of these variables indicated that the LASSI subscales may not be useful variables for a class analysis because of the lack of variance between the two groups on these scales.

Table 9. Tests for univariate equality of LASSI group means.

Variable	F	Significance
Anxiety	2.170	.143
Attention	.498	.481
Concentration	.292	.957
Information Processing	1.204	.274
Motivation	.434	.511
Selecting Main Ideas	1.850	.176
Self Testing	.767	.782
Study Aids	1.940	.165
Test Strategies	1.100	.295
Time Management	.560	.455

The pooled within-groups correlation matrix of predictor variables was inspected for interaction within the groups on the LASSI. These correlations showed the majority of the LASSI variables were strongly correlated when divided into maltreated and non-maltreated groups. The 42 possible correlations were distributed as follows: 8.0 to 7.1--2, 7.0 to 6.1--8, 6.0 to 5.1--9, 5.0 to 4.1--10, 4.0 to 3.1--6, 3.0 to 2.1--6, 2.0 to 1.1--1. Because the within group correlations were so strong, the variables from the LASSI shared variance and are not good variables to use as predictors of relationships between the maltreated and non-maltreated groups.

A stepwise procedure was used to discriminate which LASSI variables were the best variables for discriminating between the maltreated and non-maltreated groups. The stepwise procedure identified 4 variables producing the greatest discrimination. The analysis stopped at Step 4 because the f levels for the

remaining variables indicated the variance beyond this point was too small to be significant for further inclusion. Table 10 lists the final action taken in this analysis. There was only one variable which was below .05.

Table 10. Summary of selected LASSI discriminate variables.

Variables	Wilks's Lambda	Significance
Anxiety	.988	.142
Information Processing	.971	.079
Selecting Main Ideas	.958	.062
Attention	.944	.043

In the study there were 4 unstandardized canonical discriminant function coefficients which were used to construct the discriminant function. These 4 variables contributed to the discriminant function for discrimination between the maltreated and non-maltreated groups. The discriminant function for the LASSI variables is:

$$d = .73 (\text{Anxiety}) + .24 (\text{Selecting Main Ideas}) - .13 (\text{attention}) - .14 (\text{Information Processing}) - 1.54.$$

The standardized canonical discriminant function coefficients were used to determine the relative importance of each variable to the overall discriminant function (Klecka, 1980, p. 29). The standardized canonical discriminant functions for the LASSI were .866 (Selecting Main Ideas), .759 (Information Processing),

.614 (Attitude), and .514 (Anxiety). Selecting main ideas made the largest contribution to this function. The rest of the variables made nearly as strong contributions which also contribute equal importance to this discriminant function.

The total structure matrix contains the standardized canonical structure coefficients which show the similarity between each individual variable and the total discriminant function (see Table 11). The variables with the highest coefficients have the strongest discrimination function and are used in naming the discriminant function. Variables with coefficients above .30 are considered adequate for this process.

Table 11. Structure matrix of standardized canonical discriminant function coefficients for LASSI.

Variable	Function 1
Anxiety	.460
Selecting Main Ideas	.425
Information Processing	-.343
Study Aids	-.333

The four variables with correlations above the .30 criterion level were Anxiety, Selecting Main Ideas, Information Processing, and Study Aids. Although a discriminant function was produced by the analysis, it was not strong enough to be a good device for discriminating between the maltreated and non-maltreated

groups. These scores are indicative that the LASSI inventory is not a good indicator of classification into maltreated and non-maltreated groups.

The canonical discriminant function evaluated at the group centroids were $-.430$ for the maltreated group and $.135$ for the non-maltreated group. These group centroids are moderately close and are not good indicators for classification into groups.

The discriminant scores reported for the LASSI was an eigenvalue of $.06$ which is a low value for classification into groups. The canonical correlation was $.24$; this only explains 6% of the variance of the groups. The Wilks's Lambda was $.944$ that shows little variability between and within the maltreated and non-maltreated groups. Thus, the high Wilks's Lambda and the low canonical correlation indicate that there are weak differences between these variables and the function shows little separation between groups.

The classification results for the LASSI included 148 cases. The discriminant score was 59.4% accurate in classifying cases. For Group 1, the maltreated group, 51% (23) out of the 45 maltreated participants were correctly placed within this group and 38% (53) were incorrectly placed. For classification into Group 2, the non-maltreated group, 62% (87) of its 140 participants were correctly placed, and 38% (53) were incorrectly placed. Based on chance placement of 50% for the two groups, the discriminant function was only 9.4% improvement over chance level.

Discriminant Analysis and Combined Group Variables

In the third analysis, the demographic variables and the LASSI subscale scores were both used as the discriminating variables to distinguish between the maltreated and non-maltreated groups. There were a total of 176 cases included in the analysis. There were 42 maltreated and 134 non-maltreated participants. A total of 22 participants were not used because at least one of the discriminating variables was missing from the respondents data. Table 12 shows the means for each of the variables in the groups to help identify the differences between the groups.

A test of univariate equality was used as the measure to differentiate between the group means on each variable. The f values were tested at the .05 significance level. This test was conducted to test the hypothesis that all group means were equal. There were six variables that had observed significance levels less than the criterion level of .05. These were Age, Counseling, Behavior Disorder, Socio-Economic Status, Perfectionist, and Psychological Health. Thus, the means of the maltreated and non-maltreated groups were not the same in less than one-third of the combined variables.

The pooled within-groups correlation matrix of predictor variables was inspected for variable interaction within the groups. Of the 421 possible correlations, the results were 8.0 to 7.1--2, 7.0 to 6.1--8, 6.0 to 5.1--9, 5.0 to 4.1--21 with the other 381 falling below the 4.0 level. This examination revealed weak

Table 12. Group means and standard deviations for maltreated and non-maltreated combined variables.

	Maltreated		Non-Maltreated	
	Mean	SD	Mean	SD
Anxiety	24.80	7.88	26.60	6.81
Age	31.00	9.64	26.80	9.91
Attention	33.10	4.48	32.60	4.89
Behavior Disorder	1.90	.30	2.01	.01
Concentration	26.90	5.82	26.90	5.51
Counseling	1.36	.49	1.85	.36
Ethnicity	3.07	.46	3.01	.51
Geographic	1.83	.83	1.75	.92
Gender	1.71	.46	1.57	.45
GPA	2.17	.80	2.39	.94
Grades	1.60	.50	1.51	.50
Information Processing	28.40	5.81	27.40	5.42
Learning Disabled	2.00	.01	1.93	.28
Low Achiever	1.69	.70	1.81	.50
Marriage	1.67	.79	1.45	.68
Motivated	1.02	.35	1.09	.36
Motivation	31.10	5.48	30.40	5.67
Organized	1.04	.54	1.17	.45
Perfectionist	1.14	.57	1.51	.57
Persistence	1.02	.41	1.11	.41
Psychological Health	2.14	.72	1.83	.66
Selecting Ideas	18.40	4.17	19.30	3.48
Study Aids	25.90	5.25	24.70	4.92
Self Concept	2.17	.77	1.91	.74
Self Testing	24.90	5.68	25.20	5.62
Socio-Economic	2.29	1.00	2.01	.38
Test Strategy	29.80	5.81	30.70	4.91
Time Management	25.10	6.54	24.20	6.90
Year in College	3.26	1.25	3.35	1.32

within-group correlations, which means the combined variables are good variables to use as predictors of relationships between the maltreated and non-maltreated groups.

A stepwise procedure was used to discriminate which combined variables were identified as the best predictor variables. The stepwise procedure identified 8 variables which are summarized in Table 13. The analysis stopped at Step 14 because the f levels for the remaining variables indicated the variance beyond this point was too small to be significant for further action.

Table 13. Summary of selected combined discriminate variables.

Variables	Wilks's Lambda	Significance
Counseling	.774	.001
Perfectionist	.730	.001
Behavior Disorder	.710	.001
Socio-Economic	.693	.001
Psychological Health	.682	.001
GPA	.676	.001
Grades	.662	.001
Test Strategies	.655	.001

Nine variables with high unstandardized canonical discriminant function coefficients were included in the discriminant function.

$$d = 2.10 (\text{Behavior Disorder}) + 1.75 (\text{Counseling}) + .67 (\text{Perfectionist}) + .38 (\text{GPA}) + .07 (\text{Test Strategies}) - .56 (\text{Grade}) - .37 (\text{Socio-Economic}) - .26 (\text{Psychological Health}) - .06 (\text{Attitude}) - 7.20.$$

The standardized canonical discriminant function coefficients are used to determine the relative importance of each variable to the overall discriminant function (Klecka, 1980, p. 29). The standardized canonical discriminant functions for the combined variables were .686 (Counseling), .383 (Perfectionist), .376 (Test Strategies), .346 (GPA), .303 (Behavior), -.284 (Attitude), -.281 (Grade), -.217 (Socio-Economic), and -.174 (Psychological Health). Counseling is the variable making the largest contribution to this function. The remaining variables are half as strong showing that they are only half as strong as counseling.

The total structure matrix contains the structure coefficients which show the similarity between each individual variable and the total discriminant function. Three out of 30 variables had correlations above the .30 criterion level. These variables were used to name the canonical function. They were Counseling .727, Behavior Disorder .380, and Perfectionist .376. Based on the strength of the positive values of Counseling, Behavior Disorder, and Perfectionist this discriminant function was named Maltreated Succeeders.

Counseling is one way that maltreated people overcome the effects of childhood maltreatment. More than half (60%) of the maltreated group received counseling while only 15% of the non-maltreated group received counseling. There were 8% of the maltreated group diagnosed as behavior disordered in school while there was only 1% of the non-maltreated group indicating being diagnosed as having a behavior disorder. There were also more than half (64%) of the maltreated group identifying themselves as being perfectionistic while only 41% of the

non-maltreated group identified themselves as being perfectionistic. Maltreated succeeders as compared to the non-maltreated group have the traits of being more perfectionistic, have been labeled as behavior disordered more frequently and have received more psychological counseling. The maltreated succeeders as a group are performing adequately for success in college.

Classification based on the canonical discriminant function at group means was -1.32 for the maltreated group and $.414$ for the maltreated group. These group centroids are quite polar and are good indicators for classification into groups.

The eigenvalue which shows separation between the groups was $.553$. This eigenvalue is a moderate value for classification of cases into the maltreated and non-maltreated groups.

The canonical correlation was reported as $.60$. The squared proportion of this correlation is 36% which explains the variance classifying groups into maltreated and non-maltreated groups.

The Wilks's Lambda reported for the combined variables was $.644$. This explains moderate between groups variability. The classification results for the combined variables included 194 cases. The discriminant score was 81.4% accurate in classifying cases. For Group 1, the maltreated group, 69% (33 of the 48 maltreated participants) were correctly placed with 31% (15) incorrectly placed. For classification into Group 2, the non-maltreated group, for its 146 participants 86% (125) were correctly placed and 14% (21) were incorrectly placed. Based on a chance placement of 50% for two groups, the discriminant function was 31.4%

improvement over chance placement into either group. The discriminant variables with scores over .30 demonstrated that this discriminant function could produce recognizable predictive variables. The canonical correlation could also explain for 36% of placement over the chance level for classification into maltreated and non-maltreated groups.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this research investigation was to study the learning abilities of college students who experienced childhood maltreatment. It investigated whether college students' current learning and study strategies were affected by childhood maltreatment interfering with the cognitive and developmental processes associated with learning.

To accomplish this investigation a demographic data form was used as a tool for self-identification of the maltreated and non-maltreated participants and to elicit information that dealt with student learning. The study also utilized the Learning and Study Strategy Inventory (LASSI) to measure the learning and study strategies of the 229 individuals that participated in the study. After incomplete data were removed, 198 actual cases were used for the analyses.

Discussion of the Findings

The summary of findings of this study is divided into three parts:

(a) the data regarding the demographic characteristics of the maltreated and non-maltreated groups, (b) the data regarding the learning and study strategies of college students who were maltreated and non-maltreated, and (c) the statistical

analyses of the study. The study used frequencies, *t*-tests, and discriminant analysis to determine whether there were relationships between the total, maltreated and non-maltreated group variables with the demographics, LASSI inventory, and both of these combined.

Demographic Variables and Maltreatment Characteristics

The study found that 50 participants, 14 males and 36 females, were maltreated either sexually, physically, psychologically or in a combination of ways. Psychological abuse dominated as reported in 11% of the cases. Four percent reported sexual abuse; 4% a combination of physical and psychological abuse; 3% a combination of sexual, physical and psychological abuse; 2% a combination of sexual and physical abuse; and 2% physical abuse.

The two groups differed significantly in 9 out of the 19 demographic variables on a test of univariate equality. The mean age of the maltreated group (31) was older than the non-maltreated group (26). This finding is interesting because the effects of maltreatment evolve and vary with the individual's awareness of the abuse. Studies show that people who were maltreated repress their memories until they are far enough away from the perpetrator or maltreating situation to be able to understand what went on. Episodic memory which stores memories and past experiences allows for these repressed memories to surface at a later time. Repression and forgetting of abusive memories is a way of distancing from the abuse. "It is only later, in adulthood, when there is a distance from the

abuse, that the individual can contemplate change" (Lew, 1990, p. 96). This may account for why the older respondents reported more maltreatment occurrences.

There were more females that reported childhood maltreatment than males who reported it. In this study there were 36 females and 14 males who reported being maltreated. This is in accord with the literature which points out that societal standards do not allow for males to be victimized. "Frequently a male survivor will feel that he must conceal the fact that he was abused, for fear that he will be rejected, disdained, or exposed to ridicule" (Lew, 1990, p. 42). Also, "it has often been noted that males are less likely than females to admit distress" (Seidner, 1985, p. 10).

There were 38% seniors, 32% juniors, and 10% graduates reporting the most frequencies of maltreatment. This statistic is similar to older age reported above since distance makes one more aware of the abuse. "You need time and distance to regain your equilibrium and gain enough perspective to begin recovery work" (Lew, 1990, p. 45).

An interesting contradiction to the literature was found in grade point average. The maltreated students' grades (62%) were better than the non-maltreated group's (50%) in the A to B range. Academically, according to their grades, the maltreated students are outperforming their non-maltreated peers in grade point average. This finding could also be accounted for by the higher number of participants coming from the upper level college classes.

There were more maltreated participants that received psychological counseling (60%) than non-maltreated (14%). This finding shows that the majority of maltreated participants had received counseling for the maltreatment, which may be one of the reasons why they were succeeding in college and that they admitted it.

There was a greater incidence of being labeled behavior disordered among the maltreated (8%) as compared to the non-maltreated (1%). This finding is consistent with the literature. There are "higher frequencies of academic difficulties and behavior problems" (Heilig, 1990, p. 34) associated with maltreatment.

The maltreated participants were raised primarily in middle class (74%) environments, with 18% in poor and 1% in wealthy socio-economic settings. In contrast, the non-maltreated participants were raised in middle class (88%), poor (7%), and wealthy (5%) situations. This finding that maltreatment knows no socio-economic boundary is consistent with the literature.

Over half of the maltreated participants (64%) stated that they were perfectionists while only 41% of the non-maltreated stated they were perfectionists. Perhaps the significance of this finding is that students who were maltreated may have become perfectionists due to the childhood maltreatment. Perfectionism is a positive quality for success in higher education.

Difference in reported self-concept status was also found to be significant. In the maltreated group, 68% felt their self-concept was excellent or good, and 16% felt it was fair or poor. For the non-maltreated group, 85% felt their self-concept

was excellent or good, and 10% felt it was fair or poor. The self-concepts reported by the non-maltreated participants were better than the maltreated group. This finding is consistent with the literature which states "that maltreated children possess lower self-concepts and are more likely to maintain these negative self-concepts" (Cryan, 1985, p. 388). It is here that educators must be aware of how maltreatment is affecting their students' self-concepts, and care must be taken even at the college level to reinforce self-concepts of maltreated students.

The psychological health of the maltreated participants was reported as lower than their non-maltreated cohorts. The maltreated participants reported their psychological health as 72% excellent to good with 28% fair to poor. The non-maltreated reported their psychological health as 88% excellent to good with 13% fair to poor. These differences are consistent with the literature which states that the related symptoms of maltreatment include symptoms of stress disorders, psychosomatic complaints, sadness and depression, loneliness, and fear (Boyd & Klingbiel, 1990); all of them can affect a person's psychological health.

LASSI Scales and Participant Characteristics

This study investigated how long-term effects of childhood maltreatment impacted college students' cognitive abilities. The normed scores of the LASSI were compared with the learning and study strategy scores of the total, the maltreated, and the non-maltreated participants. The total group of participants at

Montana State University scored significantly better on half of the LASSI subscale scores than the normed group. This finding is of interest because childhood maltreatment did not effect the learning and study strategies of the participants studied as measured by the LASSI inventory.

Discriminant Analysis

In order to predict what learning and study strategy variables divided the cases into maltreated and non-maltreated groups discriminate analysis was used. This procedure was used to predict maltreated and non-maltreated group membership through demographic variables, the LASSI subscale scores and both of these combined variables together. A stepwise method was applied that sequentially "selects variables until they no longer contribute to the function's ability to discriminate between groups' (Seidner, 1985, p. 6).

The first discriminant analysis examined how the maltreated and non-maltreated groups were identified by the variables in the demographic data. This study found that discrimination between groups of maltreated and non-maltreated participants could be performed on the basis of demographic variables alone. Classification into the maltreated and non-maltreated groups could be achieved with 80.3% accuracy by using the discriminant function. The discriminant function was named Maltreatment Realities. This discriminant analysis was named Maltreatment Realities because the variables of counseling, perfectionism, behavior disorder, psychological health, and socio-economic status

were good indicators of predicting students in the maltreated group. The realities of the effects of childhood maltreatment can be used to differentiate between college students.

The second discriminant analysis dealt with the question of using the LASSI variables to distinguish between the maltreated and non-maltreated groups. These variables were not useful in distinguishing between the groups. Placement into the maltreated group occurred with only 59% accuracy in correctly classifying the maltreated and non-maltreated participants. This was only 9% over chance placement. The LASSI is not a good predictor of distinguishing between maltreated and non-maltreated groups, because the maltreated group did as well as the non-maltreated group on this instrument. This result is not in accord with the demographic findings or with the negative findings stated in the literature. Childhood maltreatment appears not to affect the learning and study strategies of these college students as tested by the LASSI inventory.

The third discriminant analysis used the demographic variables and the LASSI subscale scores as the discriminating variables used to distinguish between the maltreated and non-maltreated groups. The combination of the variables showed very little difference over the demographic variables alone when classifying into maltreated and non-maltreated groups. This discriminant function was 82.4% accurate in identifying cases, which was only 2% better than the demographic variables alone.

Conclusions

This study has shown that some of the effects of childhood maltreatment do carry over into the adult educational environment. This study has also shown that students maltreated in their youth can be successful in the college environment.

There are consistencies in the literature when dealing with the long-term effects of childhood maltreatment. These consistencies are the long-term effects of the maltreatment on self-concept and overall psychological health. The negative effects of the maltreatment on intellectual development, however, appear to have been overcome. Academic performance for the maltreated participants, according to GPA, was better than the non-maltreated participants.

The second conclusion of the study obtained from the *t*-tests was that the LASSI inventory was not an adequate instrument for measuring childhood maltreatment effects on academic abilities. The reason for this may be the age of the participants in the study. The average age of the participants was 28, and the LASSI is geared more toward the traditional 18-year-old student. It is apparent that the participants had dealt with the issues of childhood maltreatment and that its effects on learning styles and study strategies were not issues.

The variables of psychological counseling, psychological health, perfectionism, behavior disorder, and socio-economic status were good indicators that a student was maltreated in childhood. From this, it can be concluded that

maltreated children can be successful in college provided they seek psychological counseling dealing with issues of psychological health and perfectionism.

Recommendations

1. A more in-depth study should be undertaken for specific answers to how older students overcome the effects of childhood maltreatment in the educational environment. This approach will take a deeper look into the affective aspects of learning over the more quantitative behavioral characteristics of learning.

2. It is recommended that further studies be conducted that empirically test if the effects of childhood maltreatment do in fact impact the learning abilities of college students. The focus for these studies could specifically measure not only the effects of maltreatment on the cognitive aspects of learning, but more on the effects of the affective aspects of learning. This combination would allow for an assessment that explains how maltreated students have overcome maltreatment effects. Motivation, attention, perception, and both short-term and long-term memory can be measured by specific affective assessment instruments in addition to using the in-depth interviews. Possible avenues for exploration are innate intelligence, perfectionistic qualities, significant others, and counseling intervention. "Child sexual abuse research needs to account for variance in the range of outcomes from relatively disorder-free subjects who report low self-esteem, shame, and interpersonal distress to dramatically impaired individuals with formal psychiatric disorders (Cole & Putnam, 1992, p. 180).

3. It is recommended that further research be conducted with community college students to test if the results found in this study are congruent with the maltreated and non-maltreated students at a two-year college. The reason for this research would be to examine how the university student compares to the two-year college student. Possible avenues for exploration are assessing maltreated and non-maltreated community college students' learning abilities with the university students' learning abilities.

4. It is recommended that further study be conducted on the consequences of perfectionism as a coping mechanism with maltreated adults who attend college and those who do not attend college.

5. It is recommended that educators be made aware of childhood maltreatment and its effects on self-concept through in-service education. All educators need to be aware that negative self-concept is a reality for maltreated students and a life-long occurrence. It is also advisable to explain how learning problems and deficiencies are associated more with maltreated students than with non-maltreated students.

6. It is recommended that longitudinal learning studies be performed with elementary aged maltreated children and then these same children be retested at high school and/or college age to search for learning discontinuities.

"Developmentally focused research on the effects of child sexual abuse needs to include well-conceptualized cross-sectional studies, short and long-term prospective studies of identified cases, and the assessment of the occurrence of sexual abuse in

large longitudinal samples that follow individuals from infancy to adolescence or adulthood" (Cole & Putnam, 1992, p. 180).

7. It is recommended that parents be educated on how the effects of maltreatment may influence children in the educational setting in both cognitive and social development. This study has shown that maltreated children can be resilient, but others may not have been this resilient.

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APPENDICES

APPENDIX A
DEFINITIONS OF MALTREATMENT

Definitions of Maltreatment

The following definitions will apply for these terms used in the study. These definitions are meant to serve as guidelines, they are not conclusive.

1. **Sexual Abuse:** Sexual abuse is defined as contacts or interactions between a child (male or female under the age of 18) and an adult (more than 5 years older than the victim), when the child is being used for the sexual stimulation of the perpetrator or another person. A perpetrator is defined as a person who is in a position of power or control over the victim (family member, relative, friend, stranger, teacher, minister, baby sitter). Sexual abuse means sexual assault, sexual intercourse without consent, indecent exposure, deviate sexual conduct, or incest (Montana School Guidelines, 1990). Included in this definition is fondling, masturbation, oral sex, or the use of the child for pornography (Authier, 1986).

2. **Physical Abuse:** Physical abuse includes any non-accidental physical injury caused by the child's caretaker. By definition the injury is not an accident. Physical abuse may result from over-discipline or from punishment. It may include burning, beating, branding, punching, bruises, or broken and fractured bones (Montana School Guidelines, 1990).

3. **Psychological Abuse:** Psychological abuse as defined for this study is both emotional abuse and neglect. Psychological abuse is behavior that is sufficiently threatening to limit the capacity to work, or to enjoy good physical or mental health (Patrick-Hoffman, 1982). Included in this definition is verbal abuse, rejection, ignoring, bizarre acts of nonphysical torment, or constant lack of concern by the caretaker for the child's welfare (Authier, 1986). Neglect involves constant hunger, poor hygiene, chronically being dirty and unbathed, and having unattended to physical problems or medical needs. Emotional abuse involves being blamed, belittled, or rejected as a child; or constantly being treated unequally to other siblings; or a persistent lack of concern by the caretaker for the child's welfare (Montana School Guidelines, 1990).

APPENDIX B
SURVEY INSTRUMENT

GENERAL INFORMATION Age _____

Year in College: Freshman Sophomore Junior Senior Graduate

Please circle the response that best describes you.

- 1) Gender: a) male b) female
- 2) Marital Status: a) single b) married c) divorced d) separated e) widowed
- 3) Ethnicity:
 - 1) African American 2) Asian 3) Caucasian 4) Native American
 - 5) Hispanic 6) other
- 4) What is your current cumulative Grade Point Average (GPA)?
 - a) 3.6-4.0 b) 3.1-3.5 c) 2.1-3.0 d) 1.1-2.0 e) unsure
- 5) Have you ever been diagnosed as having a learning disability?
 - a) yes b) no
- 6) Have you ever received psychological counseling?
 - a) yes b) no
- 7) Have you ever been diagnosed as having a behavior disorder?
 - a) yes b) no
- 8) Do you perceive yourself as having been maltreated while growing up?
(You may circle more than one if appropriate)
 - a) sexually b) physically c) psychologically
 - d) non-maltreated e) unsure
- 9) In what type of socio-economic status were you raised?
 - a) wealthy b) middle class c) poor
- 10) In what type of geographic area were you raised?
 - a) rural b) suburban c) urban
- 11) What type(s) of student do you feel you are?
 - 1) organized a) yes b) no
 - 2) motivated a) yes b) no
 - 3) persistent a) yes b) no
 - 4) perfectionist a) yes b) no
 - 5) low achiever a) yes b) no

- 12) How would you rate your self-concept; how you feel about yourself?
a) excellent b) good c) fair d) poor
- 13) How would you rate your psychological health?
a) excellent b) good c) fair d) poor
- 14) Do you think your school grades equal your abilities?
a) yes b) no

THANK YOU FOR YOUR HELP. I really appreciate your time and honesty.

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