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**PARENTAL ATTACHMENT AND INVOLVEMENT AS PREDICTORS OF
HIGH SCHOOL STUDENTS' CAREER THOUGHTS**

A Dissertation in

Counselor Education

by

Albert L. Parrillo III

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The dissertation of Albert L. Parrillo III was reviewed and approved* by the following:

Spencer G. Niles
Professor of Counselor Education
Head of the Department of Counselor Education, Counseling Psychology, and
Rehabilitative Services
Dissertation Advisor
Chair of Committee

Jerry Trusty
Professor of Counselor Education,
Counseling Psychology and Rehabilitation Services

Edgar P. Yoder
Professor of Extension Education

James T. Herbert
Professor of Counselor Education/Rehabilitation Services

*Signatures are on file in the Graduate School.

ABSTRACT

This study used ordinary least squares multiple regression to examine 10th-, 11th-, and 12th-grade Career and Technical High (CTC) School students' gender, student disability, student grade, highest education level of most educated parent, parental attachment, and parental involvement on career thoughts and its constructs of Decision Making Confusion (DMC), Commitment Anxiety (CA), and External Conflict (EC). In addition, Cohen's *d* effect sizes and confidence intervals were used to examine for statistically significant difference in 11th- and 12th-grade CTC high school students' Career Thoughts Inventory (CTI) dysfunctional career thinking total scores and subscale scores of DMC, CA, and EC compared to 11th- and 12th-grade academic high school students CTI global and subscale scores. Multiple regression analysis results for 376 CTC high school students suggested that parental attachment subscale scores of Trust and Alienation contributed to dysfunctional career thinking scores and its subscale scores. Also, parental involvement scores contributed to Decision Making Confusion scores whereas no demographic variables contributed to CTI total or subscale scores. Findings between 299 CTC high school students and 396 academic high school students indicate with 95% confidence no statistical significant differences for career thoughts total and CA scores but with 95% confidence statistical significant differences for DMC and EC scores. Limitations of this study and implications for school counselors, high school students, parents, and researchers are discussed.

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CHAPTER I

Introduction

For many years theorists have researched career development of students to find methods for lessening career problems (Jepsen, 1975; Super, 1985; Tiedeman, Katz, Miller-Tiedeman, & Osipow, 1978; Vondracek & Kirchner, 1974). The concept of career development involves the implementation of a series of interrelated or integrated decisions that collectively provide a guiding purpose of direction in one's work life over a person's life span (Peterson, Sampson, & Reardon, 1991; Sampson, Reardon, Peterson, & Lenz, 2004). Specifically, an adolescent's career decisions can be influenced by his or her dysfunctional career thoughts (Sampson, Peterson, Lenz, Reardon, & Saunders, 1996b). According to Corbishley and Yost (1989) dysfunctional thoughts can become manifest in a person's unhealthy behaviors, emotions, and verbal expressions. Also dysfunctional thoughts that relate to self-worth, perfectionism, and overgeneralization were found to lessen the likelihood of a person's well being and job satisfaction (Judge & Locke, 1993). Therefore, identifying adolescents' dysfunctional career thoughts is important in lessening their career and emotional problems by changing any dysfunctional career thoughts into more functional career thoughts.

In addition adolescent career development involves career exploration that includes interactions with family, peers, and workers that impact on the career decision-making process. Career development can become a struggle for adolescents who are uncertain in making decisions and who are uncertain about using family and social networks to help resolve career problems. Furthermore, research on the influence that family (e.g., Penick & Jespen, 1992; Peterson, Stivers, & Peters, 1986), and more

specifically parents (e.g., Blustein, Walbridge, Friedlander, & Palladino, 1991; Downing & D'Andrea, 1994; Kracke, 1997; Middleton & Loughead, 1993; Palmer & Cochran, 1988; Trusty, 1996; Trusty, Watts, & Erdman, 1997) have on adolescent career decisions and exploration has grown over the past few decades. However, the impact of adolescents' perceptions of parental attachment and parental involvement on adolescents' dysfunctional career thoughts has not been examined. Also, the research examining parental attachment and parental involvement on dysfunctional career thoughts has been done on college students and adults in community settings.

The significance of collecting and researching current data on high school students' career thoughts can prevent some of the career problems that occur when high school students graduate to post secondary institutions, military, or employment. Specifically the Cognitive Information Processing model (CIP) (see Peterson et al., 1991; Sampson et al., 1996b; Sampson et al., 2004) can be used as a proactive solution by counselors, teachers, students, and parents for improving high school students' career decision making processes and preventing high school students from making career choices that guide them down the wrong career paths. Students, parents, teachers, and counselors can also use the CIP approach to help avoid students' decisions to dropout of school or fail out of school. Identifying high school students' dysfunctional career thoughts can also lessen the chances of students having future emotional problems (Corbishley & Yost, 1989) and becoming dissatisfied with future jobs (Judge & Locke, 1993).

Statement of the Problem

When it comes to making career choices some adolescents are certain about their choices whereas others are less certain. How do adolescents differ in making career decisions, specifically poor decisions, when they are faced with similar career options? Peterson et al. (1991) proposed that some adolescents make poor decisions because they have inaccurate or dysfunctional thoughts about themselves and their situations. According to the Cognitive Information Processing model the opposite would also hold true for adolescents making good choices: (i.e., they have accurate and functional thoughts about themselves and their situations). The primary issue is adolescents who make poor decisions may have negative self-thoughts causing them to miss viable career opportunities. Therefore, the problem for adolescents who fail to identify negative thoughts about themselves and their career situations may continue to make unfulfilling career decisions.

Adolescents during the high school years encounter many opportunities and challenges. For example, some adolescents will get involved with sports, music, and make lasting friendships while others will become involved with drugs, drop out of school, and be uncertain about their futures (Herr, 1999). The National Center for Education Statistics (2008) found that the national rate for student dropouts was 3.9% for the school year 2004-05. In addition, the Pennsylvania Department of Education (n.d.) found students dropped out of school because academic and behavioral problems, disliking school, pregnancy/child care, wanting to work, and expulsion. To help retention students can use the Cognitive Information Processing model to lessen inaccurate thoughts about their situations and improve on their career decision making skills. School

counselors can share this information with parents so they can better understand how their interaction and involvement can influence their children's choices. Adolescents can also use this information to understand the influence their interactions with their parents has on their career thoughts by viewing their parents as a resource in their career or general decision making processes. Ultimately, students will be able to make healthier choices by changing beliefs about themselves, family, friends, and work.

As noted earlier, an important influence in adolescents' career decision making process concerns parental attachment and involvement. Parental attachment is defined by the amount of trust adolescents have in their relationships with their parents. Specifically, the quality of parental attachment that adolescents have with parents or guardians can influence adolescent career development (Ainsworth, 1989). Meaning adolescents who have secure relationships with their parents have developed a functioning decision making model that help them in solving problems. The opposite would be true for adolescents who have an insecure parental attachment. Also, parents' involvement by expressed levels of demand and response towards their adolescents' behaviors can influence adolescent career development (Trusty et al., 1997). Parent involvement represents students' perceptions of parents' involvement in their education, career development, and personal lives. Therefore, adolescents' perceptions of their parents involvement in their lives might influence adolescents' career thoughts and impact adolescents' career decisions. Additionally, there are no research findings involving the influences parental attachment and parental involvement has on the career thoughts of high school students.

In high schools there are a number of students who have disabilities. According to the National Education Center for Education Statistics (2007) there are 6,033,425 children between the ages of 6 to 21 served by public education under the Individuals with Disabilities Act in 2004. Of the 982 possible 10th, 11th and 12th grade students who completed surveys for this study, 347 of them have a disability. That is 28% of the possible student sample size that might influence the results based on their perceptions about career thoughts and family relationships. Strauser, Lustig, and Uruk (2004) found a significant difference between college student with disabilities and without disabilities on scores measuring their career thoughts. Another reason to include students who have disabilities is because my review of the literature found no research on high school students who have disabilities with career thoughts, but my review of the literature found only studies on college students and individuals in the community who have disabilities with career thoughts (e.g., Dipeolu, Reardon, Sampson, & Burkhead, 2002; Lustig & Strauser, 2003; Strauser, Lustig, Keim, Ketz, & Malesky, 2002; Strauser et al. 2004; Yanchak, Lease, & Strauser, 2005).

Finally, high school student gender, grade, and SES will be examined because there are no research findings on these variables on career thoughts. Sampson et al. (1996c) is the only study found that included high school students' gender, grade, and SES status on career thoughts. According to Sampson et al. they designed the Career Thoughts Inventory (CTI) to measure career thoughts that tend to be common across groups (p.38).

Theoretical Framework

The theories guiding this study are Peterson's et al., (1991) Cognitive Information Processing (CIP) model, Baumrind's (1966, 1991b) theory of parenting style, and Bowlby's (1969/82, 1973, 1980) theory of attachment. The first theoretical framework, Cognitive Information Processing model, is used to define thought processes that individuals undergo to solve career problems. This theory is based on the assumption that career decisions require individuals to effectively process information in the domains of: (a) self-knowledge; (b) occupational knowledge; (c) decision-making skills; and (d) executive processing (Sampson et al., 2004). Sampson et al. suppose that dysfunctional thinking in any of the four domains could impair an individual's ability to solve career problems and to make career decisions. The CIP is based on Beck's cognitive therapy approach to mental health (Beck, 1976; Beck, Rush, Shaw, & Emery, 1979; Beck, Emery, & Greenberg, 1985). Beck theorized that illogical, distorted, or dysfunctional thinking creates blind spots or self-deceptions within an individual that causes them to have negative emotions and behaviors.

Bowlby's (Ainsworth et al. 1978; 1969/82, 1973, 1980) attachment theory was used as the theory that defines adolescent attachment to their parents. Bowlby (1982) defines attachment as a life-long, distinct behavioral system whose goal is proximity to the primary caretaker. Bowlby describes two types of attachment, secure and insecure, as being based on parent responses to child and child responses to parent in times of stress during the infancy development stage. Ultimately, a child who has a secure attachment to his parents is likely to develop trusting, caring, and loving relationships as he or she matures and therefore he or she would be better adjusted (Armsden, & Greenberg).

Ainsworth et al. later broke down Bowlby's attachment styles into secure, ambivalent, and avoidant.

According to Darling and Steinberg (1993) a majority of the writings on parental involvement over the past 25 years has come out of research on parenting style theory of Baumrind (Trusty & Lampe, 1997). Therefore, the theoretical framework for parental involvement will be Baumrind's (1966) theory of parental control. The assumption is that parents who are more involved will exact authoritative control and direct their children's activities in a rational attempt to foster responsible conformity to group standards and foster individual self-assertive autonomy (Baumrind, 1966, 1989, 1991). A further description of each of these theoretical models will be explored in the next chapter.

Research Questions

The research questions for this study developed from my review of the literature by examining articles that discussed findings related to the dependent and independent variables on this studies population of high school students. Therefore the participants add a unique feature to this study because a search of the literature on parental attachment and involvement with career thoughts found no studies on my population of high school students. The participants are career and technical students in 10th-, 11th-, and 12th-grade. From this point the participants in this study will be referred to as Career and Technical Center (CTC) high school students.

This study will examine the independent and correlated effects of student gender, student disability, student grade, highest education level of most educated parent, attachment relationships, and parental involvement on the career thoughts of 10th-, 11th-, and 12th-grade CTC high school students. Career and technical students' career thoughts

will be compared to academic students' career thoughts. Also, a measure for social desirable responding will be used as a control variable to lessen participant response bias (Paulhus, 1991). Therefore, the following research questions are posed:

Research Question 1

What are the independent and correlated effects of student gender, student disability, student grade, highest education level of most educated parent, attachment relationships, and parental involvement on the career thoughts of 10th-, 11th-, and 12th-grade CTC high school?

Research Question 2

Is there a statistically significant difference in 11th- and 12th-grade CTC high school students' CTI global and construct scores compared to 11th- and 12th-grade academic high school students CTI global and construct scores?

Significance of the Study

This study will add to the research knowledge regarding the career development of high school students' by examining their career thoughts using the Cognitive Information Processing Model (CIP, Peterson et al., 1991) in conjunction with the influences of parental involvement (Baumrind, 1966, 1989, 1991a, 1991b) and attachment (Ainsworth, Blehar, Water, & Wall, 1978; Bowlby, 1969/82, 1973, 1980). As previously mentioned the participants in this study add a unique feature because a search of the literature with the independent variables found no studies on high school students.

The findings of this study could provide important information in the area of counseling practice. Through use of the CIP model this study might find important information for school counselors that they can apply in helping students experiencing

dysfunctional career thinking due to a possible insecure attachment or permissive parents. Counselors could use this information to teach students how to improve their career decision making skills by learning how to restructure inaccurate career thoughts. For example, a student who has an unhealthy parental attachment and permissive parents might end up with the following thought: “My parents don’t care what I do for a career they just ignore me when I try to talk about my future, and now I feel so anxious when I have to make a decision that I can hardly think” (Sampson et al., 1996b, p. 16). The student would first identify his/her inaccurate career thought about not being able to think and feeling anxious because of having to make a decision. Next, he or she would challenge the old thought and then alter the old thought with a new thought acknowledging “*It can be difficult to make decisions, but I have made tough decisions my whole life despite my parents’ approval or disapproval*”. Therefore, if students can identify that they might have dysfunctional thoughts about themselves in concurrence with poor parental relationships then they might be able to act on their dysfunctional thoughts and become better career problem solvers and problem solvers in general.

This study could add to school counselors’ tools for teaching students and parents the importance their interactions and relationships have in developing effective career problem solving skills. Through use of attachment theory and authoritative parenting theory students can discuss and identify with their parents issues of trust and involvement in their parent-child relationship. Next, students and parents could learn to work together to improve their relationships and work together to solve student career problems. Therefore, students would have a healthier psychological working model for processing information about themselves, parents, peers, and workers.

Finally, this study may add information to the research literature related to the career thoughts of CTC students with and without learning disabilities. Results from this study could raise awareness of counselors and teachers working in career and technical centers related to how students' learning disabilities can influence their career thoughts and influence their career development. Counselors and teachers can then use the CIP approach to lessen their students' negative career thoughts and improve their abilities to make better career choices.

Definition of Conceptual Terms

Attachment- Bowlby (1982) defines attachment as a life-long, distinct behavioral system whose goal is proximity to the primary caretaker.

Career- a time extended working out of a purposeful life pattern through work undertaken by the person (Reardon et al., 2000a, p. 6).

Career and Technical Center High School Students- They are students attending a public high school that prepares them for academic subjects and training in a specific career program (i.e., automotive technology, medical assisting, graphic Communication etc...).

Career Decisions- includes choices individuals make about occupations, education, training, and employment (Sampson et al., 2004, p. 7).

Career Development- involves the implementation of a series of interrelated or integrated career decisions that collectively provide a guiding purpose of direction in one's work life over a person's life span (Peterson et al., 1991; Sampson et al., 2004).

Career Problem- involves a gap between a person's current career situation and future career situation that he or she desires (Peterson et al., 1991, p. 5).

Career Thoughts- involves outcomes of one's thinking about assumptions, attitudes, behaviors, beliefs, feelings, plans, and/or strategies related to career problem solving or decision-making (Sampson et al., 2004, p. 91).

Dysfunctional Career Thinking- occurs when an individual's ability to think or process information for solving career problems or making career choices is impaired by inaccurate or irrational cognitions (Sampson et al., 2004).

Definition of Operational Terms

Attachment Relationships- is operationalized using the revised version of the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987, 1989). It measures levels of Trust, Communication, and Alienation in mother, father, and peer relationships.

Parental Involvement- is operationalized by Trusty, Watts, and Erdman's (1997) factor analyses on several Student Survey items from the National Education Longitudinal Study of 1988 (NELS:88). It represents students' perceptions of parents' involvement in their education, career development, and personal lives.

Social Desirability- is operationalized by Paulhus' (1984, 1991) Balanced Inventory of Desirable Responding (BIDR). This inventory has two constructs, self-deception and impression management. Self-deception is when an individual claims positive behavior by rationalizing overconfidence in making judgments. Impression management is when individuals lie by reporting desirable behaviors and underreporting undesirable behaviors, thus making them appear more positive in the eyes of the observer. However, for this study on the impression management scale was used.

Assumptions and Limitations

The following are assumptions and limitations made about the variables and participants involved in this study.

- 1) It is assumed that some participants might lie on the self-report assessments used in this study. Therefore, it is assumed that Paulhus' (1991) BIDR will assess for participants' whose social desirable responses might affect this study's data analysis. Those participants identified by the BIDR as scoring high on the BIDR will be removed from the data analysis.
- 2) Although dysfunctional thinking in career problem solving and decision-making cannot be measured directly, it can be inferred from an individual's endorsement of statements (test items) reflecting a variety of dysfunctional career thoughts (Sampson et al., 2004, p. 91).
- 3) Participants in the study are 10th-, 11th- and 12th-grade students who attend a half-day high school and attend a half-day Career and Technical (CTC) high school. When attending the CTC high school they select a specific career program that they will train in for three years. A few examples of career program areas are cosmetology, carpentry, masonry, and electronic engineering technology. The fact that these students have made a career choice to be in a specific program could limit the generalizeability of results about all high school students.

Internal /External Threats to Validity

- 1) It is assumed that students who have a lower score on the CTI are more career ready than students who score higher on the CTI (Sampson et al. 2000).
- 2) It is assumed that the instruments for measuring career thoughts, parental attachment, and parental involvement will be a valid and reliable measure of those items.
- 3) It is assumed that CTC students' scores on the parental involvement scale are related to CTC students' parents' level of support and demand.
- 4) It is assumed that parental involvement is part of Baumrind's parental control theory by defining it as a needed parental function moderated by authoritative parenting style.

CHAPTER II

Literature Review

This section reviews the research literature pertaining to the dependent and independent variables and this section will also discuss how the previous research influenced this study. First, the independent variables will be presented in order of the variables temporal proximity to the dependent variables. The order will be demographic variables including student gender, student disability, student grade, and student socio-economic status. Next, there will be a review of the literature discussing the theory and research behind parental attachment and the theory and research behind parental involvement. Finally, an overview will be presented on the theory and research of the Cognitive Information Processing (CIP) model. The CIP theory is being reviewed to explain how the model can be used for improving high school students' career decision-making skills in practice.

Student Gender

Sampson et al. (1996c) found no relationship between gender and career thoughts for students' total scores on the Career Thoughts Inventory (CTI). Sampson et al. selected items for the CTI that would be free of gender bias. Kleiman et al. (2004) and Lustig and Strauser (2002) research support the original findings of Sampson et al. This study will attempt to confirm findings for CTC high school students by checking for a relationship between student gender and CTI total scores and construct scores.

Students with Disabilities

Students with disabilities experience unique problems with career decision making that contribute to less effective career choices. For instance, people with

disabilities have higher rates of unemployment and underemployment (Hanley-Maxwell, Szymanski, & Owens-Johnson, 1998). Yanchak, Lease, and Strauser (2005) suggest that people with disabilities face a number of environmental and individual factors in their career development. According to Yanchak et al. some examples of individual factors are gender, cultural background, socioeconomic status, self-esteem, self efficacy, and disability status. Examples of environmental factors are family involvement, work experiences, and decision making opportunities. Although, some of these factors are similar for those students without disabilities other research has found that for students with disabilities these factors are significant obstacles (Yanchak et al.).

The next group of research literature focuses on four studies that examined the career thoughts of people who have disabilities with the career thoughts of college students (see Dipeolu, Reardon, Sampson, & Burkhead, 2002; Strauser, Lustig, Keim, Ketz, & Malesky, 2002; Strauser, Lustig, & Uruk, 2004) and one study on the career thoughts of people who have a disability in a community setting (see Lustig & Strauser, 2003). All five studies used the CTI as a measure of Career Thoughts and included the subscales Decision Making Confusion, Commitment Anxiety, and External Conflict in their analysis.

The study by Dipeolu et al. (2002) questioned: do college students with learning disabilities experience more dysfunctional career thoughts compared with college students who do not have a learning disability? Dipeolu et al. found differences between the general college students without learning disabilities and the college students with various learning disabilities on their CTI total scores and subscales. They found mean scores for college students with learning disabilities were lower than mean scores for

college students without learning disabilities on the CTI total scale, Decision Making Confusion (DMC) scale, and Commitment Anxiety (CA) scale. This meant that the college students with learning disabilities had less dysfunctional career thoughts, DMC, and CA than college students without learning disabilities. According to Dipeolu et al. these unexpected results occurred because college students who have disabilities received career and academic support services as part of their acclimation to the university setting and the college students without disabilities did not receive the same services. Dipeolu et al. reported that college students with disabilities received career services prior to and during the time they conducted their study. Their results contradicted research that individuals with disabilities have more negative thoughts than individuals without disabilities with their career beliefs and indecisions (see Enright, 1996), and career decisions (see Luzzo, Hitchings, Retish, & Shoemaker, 1999).

The next study by Strauser et al. (2002) found results differing from the Dipeolu et al. (2002) study. They investigated differences between 63 individuals with disabilities in a state job placement program and 149 college students by assessing their differences in career thoughts pertaining to career choices. Strauser et al. completed independent sample t-tests and found no significant differences between the groups CTI total and subscale scores. Strauser et al. also found small effect sizes between the groups, indicating significance, with the highest being $d = .28$ for the CTI total score and the low being $d = .17$ for DMC. The limitations impacting the generalizability of this study were the majority of the participants were female and there was no information obtained on disability type.

Strauser et al. (2004) study attempted to build upon the Dipeolu et al. (2002) and Strauser et al. (2002) findings by examining the differences between 81 individuals with disabilities from the Center for Rehabilitation and Employment Research and 131 college students without disabilities and their career thoughts. Strauser et al. found significant differences between individuals with disabilities and college students on the CTI total and subscale scores. Strauser et al. also found individuals with disabilities had higher scores on the CTI and its subscales with medium to large effect sizes ranging from $d = .41$ for DMC and $d = .79$ for CTI total score. Strauser et al. concluded that earlier findings by Dipeolu et al. and Strauser et al. (2002) failed to check if individuals with disabilities received career services prior to completing the CTI and failed to account for effect size.

From the review of the research on the career thoughts of people who have disabilities this study will account for the above identified concerns by first confirming with my sample of high students' sending school districts if any career services were given to their students in the past year. Next, an a priori power analysis will be done to check for the number of participants needed to detect a statistically significant difference between CTC students with disabilities and without disabilities (Cohen, 1988). Finally, I will check for differences in the career thoughts of students with disabilities and without; although Sampson et al. (1996c) findings this study should find no differences between high school students with a disability and without a disability because Sampson et al. designed the CTI scale to be common across groups.

Student Grade

As previously mentioned, the initial research by Sampson et al. (1996c) in the development of the Career Thoughts Inventory (CTI) is the only study that examined high school students and their career thoughts. Sampson et al. used multiple regression analysis and found 5% of the variance in CTI total score was accounted for by membership according to adult, college student, or high school student normative group. In addition, substantial differences in the magnitude of CTI total scores do exist between adults ($M = 36.33$, $SD = 22.09$) and college students ($M = 47.01$, $SD = 20.89$) and between adults and high school students ($M = 48.78$, $SD = 20.50$) (Sampson et al., p. 50). These findings on high school students will be used as baseline data for comparative analysis with this study's findings on career and technical high school students. It is expected that the career and technical high school students CTI total scores will be similar to Sampson et al. original findings on 11th and 12th grade high school students.

Student Socio-economic Status

There was only one study by Lustig and Strauser (2003) that examined individuals with disabilities' career thoughts compared to the career thoughts of a group of individuals pursuing their GED and a group of individuals of low socio economic status. They wanted to find if individuals with disabilities would have discrete groupings according to a pattern of dysfunctional career thoughts; and would individuals with disabilities grouped by dysfunctional career thoughts differ when compared with the two groups of individuals participating in a General Equivalency Diploma (GED) who are involved in a job readiness program and individuals of low socio economic (SES) who currently are not looking for a job. Lustig and Strauser found through a cluster analysis

that the individuals with disabilities classified into three groups based on their scores on the CTI. The three groups are: Dysfunctional Thoughts, External Conflict, and Productive Thoughts. The Dysfunctional Thoughts cluster was found to have higher scores on the CTI total and subscale scores compared to the GED and low SES groups. The External Conflict cluster was found to have scores on the CTI scores compared to the low SES group and lower scores on the CTI compared to the GED group. The Productive Thoughts cluster had lower total CTI and subscale scores compared to both the GED and Low SES group.

This study involved adult participants in a community setting and the research findings reinforce the need for investigating the career thoughts of high school students who have disabilities because there are no research findings on this population. My study will use parent's highest level of education as an index of social status; because parent's highest level of education is a component of SES it will be used as a measure of socio-economic status (See Trusty, 1998). According to Peterson et al. (1996c) SES should not influence high school students' career thoughts (p. 38).

Attachment Relationships

This section contains a brief overview of attachment theory and then describes key components of the theory relevant to this study. Next, there will be a review of the parental attachment research. Finally, there will be a discussion of the research of attachment with career development.

John Bowlby and Mary Ainsworth (1991) researched and developed Attachment theory. Bowlby, trained as a psychoanalyst, developed Attachment theory from his disagreement with psychoanalysis' view that family experiences are not important in the

emotional disturbances of children (see Bretherton, 1992). Bowlby reported that a child's reaction with his or her caregivers' reaction during times of caregiver-child separation is the basic principle of Attachment theory. According to Bowlby (1982) attachment is based on the proximity-promoting signals and behavioral response between a child and his or her caregiver during times of separation and reunification; and so the child develops an attachment from the parents' behavior expressed to the child during that time of reunification with his or her parent. The child's attachment is based on the level of comfort or security felt by the child that is reinforced by the parent's responses over time. Bowlby found that children's response patterns become internalized over time and become their *internal working model*. Children will use their internal working models to explore their world in relation to self and others. For example, a parent's response over a period of time to his or her child's crying who is in another room of their house can develop into a secure or insecure attachment based on parent and child responses to one another during reunification. The level of attachment depends on how the parent's respond (e.g., sensitive or insensitive) to his or her child's crying and the child's reaction (e.g., trust or mistrust) to his or her parent's response to the crying. Bowlby stressed that for adolescents to develop trusting relationships a secure attachment needs to occur in early development. Ainsworth (1989) adds that the elements of attachment develop in infancy and continue throughout the lifespan.

In attachment there exist affectional bonds. Ainsworth refers to affectional bonds as being central to attachment. Ainsworth defines a person's affectional bonds as enduring, unique, and irreplaceable ties to a significant person in his or her life. An

attachment is an affectional bond, but attachment has an additional criterion that separates it from other affectional bonds. Ainsworth states:

This is the experience of security and comfort obtained from the relationship with the partner, and yet the ability to move off from the secure base provided by the partner, with confidence to engage in other activities. Because not all attachments are secure, this criterion should be modified to imply a seeking of the closeness that, if found, would result in feeling secure and comfortable in relation to the partner (p. 711).

Ainsworth et al. (1978) researched attachment using the “strange situation”. The strange situation is a 20-minute lab experiment involving a mother, child, and stranger in a playroom (for details see Ainsworth et al.). They found three different types of children’s behavioral reactions during separation from their parents and reunion with their parents. The three types are secure, ambivalent, and avoidant. A child who has a secure attachment has a positive reaction to his or her reunion with parents and feels safe in the presence of their parents. Children with a secure attachment are less disruptive, less aggressive, and more mature, and more trusting than children with ambivalent or avoidant attachment styles. Parents of securely attached children are viewed as more sensitive to their children’s needs. A child who has an ambivalent-attachment has an anxious reaction when separated from his or her parents, and will be frustrated upon his or her parents return. Children with ambivalent attachments show confusion about reacting to their parents return because of their parents’ uncertainty in how to communicate feelings of comfort and trust to their children. A child who has an avoidant attachment style will reject his or her parents when they return. Children with an avoidant

attachment do not seek comfort or contact with their parents. Parents of avoidant-attached children are viewed as more rejecting of their children's needs. Campos, Barrett, Lamb, Goldsmith, and Stenberg (1983) reviewed attachment studies done in the United States and found that approximately 62% of infants have a secure attachment, 23% have an avoidant attachment, and 15% have an ambivalent attachment.

Attachment Research

The research studies by Armsden and Greenberg (1987), and Vivona (2000) focus on the development of the original IPPA scale. Armsden and Greenberg (1987) created the original IPPA to measure the perceived quality of an individual's attachment to his or her parents and peers. Armsden and Greenberg (1989) later revised the IPPA to measure separately, the perceived quality of mother, father, and peer attachment. In addition, Vivona (2000) updated the IPPA by advancing Armsden and Greenberg's (1987) high and low security attachment classifications to account for Ainsworth et al.'s (1978) secure, ambivalent, and avoidant attachment. This study will focus on the original IPPA for parents, and not the Armsden and Greenberg's (1989) revised version of the mother and father scales because of the time it would take participants to complete the two surveys and because the original IPPA measures attachment to any attachment figure who was involved in the participants life and that might not include their parents. For more detail on the IPPA see this study's methods section (for further review of the IPPA see Lopez & Gover, 1993; Lyddon, Bradford, & Nelson, 1993).

Armsden and Greenberg (1987) conducted a two-part study in the creation of the IPPA. In the first part of their research they distributed a 60-item questionnaire to two samples of undergraduate students regarding the felt level of security towards parents and

peers. They did the first part of the study to find the internal reliability of the IPPA. Armsden and Greenberg found through factor analysis 28 items for parent and 25 items for peer attachment with three subscales for both parent and peer attachment. The three subscales are Trust, Communication, and Alienation. In the second part of the study they examined the validity of the IPPA. Armsden and Greenberg used a sub-sample from the first part of the study to find out if attachment to parents and peers would be related to well being. They also examined differences in attachment involving proximity and well-being. Finally, they proposed that adolescents who have secure attachments would have less negative life change and psychological issues than adolescents with insecure attachments. Armsden and Greenberg found “quality of attachment not only was strongly related to well-being, but also meaningfully contributed to predicting adolescents’ depression/anxiety and resentment/alienation scores” (p. 445). They found that this supported Bowlby’s (1973) assumption that attachment is related to anxiety and depression.

Vivona (2000) used the original IPPA subscales to validate evidence for a new classification of parental attachment. The original classification is based on parental attachment security, high security (secure) and low security (insecure) parental attachment. Vivona conducted a two-part study using the IPPA scale and extended the original IPPA classifications into the following parental attachment styles: secure, ambivalent, and avoidant attachment. Her research validated the upgrade from the original findings by Armsden and Greenberg’s (1987) parental attachment security classifications to Ainsworth’s et al.’s parental attachment styles. However, Brennan, Clark, and Shaver (1998) recommend that the “categorization of research participants is

unnecessary when dimensional measures are available; and some power and precision are lost when categories rather than continuous scales are used” (p. 68). Therefore, this study will use Armsden and Greenberg’s constructs of Trust, Communication, and Alienation to measure attachment and describe parental attachment.

Vivona (2000) used 173 undergrads to test her hypothesis that parental attachment style can be predicted from parental attachment functions. She used the IPPA to distinguish among secure, ambivalent, and avoidant attachment styles. She applied Armsden and Greenberg (1987) score distribution rules to find the attachment styles. The high security attachment rule (Armsden & Greenberg) was kept to designate the secure attachment style and low security was split using the new IPPA classification rules (Vivona) to designate ambivalent and avoidant attachment styles. The Parental Attachment Questionnaire (PAQ; Kenny, 1990) was used to find convergent validity. She used measures for worry (Penn State Worry Questionnaire, PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990), depression (Beck Depression Inventory, BDI; Beck, Rush, Shaw, & Emery, 1979), and anxiety (Beck Anxiety Inventory, BIA; Beck, Brown, Epstein, & Steer, 1988) for construct validity. She found support for the new classifications of parental attachment style. Vivona reported “discrimination between securely attached and insecurely attached college students was established with demonstration of reliable group differences across three dimensions of parental attachment as measured by the PAQ as well as worry, anxiety, and depression” (p. 321).

In part two of her study, Vivona (2000) wanted to replicate the results in part one. She added two variables; worry content and autonomy, to assess for discrimination in the insecure parental attachment styles (see Vivona). She also used the variables of college

adjustment and ego development to add support to the first part of her study with concurrent validity and check for sex differences between secure and insecure attachment styles. Vivona found that her results in study two supported validity for the new parental attachment styles that she found in study one. Although parental attachment styles did not differ between men and women, Vivona found that for women attachment style predicted college adjustment and intimacy. Whereas, Vivona found that for men parental attachment styles did not predict college adjustment and intimacy. She cited the differences between women and men might be a function of how men and women identify their sex roles that play out in their interpersonal relationships. For example in late adolescence, women might view intimacy and relationships as more important part of their identity than men, and men might view autonomy and independence as a more important part of their identity than women.

Armsden and Greenberg's and Vivona's research are important to this study because their findings link Tulving's (1972, 1984) theory of episodic and semantic memory to Attachment theory (Ainsworth et al., 1978; Bowlby, 1969/82, 1973, 1980) and to CIP theory (Peterson et al., 1991). Attachment theory and CIP theory converge on the idea that a person's thoughts and perceptions are the foundation for emotional and behavioral responses to experienced situations. This supports Bowlby's (1969) idea of *internal working models* in which children behave based on episodic memories from experiences with their families during infancy. Individuals develop emotional and behavioral problems when their thoughts conflict in interpreting events (episodic memory, what they think happened) versus facts (semantic memory, what actually happened). For example, insecurely attached adolescents might respond to an argument

with a friend by avoiding that friend because they believe or think that their friend will not be sensitive to their needs. Thus adolescents' inaccurate beliefs or thoughts increases their anxiety about the disagreement they had with their friends and increases their avoidant or ambivalent behaviors about the disagreement with their friends. Conversely, securely attached adolescents might respond to an argument with a friend by trying to communicate with their friend so they can resolve the issue. Their belief is that their friend is sensitive to their needs. Thus securely attached adolescents' anxiety about the argument will be considerably less than that of the insecure attached adolescents' anxiety about the argument because of the difference in the secure versus the insecure adolescents' perceptions of the argument. The secure adolescent uses positive self talk to distinguish between what they think happened and what actually happened. They use their internal working model that they developed in early childhood to challenge their thoughts that their friend does not want to talk them anymore because of the argument by acknowledging the fact that they have no evidence that their friends do not want to talk to them anymore. The secure adolescents' internalized working model has developed from positive experiences with their parents since early childhood into a healthy and functional thought process that helps them to distinguish between the true and untrue facts that they think when they encounter various events in their lives. The opposite would be true for insecure adolescents. So this study expects to find that adolescents who have more trust and communication with their parents and less alienation from their parents should also have healthier career thoughts.

Attachment and Career Development

Blustein, Prezioso, and Schultheiss (1995) reviewed the current status of Bowlby's attachment theory and career development. From their review of the literature, Blustein et al. developed four propositions, but this study will focus on the first two, as they pertain to adolescents and the later two pertain to adult attachment and career development. The first proposition describes the role of attachment with career exploration and the second proposition describes the role of attachment with career decision-making. Blustein et al. proposed the following:

Proposition # 1: the experience of felt security that is characteristic of individuals with secure attachment relationships promotes exploration of the self and the educational and vocational environment.

Proposition # 2: Individuals with access to secure attachment and/or relationships with felt security provided by internal working models will progress effectively through the career decision making and commitment processes, culminating in the selection and implementation of a career plan (p. 425).

The two propositions are based on late adolescent research. These propositions reinforce the need for this study to examine attachment on career thoughts of mid-adolescents.

These propositions correspond with the CIP model because this study's population of Career and Technical (CTC) students is in a stage of career development that involves developing their career decision-making and career exploration skills because CTC students have already selected a career area and are learning and developing skills for the world of work. This allows them to explore their career and also decide if this is a career they plan on entering when they graduate from high school.

Blustein et al. (1995) stated “some specific directions that merit inquiry include the role of attachment relationships in the career development tasks of childhood and early adolescence, which is a domain that is often neglected by researchers and practitioners” (p. 427).

Roisman, Bahadur, and Oster (2000) examined infant attachment security as a predictor of career development in late adolescent. They also assessed if the quality of adolescent relationships with their parents is a predictor of the quality of their career exploration and planning. They found that at age 18, adolescents secure attachment to parents is a predictor of career exploration and planning. Roisman et al. report that this supports Bowlby’s (1969/82) concepts that an infant’s attachment to his or her parent creates an internal working model that is used throughout a person’s lifespan. Their findings suggest that attachment theory can be used as a life-span framework for research with career development. Roisman et al.’s research emphasizes the importance for the current study’s research of adolescents’ parental attachment on their career thoughts. This study’s findings will attempt to support Roisman et al.’s implications that parent-child attachment can influence adolescents’ career thoughts.

Blustein et al. (1991) used the IPPA in their research to examine late adolescent parental attachment and commitment to career choice. They found that the research literature supports parents as influences on their high-school-age adolescents’ vocational maturity (Palmer & Cochran, 1988) and that parents are associated with their late adolescents’ career planning (Kenny, 1990). Blustein et al. states “this theoretical and empirical literature suggests that, for many young adults, some degree of familial

attachment or support is needed to provide a secure base from which to engage in the complex and challenging tasks of committing to a career choice” (p. 43). Blustein et al. ascertained that parental attachment to mother and father would be positively related to a high level of commitment to career choice. They found that parental attachment with psychological separation and conflictual independence contributed to the prediction of late adolescents’ commitment to career choice. Blustein et al. recommend that counselors need to pay attention to family relationships and family conflicts so that counselors can help their adolescent clients work towards foreclosure in committing to a career choice. Blustein et al.’s findings support Bowlby’s (1982) theory that establishing a secure base is a good method for understanding how the counselor/client relationship can be conceptualized to help adolescents in resolving their problems. Whereas, the research of this study will examine how adolescents career thoughts are predicted by parental attachment relationships and therefore will add to the research on adolescent career development and attachment.

Ketterson and Blustein (1997) used the IPPA to examine late adolescent parental attachment and gender traditionality in the career exploration process. Ketterson and Blustein state “gender traditionality is defined by the proportion of men and women employed in a participant’s first-choice occupational preference” (p. 168). They also examined the roles of age and gender in the career exploration process. Ketterson and Blustein found that higher levels of attachment in late adolescents to mother and father are associated with career exploration. Ketterson and Blustein’s findings support previous research that secure attachments are associated with the career development process (Blustein et al., 1991; Blustein et al., 1995). Ketterson and Blustein found that late

adolescent gender traditionality was not associated with attachment and career exploration. In their findings age was found to be a predictor of career exploration and gender was not found to be a predictor of career exploration. Ketterson and Blustein's findings impact this study by supporting the theoretical assumptions by Ainsworth (1989) that parental attachment is important in the process of a person's career development. The current study findings will attempt to support that there is a relationship between career thoughts and attachment relationships.

Parental Involvement

This section will present a brief overview of Baumrind's (1966) theory of authoritative parenting as it relates to this research study's participants' views of their parents' involvement in their lives. The rationale is that parents who are authoritative in their parenting style are more demanding and responsive in their parenting style and will be more involved in their children's career development. Authoritative parents are those parents who meet the conditions of being warm, democratic, and firm in their parenting practices (Steinberg, Lamborn, Dornbusch, & Darling, 1992). After the overview, this study will review the parental involvement research that is most influential to this study's research questions and methods. For further reading on Baumrind's parental control theory as it relates to parental involvement, the reader can review the books and articles listed in the reference section (viz. Baumrind, 1966, 1968, 1989, 1991a/b; Darling & Steinberg, 1993; Steinberg, 2001; Steinberg et al. 1992; Steinberg & Silk, 2002; Trusty & Lampe, 1997; Trusty et al., 1997).

Baumrind's (1991b) contemporary view of adolescent development is that parents need to be demanding and responsive in fostering independence when raising their

children to become positive contributors of society. Her view is the opposite of the classic view (for examples see Baumrind, 1991b) that parents' need to be undemanding and unresponsive in fostering independence and allow society to assist in raising their children. She defines parental demandingness by how parents use the following constructs of demandingness in raising their children: direct confrontation, monitors, intrusive-directiveness, and pattern of firm, consistent discipline with high maturity demands (Baumrind, 1989, p. 361). She defines parental responsiveness by how parents use the following constructs of responsiveness in raising their children: affective warmth, cognitive responsiveness, attachment and bonding, unconditional acceptance or non-contingent positive reinforcement, sensitive attunement, involvement, and reciprocity (Baumrind, 1989, p. 365). The demands parents put on their children and the responses they give their children make up the three types of parental control.

Diana Baumrind in 1966 proposed three models of parental control in childrearing practice: permissive, authoritarian, and authoritative. Baumrind (1966) states “a permissive parent, attempts to behave in a non-punitive, acceptant, and affirmative manner towards the child’s impulses, desires, and actions” (p. 889). Permissive parents are more responsive than they are demanding (Baumrind, 1991a/b). The next type is the authoritarian parent. Baumrind (1966) states “the authoritarian parent attempts to shape, control, and evaluate the behavior and attitudes of the child in accordance with a set standard of conduct, usually an absolute standard, theologically motivated and formulated by a higher authority” (p. 890). Authoritarian parents are demanding and directive, but not responsive (Baumrind, 1991a/b). The third type is the authoritative parent. Baumrind (1966) states “the authoritative parent attempts to direct the child’s activities in a rational,

issue-oriented manner. She encourages verbal give and take, shares with the child the reasoning behind her policy, and solicits his objections when he refuses to conform” (p. 891). Authoritative parents are both demanding and responsive (Baumrind, 1991a/b). Baumrind (1971) during her research on parental authority found a fourth type of parental control. She labeled this pattern of control the rejecting-neglecting type. Baumrind (1989) states that rejecting-neglecting type parents are: “empirically, they were highly coercive, non-individuated and lacking in intellectual stimulation, and rather conventional, and they did not monitor their children’s activities” (p.357). Neglecting-rejecting parents are neither demanding nor responsive (Baumrind, 1991a/b). She also used the terms disengaged or unengaged to describe these families.

Baumrind over her years of research expanded her four types of parental control to six. Baumrind (1991b) split the permissive type into the democratic and non-directive type. The democratic type is more responsive than demanding. She found non-directive parents to be more responsive than demanding and also these non-directive parents will avoid confrontation. Non-directive parents differ from the old term, permissive parents, because mothers are not supportive. Next Baumrind’s findings split the authoritarian parents into two parenting types to distinguish between levels of intrusiveness when parenting their children. The first parenting type remained the authoritarian type, for which she also used the term directive. The second authoritarian parenting type she referred to as the good enough parenting type because the good enough parenting type had moderate levels of demanding and responsiveness.

This study’s research will not entail all six of Baumrind’s parenting styles, but will focus on authoritative parenting style. For the purpose of answering this study’s

research questions, the focus will be on parental involvement as a part of Baumrind's authoritative parenting style because of the relationships found in the research literature between authoritative parenting and parental involvement (Steinberg et al. 1992; Trusty, 1998; Trusty & Lampe, 1997). The next section will expand further on the connections between parental involvement and its relationship with authoritative parenting style in the next section.

Parental Involvement Research

The parental involvement research has focused on many different aspects of behaviors during adolescent development. This section will give a brief overview of those studies that are most pertinent to this study's research question one. Parental involvement has been found to influence many different aspects of adolescent life including the following: (a) competence and substance abuse (Baumrind, 1991b), academic achievement (Steinberg et al., 1989; Steinberg et al., 1992) and academic success, (b) educational expectations (Garg, Kauppi, Lewko, & Urajnik, 2002; Trusty, 1998; Trusty, 1999; Trusty & Colvin Harris, 1999), (c) locus of control (Trusty & Lampe, 1997) and (d) career decisions and development (Downing & D'Andrea, 1994; Farmer, 1985; Helwig, 2004; Kracke, 1997; Kotrlik & Harrison, 1989; Middleton & Loughhead, 1993; Palmer & Cochran, 1988; Penick & Jepsen, 1992; Peterson, Stivers, & Peters, 1986; Trusty, 1996; Trusty, Watts, & Erdman, 1997; Wilson & Wilson, 1992).

Steinberg et al. (1992) examined the impact of authoritative parenting, parental involvement, and parental encouragement on adolescent achievement. Steinberg et al. research is important this study's research because Steinberg et al. view parents who have an authoritative parenting style as using parental involvement as a parenting practice or

behavior in raising their adolescent children. Thus, Steinberg et al. connect Baumrind's theory of parental control with parental involvement. Steinberg et al. conducted a longitudinal study on adolescents' perceptions of their parents' child rearing practices and aspects of adolescents' school performance. Steinberg et al.'s research study connected the research between authoritative parenting with the research on parental involvement. First, they examined relationships between school performance and parental behaviors over time in an attempt to find out if authoritative parenting, parental involvement, and parental encouragement would lead to improvements in school performance. Second, they examined the effects of authoritative parenting on student achievement and also considered the mediating effects of parental encouragement and educational involvement. Third, they examined if the function of authoritative parenting style would differ in the level of parental involvement and encouragement on school performance and engagement. Steinberg et al. conceptualized that parents who are non-authoritative in their parenting style will do more damage than authoritative parents who are heavily involved in their children's education.

Steinberg et al.'s (1992) findings are important to this study because they found that parents who are authoritative are associated with higher levels of educational involvement and encouragement of academic success. Steinberg et al.'s also found that parental involvement accounts for better school performance and stronger school engagement for adolescents who have authoritative parents. Therefore, Steinberg et al. found that authoritative parenting style has manifested behaviors, such as parental involvement that influence adolescent behavior. These manifested behaviors are also found to be moderated by authoritative parenting style. Steinberg et al. stated "simply

put, parental involvement in schooling is far more effective in context of an authoritative home than in a non-authoritative one” (p. 1,279). From their results this study will try to support that parental involvement might positively or negatively influence adolescent career thoughts and mean that this may be because of an authoritative or non-authoritative parenting style.

In addition, research by Trusty and Lampe (1997) and Trusty (1998) supports Baumrind’s contemporary theory that parental involvement and control leads to more internal locus of control and higher educational expectations in late adolescents. Trusty (1998) stated “although authoritative parenting and parent involvement differ conceptually, both entail parents’ attention, support, and effective communication with adolescents” (p. 262). For this study parental involvement will be defined as part of Baumrind’s parental control theory as a needed parental function that is moderated by authoritative parenting style.

A study by Garg et al. (2002) simultaneously explored background factors, family involvement factors, and personal factors of adolescents’ educational aspirations. They used structural equation modeling to examine over 4,000 Canadian students’ educational aspirations with the previously mentioned factors. Garg et al. found that socio economic status (SES) based on parents highest level of education and parental involvement predicted 63% of the variance for the students’ educational aspirations. Thus supporting the research by Trusty and Lampe (1997), Trusty (1998), and Steinberg et al. (1992) that parental involvement influences adolescent academic goals. Garg et al.’s research findings also support Baumrind’s (1989) description of authoritative parents as being warm, firm, and who promote independence that foster socially competent children. Garg

et al. state “along with a positive home climate, parents’ involvement with adolescent schooling and education likewise positively influence the formation of a healthy, educational self-schema” (p. 104).

As part of Baumrind’s (1991b) theory, authoritative parents were found to be secure in their attachment to their parents. This could create issues of multicollinearity between this study’s variables of parental attachment and parental involvement on career and technical students’ career thoughts. However, since parental involvement is being used as a measure of the function of authoritative parenting style, and not as measure of authoritative parenting directly, the findings of this study might have some correlation among the parental involvement scale and the parental attachment scale, but not multicollinearity.

Parental Involvement and Career Development

Schulenberg, Vondracek, and Crouter (1984) suggest that focusing on parent-child relationships is a domain that is worth exploring for determining adolescent career outcomes. Specifically, research question one of this study is concerned with the impact that parental involvement will have on adolescent career thoughts. In support this study’s focus on parents and career thoughts, Kotrlik and Harrison (1989) examined significant others and factors that influence the career decisions of high school students. Kotrlik and Harrison found “students perceive that their parents influence their career choice more than any other person, and the mother is more influential than the father” (p. 60). Palmer and Cochran (1988) found from their research on parents as agents of career development that the role of parents is important in creating a partnership with their children and is important in helping their children with the career planning process. Palmer and Cochran

believe that the role of parents in their children's career development is a critical, especially in the areas of theory and future research.

Kracker (1997) examined parental behaviors and adolescents' career exploration. Kracker hypothesized about relationships among parental behaviors with career exploration of their children and parental educational background. Kracker's results found that parental education background of authoritative parents is related with the career exploration of their children. Further, this connection between authoritative parenting and career exploration is due to the warm and supportive behaviors reflected in the parent child relationship; and this type of warm and supportive authoritative parenting style resulted in more active career exploration. Kracker's research findings reinforce the concept that adolescents' perceptions of their parents' involvement in their lives can influence their career thoughts.

Trusty (1996) and Trusty et al. (1997) using summary data from eight items from the NELS:88 Student Survey, researched the predictors and relationships of parental involvement in adolescent childrens' career development. In both studies Parental Involvement scale scores were found to be higher for females than for males. Trusty (1996) found Parental Involvement scores had high bivariate relationships with school attitudes, education outlook, family/social outlook, and job outlook. Trusty et al. found low relationships between Parental Involvement scores and SES and family structure. Trusty et al. found no relationship between family life events and Parental Involvement scores as far as parental impact on their adolescent's career development. The overall implications for both studies are that parental involvement is an important factor in determining adolescents' career development outcomes.

The research reviewed on parental involvement and career development gives support for doing research on adolescent perceptions of parental involvement and career thoughts. Therefore, this study expects to find a relationship between parental involvement and career thoughts.

Cognitive Information Processing Model (CIP)

Peterson, Sampson, and Reardon developed the Cognitive Information Processing Model or CIP model in 1991 in their book *Career Development and Services: A Cognitive Approach*. The CIP model was initially developed to improve the deliverance of career services at Florida State University in 1971. The CIP developers sought to close the gap between theory and practice by creating a cost-effective system of deliverance of career services to adolescence and adults. The purpose of the CIP approach is to assist adolescence and adults in making an appropriate career choice and improves their decision-making skills. Reardon, Lenz, Sampson, and Peterson (2000a) based the CIP approach on these eight assumptions:

1. Career choices are based on how we think and feel.
2. Making career choices is a problem-solving activity.
3. Our ability as career problem solvers is based on what we know and how we think.
4. Career decisions require a good memory.
5. Career decisions require motivation.
6. Career development continues as part of our lifelong learning and growth.
7. Our career depends largely on what and how we think about it.

8. The quality of our career depends on how well we learn to make career decisions and solve career problems. (p. 16)

When applying the CIP model with clients, the role of the counselor is to assist clients in making career decisions. During this process the counselor needs to understand how students process information about themselves and the world of work (Peterson et al., 1991). Thus counselors using the CIP model do not provide solutions to their clients' career problems nor do they assist them in making a career choice at a particular point in time. Instead, they provide their clients with the tools to understand themselves, their career choices, and develop their own capabilities to solve their career issues on a continual basis.

Two core constructs make up the foundation of the Cognitive Information Processing model. The first is the pyramid of information processing domains. The pyramid contains the domains or content by which individuals career problem solve and make career decisions. These domains are self-knowledge, occupational knowledge, decision-making skills, and metacognitions. The second core construct is the communication, analysis, synthesis, valuing, and execution (CASVE) cycle. The CASVE cycle is helpful in understanding the process by which individuals' solve career problems and make career decisions. The CASVE cycle occurs in the decision-making skills domain and involves the phases of communication, analysis, synthesis, valuing, and execution. The following sections will include a description of the pyramid of information processing domains and the CASVE cycle.

Pyramid of Information Processing Domains

The pyramid of information is arranged with the knowledge domain at the base of the pyramid, the decision making skills domain in the middle, and the executive processing domain at the apex of the pyramid.

Knowledge Domains

The knowledge domains comprise the base of the pyramid with the two sub-domains of self-knowledge and occupational knowledge. Peterson et al. (2002) reported that networks of memory structures called schemata develop over the life of an individual and are stored in the sub-domains of self and occupational knowledge. According to Bruner (1973) and Rummelhart and Ortony (1977) these schemata provide the knowledge of occupations and knowledge of ourselves that are applied when we make a career choice. For example when a person wants to learn about the profession of psychology then he or she starts to distinguish differences between the work done in the field of psychology versus other helping professions; therefore he or she becomes aware of new information about psychology that is helpful in making a choice to explore the field of psychology as a future career option.

Self-knowledge.

The sub-domain of self-knowledge contains individuals' perceptions of their values, interests, skills, and employment preferences (Sampson et al., 2004). Sampson et al. acknowledge that there are a variety of self-knowledge characteristics, however for parsimony and clarity of their model they choose to focus on the characteristics mentioned. Therefore, Sampson et al. define the following self-knowledge characteristics as:

Values are defined as motivators for work. Interests are defined as activities (behaviors) that people enjoy. Skills or abilities are defined as activities (behaviors) that people perform well. Employment preferences are defined as factors people seek in their job (such as opportunities for travel) or seek to avoid (such as lifting heavy objects). (p. 22)

All of the self-knowledge characteristics are influenced by an individual's life experiences and personal characteristics (Sampson et al., 2004). For example a person's spiritual upbringing might influence his or her choice to seek a job that might involve charity or religious organizations. An individual who has the natural ability to play sports might seek a career that involves athletics or physical activity. A life experience of growing up on a farm might influence a person's interest to work outdoors with animals and plants. Therefore, for each individual who is making a career choice the sub-domain of self-knowledge translates into his or her concept of *knowing about myself* (Sampson et al.). For clarification of their self-knowledge, individuals need to reflect upon their experiences and engage in new experiences for continuous exploration in determining their values, interests, skills, and employment preferences.

According to Tulving (1972, 1984) self-knowledge is stored in episodic memory. An individual's perception of a series of episodes over time is framed in his or her episodic memory (Sampson et al., 2004). Episodic memory influences a person's discernment of past events as well as his or her present emotional state (Sampson et al.). For example, an individual's positive or negative perceptions of past events could influence their present feelings and behaviors during a job search and interview process. If a person is depressed due to past or current attempts to find employment or because of

personal issues, then his or her emotional state may influence his or her readiness to make career decisions. Therefore, Sampson et al. note the importance of first assessing for readiness of an individual. Assessing for career readiness is critical because the capability of an individual to make a career decision needs to be considered with the individual's capability to understand the influence of family, social, economic, and organizational factors.

Occupational knowledge.

The term occupation rather than work or career is used in this sub-domain of knowledge because it applies directly to the labor market economy. The definition of an occupation is a group of similar positions found in different industries or professions (Reardon et al., 2000a, p. 8). There are two types of occupational knowledge. The two types are knowledge of individual occupations and knowledge of the structure of the relationships among occupations (Peterson et al., 1991). Knowledge of individual occupations contains information about the training, education, salary, and other requirements of the job. This type of information can be obtained from sources such as the *Occupational Information Network (O*NET)* (U.S. Bureau of Labor Statistics, 1999), *Classification of Instructional Programs (CIP)* (U.S. Department of Education, 1990), and the *North American Industry Classification System (NAICS)* (U.S. Census Bureau, 1997) to name a few.

The second, knowledge of the structural relationships among occupations is used to discern the similarities and differences between and within categories of occupations (Peterson et al., 1991). For example an individual could be challenged by a number of different occupational choices in the field of criminal justice. This could hypothetically

breakdown into categories such as corrections and law enforcement. The individual might then select law enforcement, which breaks down into local, state, and federal occupations, and so on. Therefore, individuals have to investigate the relationships among occupations so they can decipher the most salient occupational choice.

Knowing about individual occupations and having a schema of the organization of the world of work are inclusive in the sub-domain of occupational knowledge (Sampson et al., 2004). According to Sampson et al. (2004) an example of the world of work schema is the Holland Hexagon (Holland, 1997). Sampson et al. (2004) recognize the importance of the knowledge of education, training, and employment options and so they use the term options knowledge interchangeably with occupational knowledge. To gain the schema of knowledge of occupational options an individual either has direct or observational experiences through others or the media (Sampson et al., 2004). As people gain more occupational experiences then the knowledge and schema of their occupational options will increase over time (Sampson et al., 2004). A stronger occupational schema facilitates exploration of all the different possible options within the structure of the occupational relationships.

Options knowledge is stored within semantic memory (Sampson et al., 2004). Semantic memory consists of verifiable facts rather than personal perceptions (Tulving, 1972, 1984). Semantic memory is the comprehension of facts, concepts, and relationships among facts and concepts (Peterson et al., 1991, p. 102). Therefore, unlike the storage of self-knowledge in episodic memory, semantic memory is not influenced by past events or present emotions. For example, an individual's emotional state would not influence him

or her from understanding the differences or similarities between the occupations of butcher and chef.

Decision Making Skills Domain

In the decision making domain individuals use information in the knowledge domain to problem solve or make a career decision. Peterson et al. (1991) state “One’s potential as a problem solver and decision maker not only depends on the depth, structure, and retrieval capacity of knowledge in the knowledge domain but also on the adequacy of one’s information processing skills in the decision making domain” (p. 32). According to Peterson et al. (1991) the process of making a career decision is based on five generic processing skills that have been identified by cognitive theory (Baron, 1981; Bloom, 1984; Bloom, Hastings, & Madeus, 1971; Sternberg, 1980) and research (Baird, 1983; 1981; Peterson & Swain, 1978; Peterson & Watkins, 1979; Warren, 1976). The five previously mentioned processing skills of the CASVE cycle are: communication, analysis, synthesis, valuing, and execution.

An individual first starts with a problem. A problem is a gap between an existing and a desired state of affairs or the difference between where you are and where you want to be (Sampson et al., 2004, p. 4). A career problem involves a gap between a person’s current career situation and future career situation that he or she desires (Peterson et al., 1991, p. 5). The motivation to problem solve comes when a person has a desire to remove the gap. To remove the gap a person engages in problem solving, which involves a series of thought processes in which information about a problem is used to arrive at a plan of action necessary to remove the gap between an existing and a desired state of affairs (Sampson et al., 2004, p. 5). This process involves: (a) communication, noticing the gap;

(b) analysis, understanding the causes; (c) synthesis, discovering alternate courses of action; and (d) valuing, selecting an alternate course of action (see Peterson et al., 1991; Reardon et al., 2000a). In contrast, decision-making adds an additional step. Decision making is defined as a broad concept that includes problem solving along with the cognitive and affective processes needed to develop a plan for implementing the solution and taking the risks involved in following through to complete the plan (Sampson et al., 2004, p. 6). Therefore, decision-making carries out the identified course of action in an attempt to remove the gap otherwise known as (e) execution. In addition, an individual returns to the communication step to determine if the gap was removed and if not then he or she selects another alternate course and repeats steps (d) to (e). Next, I will explore the CASVE cycle in more detail.

Communication.

The communication phase is the first phase in the CASVE cycle. In the communication phase, individuals become aware that a gap exists between an existing and a desired state of affairs, or where they are and where they want to be (Sampson et al., 2004, p. 26). This gap is identified as a career problem that needs to be solved by making a career decision. In client terms it means “knowing I need to make a choice” stage (Reardon et al., 2000a; Sampson et al., 2004). The gap is communicated through internal or external cues. Internal cues are individuals’ thoughts or perceptions about a discomfoting situation they are experiencing. For example, internal cues can cause emotional or behavioral consequences such as sadness and stress, and stomachaches and headaches. External cues occur when individuals receive input from other people regarding their current situation. For example, a student might get feedback from teachers

or parents concerning career plans after graduation. Sampson et al. (2004) state “Clients’ growing awareness of a gap creates a tension that stimulates individuals to engage in career problem solving and decision making” (p. 26). When the gap is acknowledged and no longer ignored the individual then moves to the next phase of analyzing the problem.

Analysis.

In the analysis phase individuals need to start with good problem solving by avoiding the urge to act impulsively to eliminate the physical and emotional discomfort caused by the negative perception of the career problem (Peterson et al., 1991; Reardon et al., 2000a). To counteract the impulsivity for wanting to solve a career problem that individuals are experiencing, they need to act with patience through reflection and clarification of their understanding of the career problem. Sampson et al. (2000a) found the following questions need to be asked in order to better understand the career problem:

What do I need to know about my situation and myself to solve this problem?

What exactly do I need to do to solve this problem? Why am I feeling this way?

What do my significant others think about my choice process? Where is the pressure coming from to make a choice? (p. 77)

In client terms the analysis stage is also known as the “understanding my self and my options” stage (Reardon et al., 2000a; Sampson et al., 2004). During this phase the individual needs to clarify his or her self-knowledge and occupational knowledge. In order to lessen the gap communicated in the first stage, individuals dealing with the career problem need to learn more about self and occupational knowledge. In the first step, they build self knowledge by clarifying values, interests, skills, and employment preferences; and build upon their occupational knowledge by identifying fields of study,

jobs, leisure areas, and educational programs (Peterson et al., 1991; Reardon et al., 2000a; Sampson et al., 2004). Sampson et al. (2004) suggest the use of career assessments and computer assisted guidance (CACG) systems in the analysis phase. In addition, they suggest the application of personal experience and input from others.

In the analysis phase individuals need to connect the relationships between self-knowledge and occupational knowledge (Peterson et al., 1991). Individuals make the connection by using CACG systems to explore their values and interests with information about occupations (see Reardon et al., 2000a, chaps. 2 & 3). During the analysis phase individuals also need to examine their perceptions and self-talk in how they go about making career decisions. A negative or positive attitude about their experiences and thoughts on their view of the career problem could result in satisfying or dissatisfying outcomes for moving forward to solve the career problem. Therefore, it is pertinent that the individual be aware of their self-talk and attitudes, and reframe all negative perceptions. Sampson et al. (2004) note that “During the analysis phase, clients engage in a recurring process of clarifying existing knowledge or obtaining new information, followed by time to reflect on and integrate what has been learned, leading to new or more complex mental models” (p. 17).

Synthesis.

The synthesis phase is the third stage in the CASVE Cycle. In client terms it is “expanding and narrowing my list of options” stage and applies the information gained about the communication gap by focusing on the course of action to solve the problem (Reardon et al., 2000a). The goal of the synthesis phase is to list options without missing alternatives and avoid becoming overwhelmed with the list of choices (Sampson et al.,

2004). Elaboration or divergent thinking and crystallization or convergent thinking is a two-step process used in the synthesis phase. Elaboration is the first step and it involves freeing the mind to create a list of potential solutions for the career problem (Sampson et al. 2004). This can be accomplished by applying the information gained in the analysis phase from the CACG, personal experiences, and input from significant others.

In the second step of crystallization, the individual narrows down the list of options created in the elaboration step. The individual does this by selecting the options that are most congruent with his or her values, skills, interests, and employment preferences and then creates a manageable list of three to five options (Sampson et al., 2004). This step involves repeating the review of the information gained in the analysis stage until the options selected create the best opportunity to remove the gap identified in the Communication stage. When the person exhausts his review of the options and selects the most viable three to five options that narrows the gap then the person can move to the valuing phase.

Valuing.

The process of valuing is the fourth stage of the CASVE Cycle. Valuing has two steps; the first is the evaluation of how options will affect self and others, and the second step is ranking the options from the synthesis stage (Peterson et al., 1991; Reardon et al., 2000a). The valuing process in client terms is the “choosing and occupation, program of study, or job” stage in which the client evaluates the alternatives left from the synthesis stage by using cost benefit analysis (Sampson et al., 2004).

In the first step of evaluating the alternatives, the individual thinks about how it will affect his or her social context by examining one’s value system (Sampson et al.,

2004). The person considers the advantages and disadvantages of his or her remaining career choices based on the possible positive and negative outcomes for his or her self and others. For example, an individual might consider the implications of going to law school based on the social and financial consequences it could have for his or her family now and in the future. Attending law school might be seen as a prestigious option, but it might place financial burdens on the family. Other social considerations might be friends, neighborhood, religious organizations, community, gender, or ethnic group (Reardon et al., 2000a).

In addition, the career problem solver evaluates career options by regarding one's moral ideals (Peterson et al., 1991). This moral evaluation examines the sense of right and wrong by judging the occupational alternatives based on his or her beliefs and the beliefs of his or her social groups. Reardon et al. (2000a) stated, "Each of us is ultimately faced with making choices about (1) 'What is best for me personally?' or (2) 'What is best for significant others in my life?' and (3) 'What is best for my community at large?'" (p. 80). Peterson et al. (1991) report that parts of the processes in the valuing phase are based on Rest (1984) and Kohlberg's (1981) theories of moral development.

The second part of the valuing stage involves the ranking of options from the synthesis stage. Reardon et al. (2000a) suggest ranking first the option that best removes the gap identified in the communication phase, and the next best option second, and so on. Once, the optimal choice is selected then the individual begins to put the option into action in the execution phase. For example, the option might be to select a major, enroll in college, join the military, or sit down with parents and talk about financial aid for school. Furthermore, the person should have suitable backup alternatives if the first

option fails to complete the gap then start again with the communication phase. Keep in mind that the highest priority option could just be the beginning of closing the gap between the existing state and the ideal state of affairs because the problem solver might find out that the gap is still there after the execution phase and follow-up evaluation with a closing communication phase.

Execution.

The final stage in the CASVE Cycle is the execution stage. In client terms it is known as the “implementing my choice” stage and is where the client commits to and implements a plan of action on his or her first choice (Sampson et al., 2004). In this phase an individual converts cognition into action by changing the option into a goal and forming a series of logical steps to achieve that goal (Peterson et al., 1991; Reardon et al., 2000a). Therefore, the cognitive solution converts to a concrete goal. Now the individual goes from thinking about the option to committing to a plan of action for the purpose of closing the identified career gap. This commitment to work on the plan of action can cause conflict for people who are indecisive, but it can also build confidence that now they have a direction in life (Peterson et al., 1991). Furthermore, the stress for individuals to commit in this stage involves acknowledgment of their feelings of anxiety and uncertainty to take a behavioral step in a direction that has a risk of failure.

The execution stage has three specific activities: (a) planning, (b) trying out, and (c) applying (Reardon et al., 2000a). Planning involves making a plan for obtaining education and training, including dates and addresses (Reardon et al., 2000a, p. 80). Trying out implies gaining field experience in a career through exploring work activities such as volunteering, cooperative education, job shadowing, and part time work.

Applying includes job, training, or educational search activities such as filling out applications, developing a resume, interviews, and taking steps to implement a planned course of actions (Reardon et al., 2000a).

For example, a student might figure out that he or she wants to go to law school as his or her first career choice, but the choice might not be fulfilled until he or she gets accepted to a law school. Therefore, the steps to fulfilling that career choice starts with a plan sequence of logical steps. These steps might include planning to take the law exam, reviewing different law schools, and discovering what it will take to get accepted and pay for law school. So the student makes a commitment to this process through identifying concrete actions that need to be accomplished by doing behaviors that will give him or herself the best chance to be accepted into a prospective law school. Next, the student will try out related experiences for learning about what it might be like to be a student at a law school. Therefore, the student might visit potential law schools, sit in on classes, and meet with current law students and professors. Finally, the student might apply to potential law schools, and implement a plan to get accepted to one of the selected schools. So the student might have closed the gap on the initial career problem when he or she is accepted to a law school, but to ensure the gap is closed the communication phase must be revisited.

Communication recycled.

When students complete the execution phase they need to return to the communication phase to check if the selected option removed the gap between the real and the ideal state. In client terms this is known as the “knowing I made a good choice” stage (Sampson et al., 2004). If the gap was not removed then the individual needs to

revisit the CASVE process and select the next option from the list in the valuing stage. Reardon et al. (2000a) report that the career problem solving and decision-making are continuing processes and not events. Therefore, the focus is on the completion of CASVE process by working on each of the five stages as they occur.

Executive Processing Domain

The executive processing domain is at the top of the pyramid of information processing. Meichenbaum (1977) referred to the skills used in the executive processing domain as metacognitive skills. Reardon et al. (2000a) report while it is important to have a good base of self and occupational knowledge, as well as an understanding of how to apply the information, this is still not sufficient enough to solve a career problem. The authors go on to state, “the missing ingredients are referred to as *metacognitive skills*, or the skills that govern how we think about career problem solving and decision making” (p. 87). Fundamentally, metacognitions are the higher order thinking process that we engage in to attain a goal (Reardon et al., 2000a). Metacognitions help the decision maker to initiate the CASVE Cycle, retrieve information from the knowledge domain, and execute a choice (Peterson et al., 1991; Reardon et al., 2000a). Therefore, metacognitions control the selection and sequencing of cognitive strategies used to solve a career problem through self-talk, self-awareness, and monitoring and control (Sampson et al., 2004, p. 24).

Self-talk.

In order for students to be good problem solvers they need to have healthy thoughts about their career situation. Self-talk is the brain’s conversation with itself regarding how a person might solve a problem such as making a career decision. A

person can have positive and negative self-talk (Sampson et al., 2004). Students with positive self-talk will tend to have statements about themselves that will help them maintain motivation and confidence to continue on with the career problem solving process. Positive self talk will also motivate the person to follow through on behaviors for discovering and applying information that help solve their career problem and also produce positive emotions. An example of positive self-talk would be “I am a capable problem solver” (Peterson et al., 1991, p. 38).

Good career decision makers want to avoid negative self-talk. Students who engage in negative self-talk create destructive beliefs about themselves that can cause behaviors and feelings that prevent them from continuing on in their career decision-making process. For example, a statement based on the belief that “I must be stupid because I need help in solving my own career problem” can lead to unmotivated behaviors for seeking out career counseling and also lead to feelings of hopelessness. Reardon et al (2000a) state that negative self-talk brings “static” into a system that can prevent a student from exploring, accessing, and using available information stored in the knowledge domains and therefore interferes with the effective, efficient processing of information in the decision making skills domain.

Self-Awareness.

Being an effective career problem solver means “having an awareness of one’s self as the doer of a task” (Reardon et al., 2000a, p. 88). Students that are aware of their self-talk and feelings is an indicator that they might be good problem solvers. Peterson et al (1991) affirm that self-awareness assists in controlling biases from wishful thinking, projective thinking, or outside influences of family and friends during the synthesis and

valuing of alternate solutions during the career problem solving process. Therefore, students that are aware of their feelings will attempt to select a solution that benefits family, friends, community, and themselves. In the previous example where the student who decided to go to law school becomes aware that he or she is having anxious feelings about the decision to go to law school because he or she is having negative self-talk about failing the entrance exam. The student's self-awareness about the test anxiety allows him or her to lessen the negative self-talk by coming up with an action plan to prepare for the law school entrance exam. Therefore, he or she feels less anxious and more confident about his or her career decision of attending law school.

Monitoring and control.

Monitoring and control is a component of the decision making process that involves the initial use of lower order information and then progresses to gaining further information for problem resolution (Atkins & Shiffrin, 1968). Proper decisions are made when students use the initial information they have to examine their career problem and as they notice a lack of information needed to close the decision making gap they proceed to search for and retrieve more information. Students use the metacognitive skills of monitoring and control to maintain a balance between impulsive and compulsive decision-making. Impulsive decision making promotes the use of random or trial and error types of problem solving (Messer, 1976). Compulsive decision-making promotes obsessive thinking with no event of action-oriented behaviors to solve the problem (Nisbett & Ross, 1980).

According to Sampson et al. (2004) monitoring refers to an individual's ability to keep track of his or her progress during the decision-making process by knowing when to

stop and search for more information, knowing when to continue on to the next step in the process after a task is completed, and knowing when to seek assistance when stuck in the process. In addition, Sampson et al. refer to control as an individual's ability to purposely engage in the next problem solving task, which includes the ability to control negative self-talk, and control behaviors to complete tasks. For example, a student interested in becoming a plumber would use monitoring to discover new information about this career by researching the average starting salaries. Next, the student might apply control by putting closure to that task and moving onto talking with local plumbers in the field about their pay, benefits, duties, training, and hours.

In summary, the Cognitive Information Processing model can be used to help solve high school students' career problems. Students need to apply self and occupational knowledge in the knowledge domain to help them identify their career problem. Next, students enter the decision making domain and use the CASVE cycle to lessen the gap and make a career choice. During the entire process students are using the executive processing domain to identify and lessen negative self talk and work through the career decision making process.

Career Thoughts Research

A review of the research literature found that there has not been research done on high school students with the use of the Cognitive Information Processing (CIP) model and the Career Thoughts Inventory. The only exception is the research done by Sampson et al. (1996c) on the original normative sample of 396 11th- and 12th-grade high school students in the creation of the CTI. The majority of the research using the CTI used participants in university and community settings with age ranges from 17 to 59 (e.g.,

Austin, Dahl, & Wagner, 2003; Austin, Wagner & Dahl, 2004; Railey & Peterson, 2000; Kleiman, Gati, Peterson, Sampson, Reardon, & Lenz, 2004; Lustig & Strauser, 2002). These researchers investigated: career thoughts and career interest structure (Railey & Peterson), career thoughts and sense of coherence (Lustig & Strauser), career thoughts and career decidedness (Kleiman et al.), and reducing negative career thoughts using the CIP model (Austin, Wagner, & Dahl; Austin, Dahl, & Wagner). These studies are noteworthy, and are recommended for further reading regarding the research conducted on the CIP approach. However, there will be no further detail about the findings of these studies, but there will be further detail with the more relevant findings of studies directly related to the research questions and methods of this study.

Research by Dodge (2001) and Voight (1999) were the most influential in the design of this study. These two studies included the CIP approach with parental attachment (Voight) and the CIP approach with family systems (Dodge) in their examinations of their participants' career development. The two studies also used a correlational design. Voight used canonical correlation to investigate parental attachment as a predictor of career identity. Dodge used canonical correlation to investigate a relationship between personal authority in the family system and dysfunctional career thoughts. Dodge also used canonical correlation to investigate a relationship between quality of family relationships and family system maintenance, and dysfunctional career thoughts. College students participated in both studies. Although, Dodge and Voight had several hypotheses, this literature review will focus on their hypotheses that are most relevant to this study (see Dodge; Voight).

Voight (1999) used the Parental Attachment Inventory (PBI, Parker, Tupling, & Brown 1979) to measure parental attachment that included the four subscales of father care, father protection, mother care, and mother protection. Voight used the CTI to measure career dysfunctional thinking that included the global score and scores on the three subscales of Commitment Anxiety, Decision Making Confusion, and External Conflict. Voight found no significant relationship between the set of four parental attachment variables scores and the set of four career identity variables scores. However, she reported that her results are inconsistent with other literature on family and career development (see Blustein, 1997a; Blustein, Prezioso, & Schultheiss, 1995; Blustein, Walbridge, Friedlander, & Palladino, 1991; Grotevant & Cooper, 1988; Kenny, 1990; Ketterson & Blustein, 1997; Kinnier, Brigman, & Noble, 1990; Lopez, 1989, 1995; O'Brien, 1992; O'Brien & Fassinger, 1993; Penick & Jepsen, 1992). Voight reported that her results are inconsistent with the research literature because of her studies small homogeneous sample size (131 participants). Her sample was mostly women from similar backgrounds and she also had no method to check for issues with social desirable responding.

To improve upon Voight's (1999) methods, the current study will survey a larger group of participants with differing genders, and from diverse family and socio-economic backgrounds. This study will also have a measure for social desirable responding to lessen any bias in participant response. In addition, Voight (1999) recommended using a parental attachment measure that would address more conflict in the relationships between parent and child. In this study, a different measure than Voight's measure of parental attachment will be used to examine more conflict in the relationships (see

Armsden & Greenberg, 1987). This study will account for these corrections in the methods section.

Dodge (2001) used the Personal Authority in the Family System Questionnaire (PAFS-Q, Bray, Williamson, & Malone, 1984a, 1984b) to measure personal authority and the CTI to measure dysfunctional career thoughts. He examined the hypothesis that personal authority in the family and its seven variables (i.e., intergenerational intimacy, intergenerational individuation, personal authority, intergenerational intimidation, intergenerational triangulation, peer intimacy, and peer individuation) is negatively related to career dysfunctional thinking and its three subscales. In addition, he used the Family Environment Scale's (FES; Moos & Moos, 1994) three subscales of Cohesion, Expressiveness, and Conflict to measure the impact of family dynamics with career thoughts. Dodge proposed that low cohesion and expressiveness and high conflict would be related to the CTI's three subscales.

Dodge (2001) found for his first hypothesis that there is a reliable relationship between scores on the CTI subscale of External Conflict and scores on the PAFS-Q subscale of Intergenerational Individuation. External Conflict, Decision Making Confusion, and Commitment Anxiety scores were found to relate to Intergenerational Individuation, Intergenerational Intimidation, Intergenerational Triangulation, and Peer Individuation scores. Dodge interpreted his findings to mean "the developmental task of individuation from peers and parents is associated with less impairment in career decision-making" (p. 81). For the later hypothesis, Dodge (2001) found that "dysfunctional career thoughts associated with openly expressed anger and conflict among family members" (p.86). Low confusion and expressiveness did not relate to

career thoughts. Dodge interpreted these findings to mean that conflict in the family plays a role in the career development of college students. However, he did not find the opposite to be true with a supportive family being related to the absence of career dysfunctional thoughts.

Dodge's (2001) findings support the importance of the role that family has in influencing people's career thoughts in the career development process. However, the current study will use Bowlby's (1969/82, 1973, 1980) theory of attachment as opposed to Dodge's use of Bowen's (1978) theory of family systems to examine if parental attachment will influence a person's career thoughts. Whereas Bowlby's theory defines peoples' relationships later in life is based on secure and insecure attachments to parents; Bowen's theory defines peoples' relationships later in life based on differentiation from parents. This study is interested in examining high school students' career thoughts with high school students' nature of feelings towards expectations about attachment figures (see Armsden & Gay, 1987) not independence from parents (Bowen).

Based on the lack of research on the Cognitive Information Processing model and attachment, this study will add to the career development and attachment research by examining relationships between career thoughts and parental attachment's constructs of Trust, Communication, and Alienation. This study will also examine if supportive and involved parents are related to functional career thoughts.

Conclusions

Chapter II started with a review of the literature pertaining to the relationships that students' gender, disability, grade, and parents level of education had on career thoughts. The lack of research on high school students found that there is a need to

confirm Sampson et al. (1996c) findings on high school student normative group. Research on students with disabilities found that this study needs to complete a priori power analysis to ensure that this study will have enough participants to detect a statistically significant difference. To lessen response bias this study will also have to check with the participants sending school districts about any career services they might have received in the past year. Also, this study will use parents' level of education as a measure of SES to check if there is a relationship with career thoughts.

Next, there was a review of Bowlby's Attachment Theory and Cognitive Information Processing model. The two theories were found to converge on the concepts of episodic and semantic memories because adolescents base their behaviors and emotions on positive or negative perceptions from past familial interactions. Meaning, adolescent behavioral and emotional problems occur when there is a conflict between an adolescent's perception of past events and actual facts. Bowlby (1969) defined this as a person's internal working model. The research found on attachment and career development supported adolescents who have secure attachments to parents also have healthier working models for making career decisions and solving career problems. Therefore, this study expects to find a relationship between parental attachment and career thoughts.

Next, the research on parental involvement was reviewed. This research found parental involvement was moderated by authoritative parenting and accounted for improved school achievement. According to Baumrind's (1991a/b) theory of parent control, authoritative parents are involved in their adolescents' lives. Also, research on parental involvement and career development supported parents as influences of their

adolescents' career decision making and exploration. Therefore, this study expects to find a relationship between parental involvement and career thoughts.

Finally, a review of the Cognitive Information Processing model explained how the model can be used to help students improve their career decision making skills. In addition, there was a review of the research literature on career thoughts that specifically used the Cognitive Information Processing model. This research found a need to use a measure of social desirable responding to check for response bias. A review of the literature also found that there was a lack of research using the Cognitive Information Processing model's concepts of career thoughts with high school students.

CHAPTER III

Methodology

The first section of this chapter will discuss information about participant sample size, recruitment, and consent. Second, this chapter will describe the instruments used in this study. In addition instruments for the dependent as well as the independent variables will be described in order of the variables temporal proximity to the dependent variables. Third, research questions with an accompanying rationale for the statistical procedures and the assumptions on which they are based will be detailed.

Population

Participant Estimated Sample Size

Faul, Erdfelder, Lang, and Buchner's (2007) G*Power 3 software was used in calculating an a priori power analysis to determine the sample size needed to achieve a desired level of power. Szymanski and Parker (1992) stated the following:

Statistical power is the probability of finding relationships or differences in sample data that actually exist in the population (Cohen, 1988). Power can also be viewed as "the probability of rejecting a null hypothesis that is, in fact, false" (Williams, 1986, p. 67). Power is a function of the sample size (N), the probability (alpha) of a Type I error, and the effect size (ES). Other factors that affect power include the appropriateness of the research design and the adequacy of controls in limiting error variance. (p. 2)

In determining power, an important consideration concerns effect sizes which indicate strength of relationships among variables (Szymanski & Parker, 1992). Field (2005) defined "effect size is simply an objective and standardized measure of the

magnitude of the observed effect” (p. 32). Effect sizes range from 0 no effect, to 1 perfect effect. Urdan (2005) suggests that there are no specific rules governing the interpretation of effect sizes; however, most authors suggest that effect sizes below .20 are “small”, effect sizes between .25 and .75 are “moderate”, and effect sizes over .80 are “large”.

Effect sizes are linked to three other statistical properties:

(1) The sample size on which the sample effect size is based; (2) the probability level at which we will accept an effect as being statistically significant (the α -level); and (3) the ability of a test to detect an effect of that size (known as statistical power) (Field, 2005, p. 33).

For the a priori power analysis, an alpha level of .01 was selected because this value improves the probability of finding a statistically significant effect (Cohen, 1988). I used the G*power default effect size $f = 0.15$ because there was no previous knowledge that specifically considered parental attachment and involvement with the career thoughts of high school students. A power level of .80 was selected because Heppner, Kivlighan, and Wampold (1999) identify .80 as an acceptable level of power. After inputting the selected levels with this studies nine independent variables, the G*Power3 software calculated an estimated sample size of 114.

Participant Recruitment and Consent

Participants in this study include 10th-, 11th-, and 12th-grade high school students enrolled in a career and technical public school in south central Pennsylvania. The career and technical high school recruits students from 14 different public school districts, and two non-consortium school districts, and three private schools in Cumberland County, Perry County, York County, and Adams County. The career and technical school is a half

day technical school; this means that the students spend half the day at their sending school attending academic subjects and half the day at the career and technical school attending technical subjects.

I contacted the participants' 14 sending school districts counselors to find out if there were any career services given in the past year. As found in the literature review, Dipeolu et al. (2002) failed to account for any career counseling that students with disabilities had received prior to filling out the Career Thoughts Inventory (CTI). This was a limitation to Dipeolu et al.'s study because their findings contradicted prior research that students with disabilities have less dysfunctional career thoughts compared with college students' career thoughts. Sending school districts career services were accounted for in this study because some participants might have received career counseling and therefore might have been more prepared when answering the surveys about career decision making. I found that all participants from the 14 sending school districts had received some form of computer aided career guidance services their freshman year of high school. The career programs the participants from the 14 sending school districts were exposed to were Choices, Discover, Educational Planner, and Career Cruising.

First, permission was received through the director and principal of the career and technical high school to conduct research on their students. Next, permission was received from teachers to use their class time to conduct this study. Finally, students were asked directly in their technical program settings about volunteering to participate in this study. See Appendix A for the recruitment script used to recruit students to volunteer for this study.

Since this study assessed opinions and perceptions of minors, parental consent was needed in addition to student consent. To acquire participant parental permission, informed consent forms were mailed to all parents of students in 10th, 11th, and 12th grade who attend the career and technical school. The consent form was based on the career and technical schools' parent and student consent procedures and the Pennsylvania State Universities Office of Research Protections procedures for gaining participant informed consent. The schools' procedure is to give students and their parents two weeks to respond to the informed consent form. Students needed to have the form signed by their parents if and only if their parents did not wish to give consent to allow their children to participate in this study. Those students who returned signed forms did not participate in this study. See Appendix B for a sample of the informed consent form.

Students who gave final verbal consent the day of the study completed the Student Background Questionnaire, the Career Thoughts Inventory (Sampson et al., 1996a), the Inventory of Parent and Peer Attachment (Armsden & Greenberg, 1989), the Impression Management Scale of the Balanced Inventory of Desirable Responding (Paulhus, 1984, 1991), and the NELS: 88 Student Questionnaire (Trusty et al., 1997). The instruments were presented to the students in a packet. The instruments in the packet were placed in a random order to prevent participant fatigue in responding to the assessments. The primary researcher administered all packets to students in their program area settings or shop classrooms. Students completed the assessments within the allotted time of 45 minutes. However, students who needed more time to complete the packets were given more time. Names were not collected, but each sheet of paper within each packet had a corresponding participant number in case of packet separation.

Instruments

Instruments for Independent Variables

Demographic Variables

The following is a description of the demographic variables that were used in this study. The demographic information was presented to participants in the Student Background Questionnaire. The Student Background Questionnaire was developed to assess the participants' gender, grade, parent/guardian level of education, and special education status or disability status. Please see Appendix C for the sample form of the Student Background Questionnaire. In addition, any demographic variables with more than two categories were dummy coded. Dummy coding allowed for recoding of nominal data that have more than two categories as zeros and ones so the computer would interpret the data into the multiple regression analysis. This study used the number 99 as the code for missing data for all independent and dependent variables.

Gender.

Gender is a nominal or categorical data and it was dummy coded (Dgender) as 1 for boys and 0 for girls.

Parental Highest Level of Education.

The ordinal categories of the reported parent with the highest level of education were as follows: (1) less than high school, (2) high school diploma or GED, (3) some college/post secondary, (4) associates degree, (5) Bachelor's degree, (7) Ph.D, M.D., or professional degree, and (0) don't know (see National Education and Longitudinal Study, 1988-2000). However, parents' levels of education were recoded based on results from a frequency analysis. This variable was recoded by combining six of the responses into

three responses with one remaining response keeping its original code. “Less than high school” or “GED and high school diploma” were combined to become “high school or GED”. “Some college” and “associates degree” were combined to become “some college and associates degree”. “Bachelors degree”, “Masters Degree”, and “Ph.D. or professional degree” were combined to become “Bachelors or higher”. The remaining response was coded as 0 for “don’t know”, and these responses were removed from the regression analysis as missing data. See Table 2 for coding of the variables used in the regression analysis procedures.

Student Disability.

Student disability is categorical data and was dummy coded (Ddisability) as 1 for students who have a disability and 0 for all those students who do not have a disability. Students who do have a disability were required to select the disability category. The United States Department of Education (2004) in their document, the Individuals with Disabilities Education Act (IDEA), defines a student who has a disability as:

Having mental retardation, a hearing impairment including deafness, a speech impairment, a visual impairment including blindness, serious emotional disturbance, an orthopedic impairment, autism, traumatic brain injury, other health impairment, specific learning disability, deaf-blindness, or multiple disabilities, and who, by reason thereof, needs special education and related services. (p. 3)

There are other types of issues that impede student learning that would not require special education services. Those issues fall under the definition of Pennsylvania Code Chapter 15, which is regulated by Title 34, Section 504 in the United States Department

of Education Regulations. For the purpose of this study the number “504” refers to those students who meet those federally specified conditions as defined by the Pennsylvania Department of Education (PDE). In PDE’s (1991) PA Code, Chapter 15 defines a protected handicap student as a student who meets the following conditions:

- (i) Is of an age at which public education is offered in that school district.
- (ii) Has a physical or mental disability, which substantially limits or prohibits participation in or access to an aspect of the student’s school program.
- (iii) Is not eligible as defined by Chapter 14 (relating to special education services and programs) or who is eligible but is raising a claim of discrimination under § 15.10 (relating to discrimination claims). (p. 2)

For example, if a student who has diabetes is missing school due to the disease, but does not qualify under IDEA for special education services, he or she would be eligible for accommodations under section 504. Non special education personnel implement these accommodations.

Inventory of Parent and Peer Attachment

Armsden and Greenberg (1987) created the Inventory of Parent and Peer Attachment (IPPA) to assess late adolescents’ attachment to their mother, father, and friends. The IPPA is based on Bowlby’s (1969/82, 1973, 1980) attachment theory. The original IPPA consists of 28 items. The IPPA assess security of attachment (Bowlby, 1969/82, 1973, 1980) and includes three dimensions of Trust, Communication, and Alienation. The instrument is self-report and uses a 5-point Likert-type response format. Higher scores indicate more secure attachment and lower scores indicate less secure attachment. The response options are: 1 “almost never or never true”, 2 “not very often

true”, 3 “some-times true”, 4 “often true”, and 5 “almost always or always true”. All negatively worded item responses are reversed for each subscale and then all item responses for each subscale are summed to calculate the IPPA total score. Armsden and Greenberg (1989) state “it is necessary to also reverse score all Alienation subscale items” (p. 7). The IPPA Results of the test yield two separate scores for parent and peer attachment. For the purpose of this study only the parent attachment scale was used to measure parental attachment. See Appendix D for a sample of the IPPA assessment.

Trust.

The subscale of Trust is made up of 10 items. Armsden and Greenberg (1987) defined the Trust subscale as the “items suggesting themes of parental understanding and respect, and mutual trust” (p. 433).

Communication.

The subscale of Communication is made up of 10 items. Armsden and Greenberg (1987) defined the Communication subscale as the “items related to the extent and quality of verbal communication with parents” (p. 433).

Alienation.

The subscale of Alienation is made up of 8 items. Armsden and Greenberg (1987) defined the Alienation subscale as the items suggesting “feelings of alienation and isolation” (p. 433).

Validity of the IPPA.

Content validity of the IPPA is based on close relationships between development of the items and models of attachment and adolescent development (Blustein et al., 1991, p. 44). Convergent validity scores for the IPPA correlate with measures of self-concept,

self-esteem, life satisfaction, problem solving, and locus of control (for examples see Armsden & Greenberg, 1987). Armsden and Greenberg found the three-factor structure to correlate with family cohesion. The IPPA scores negatively correlated with depression and loneliness.

Reliability of the IPPA.

Internal consistencies for the mother, father, and peer attachment scales are alphas of .91 for Trust, .91 for Communication, and .86 for Alienation (Armsden & Greenberg, 1987). The original IPPA's three-week test-retest reliability coefficients are .93 for parents and .86 for peers (Armsden & Greenberg, 1989).

NELS: 88 Student Questionnaire

The scale developed by Trusty et al. (1997) was used to measure parental involvement. Trusty and Lampe (1997) state, "the scale represents students' perceptions of parents' involvement in students' educational, career, and personal development" (p. 377). The measure of parent involvement was assessed by Trusty et al. (1997) from the NELS: 88 Second Follow-up Student Questionnaire. Trusty et al. completed a factor analysis on several of the items that represented students' perceptions of parents' involvement in their education, career development, and personal lives. The students' perceptions came from seven questions regarding parental discussion with students about: (a) school courses, (b) school activities, (c) things studied in class, (d) grades, (e) post high school job possibilities, (f) current events, and (g) things which trouble the student. Students indicated a choice on a three-point Likert-type scale of never, sometimes, or often (Trusty et al.). The eighth item assessed how much time parents spent with their child talking or doing activities (Trusty et al.). The eighth survey item was measured by a

four-point Likert-type scale indicating the following categories: (a) never/rarely, (b) less than once a week, (c) once or twice a week, or (d) every day or almost every day. Higher scores for these eight items indicate student perceptions of more parent involvement. This study used the four-point Likert-type scale for all eight items. For a sample of NELS:88 Survey see Appendix E.

Validity of Parental Involvement.

Trusty (1996) found convergent validity of Parental Involvement scores related to adolescents' favorable perceptions of the future, and constructive school attitudes. Whereas, they found Parental Involvement scores negatively related to drug use and problem behavior (Trusty & Colvin Harris, 1999, p. 368). Trusty et al. (1997) found Parental Involvement scores in career development were negatively related to school absences and tardiness, misbehavior in school, and alcohol and other drug use. However, Parental Involvement scores were positively related to: constructive attitudes about school, amount of time spent on homework, and achievement test scores (Trusty et al., 1997, p. 194). According to Trusty et al. correlations and factor analysis for the scale quantified parental involvement in their children's career development.

Reliability of Parental Involvement.

According to Trusty and Lampe (1997), Parental Involvement's internal reliability estimate was .82. The coefficient was based on the sample of 10,311 high school seniors from the NELS: 88 Second Follow-up Student Survey (Trusty & Lampe).

Balanced Inventory of Desirable Responding (control variable)

The Balanced Inventory of Desirable Responding (BIDR) was the measure used in estimating participant responses. The inventory measures the two constructs of self-

deception (SDE) and impression management (IM) (Paulhus, 1984, 1991).

Psychoanalytic theory was the original basis for the original self-deception items. The theoretical assumption was that an individual would use his or her ego defense of self-deception by denying any threatening thoughts or feelings (Paulhus, 1991). However, the scale is now based on ego-enhancement. This construct is demonstrated when an individual uses self-deception to exaggerate claims of positive behavior by rationalizing overconfidence in making judgments (Paulhus, 1991). Impression management is when participants lie by over-reporting desirable behaviors and under-reporting undesirable behaviors, thus making them appear positive in the eyes of the observer. In other terms, any participant distortion is presumably a conscious lie (Paulhus, 1991). Participants who score high on the BIDR impression management scale will be removed from the data analysis because their socially desirable responses biased the linear estimates in the regression analysis. Please see the excluded data section in chapter IV for further explanation.

The BIDR assesses 40 items that are rated on a seven-point Likert-type scale. The scales for SDE and IM range from 0 to 20 because only the extreme scores of six or seven are assessed as one point (Paulhus, 1991). In addition, scores of one or two are reversed on negatively keyed items. All 40 items can be summed to yield a total score of socially desirable responding (SDR) (Paulhus, (1991). For this study only the IM scale was used because Abrams and Trusty (2004) acknowledged, “impression management should be controlled to extract bias associated with the conscious, socially conventional persona projected in self-report instruments” (p. 367, and also see Paulhus, 1984, 1991;

Paulhus & Reid, 1991). For a sample of the BIDR Impression Management Items please see Appendix F.

Validity of the BIDR.

Convergent validity for the total scale of SDR scores had strong correlation with other measures scores of self-deception. Furthermore, scores on the SDE measure were found to have positive correlations with scores on the measures of defense and coping (see Paulhus, 1991). Paulhus found IM scale scores highly correlated with scores on instruments measuring lying, instruments measuring role-playing, and scores on instruments measuring ratings of agreeableness and conscientiousness. Finally, discriminant validity of self-deception and impression management ranged from .05 to .40 depending on the situation for self-presentation (Paulhus, 1991).

Reliability of the BIDR.

Paulhus (1991) surveyed samples of 884 religious adults and 433 college students to find internal consistency coefficients for both the SDE and IM scales. The alpha ranges for the SDE scale are .68 to .80 and for the IM scale .75 to .86 (Paulhus). Paulhus reports an alpha coefficient of .83 for the total score of the 40 items. Correlations over a five-week test-retest period are .69 for the SDE scale and .65 for the IM scale (Paulhus).

Instrument for Dependent Variable

Career Thoughts Inventory

The Career Thoughts Inventory is a theory-based assessment consisting of 48 items with a four point Likert-type scale with response options from 0 strongly disagree, 1 disagree, 2 agree, to 3 strongly agree (Sampson et al., 1996a; 1996c; 1998). The Likert-type scale of the CTI was treated as an interval level of measurement, and so were all

other assessments in this study that used a Likert-type scale (see Glass & Hopkins, 1996; Sirkin, 1999). The CTI is based on Cognitive Information Processing Model (CIP), a theoretical approach to career development and career services (Peterson, Sampson, & Reardon, 1991; Peterson, Sampson, Reardon, & Lenz, 1996), and a cognitive theoretical approach to counseling and mental health services (Beck, 1976). In addition, *Improving Your Career Thoughts: A Workbook for the Career Thoughts Inventory* (Sampson et al., 1996b) is used in the delivery of career services in conjunction with the CTI and is based on CIP theory.

The CTI can be used with adults, college students, and high school students. It was created to improve individuals' career decision-making and to improve the delivery of quality career services used by these individuals. The assessment is a self-administered and an objectively scored measure of the level of dysfunctional thinking related to career problem solving and decision-making. In terms of use with high school students, the CTI was designed for 11th and 12th grade high school students choosing an occupation, choosing a postsecondary field of study, or seeking employment (Sampson et al., 1998, p. 117). The readability of the scale was calculated to be at a 6.4 grade level (see Sampson et al., 1996c, p. 22).

The CTI can be completed in 7 to 15 minutes. A higher total score indicates a greater degree of dysfunctional career thinking. Therefore, the CTI yields a single global indicator of dysfunctional thinking in career problem solving and decision-making, and scores on three construct scales (Sampson et al., 1996c). However, there are 48 items scores representing the CTI total score and therefore these 48 items scores are not simply the sum of scores for the three CTI subscales. There are 19 additional items that are not

represented by the CTI subscales. Those 19 items scores are added with the 29 items scores from the three construct scales for a total of 48 items scores that are added to give the CTI total score. Some examples of those 19 items are: “almost all occupational information is slanted toward making the occupation look good”; “there are few jobs that have real meaning”; and “if I change my field of study or occupation, I will feel like a failure” (Sampson et al., 1996a).

The three construct scales are: Decision Making Confusion, Commitment Anxiety, and External Conflict. I will give a brief description of each subscale including some examples of the subscale items. However, validity and reliability information will be included in the sub-sections following the descriptions of the subscales.

Decision Making Confusion (DMC).

This construct is defined by the inability to initiate or sustain the decision making process as a result of disabling emotions and/or a lack of understanding about the decision making process itself (Sampson et al., 1996c). This scale has 14 items. Some examples of DMC items are: “no field of study or occupation interests me”; “I get so depressed about choosing a field of study or occupation that I can’t get started”; and “I’ll never understand enough about occupations to make a good choice” (Sampson et al., 1996a).

Commitment Anxiety (CA).

This construct is defined by an inability to make a commitment to a specific career choice, accompanied by generalized anxiety about the outcome of the decision making process, with the anxiety perpetuating the indecision (Sampson et al., 1996c). This scale has 10 items. Some examples of CA items are: “my interests are always

changing”; “I’m afraid I’m overlooking an occupation”; and “the hardest thing is settling on just one field of study or occupation” (Sampson et al., 1996a).

External Conflict (EC).

This construct is defined by an inability to balance the importance of one’s own self-perceptions with the importance of input from significant others, resulting in a reluctance to assume responsibility for decision making (Sampson et al., 1996c). This scale has 5 items. Some examples of EC items are: “the views of important people in my life interfere with choosing a field of study or occupation”; “I’m always getting mixed messages about my career choice from important people in my life”; and “I need to choose a field of study or occupation that will please the important people in my life” (Sampson et al., 1996a).

Normative Group of the CTI.

Sampson et al. (1996c) used multiple regression analysis to determine the amount of variance among the three normative groups of adults, college students, and high school students in the CTI total score. They found a 5% difference of the variance in the CTI total score among the three normative groups. Sampson et al. (1996c) explains the substantive variance as a likely function of developmental differences. The CTI total score differences are as follows: between adults (M = 36.33, SD = 22.09) and college students (M = 47.01, SD = 20.89) and between high school students (M = 48.78, SD = 20.50). For the purpose of this study normative data was presented for high school students (n = 396). In addition, the short form of the Marlowe-Crowne Social Desirability Scale was used to retain CTI scale items that were significantly associated with social desirability ($r \leq .25$) (Sampson et al. 1996c).

Validity of the CTI.

Sampson et al. (1996c) found the Career Thoughts Inventory to exhibit reasonable content, construct, convergent, and criterion validity. Content validity was established by linking individual items and construct scales to CIP theory through content dimensions (Sampson et al.). Regarding construct validity, a series of principal component analyses with orthogonal rotation identified the factors of Decision Making Confusion, Commitment Anxiety, and External Conflict.

Assessment of convergent validity showed CTI scales consistently inversely correlated with positive constructs. In other terms, DMC, CA, and EC scale scores showed negative correlations with scores for vocational identity, career certainty, and occupational knowledge. Conversely, the scale scores correlated directly or positively with scores for indecision, neuroticism, and vulnerability (Sampson et al.). The measures used in the assessment of convergent validity are the following: *My Vocational Situation* (MVS; Holland, Daiger, & Power, 1980a), *Career Decision Making Scale* (CDS; Osipow, Carney, Winer, Yanico, & Koschier, 1987), *Career Decision Profile* (CDP; Jones, 1988), and *Revised NEO Personality Inventory* (NEO PI-R; Costa & McCrea, 1992a). Finally, criterion validity showed that the CTI discriminated between persons seeking career services and persons not seeking career services (Sampson et al.).

Reliability of the CTI.

The internal consistency coefficients for the CTI total score of the high school students was $\alpha = .96$. Sampson et al., (1996c) reported alpha coefficients at .91 for the DMC scale, .85 for the CA scale, and .74 for the EC scale. The lower reliability estimates of the EC scale may be due to the small number of items ($n = 5$). Stability

scores for the four-week test-retest coefficients for the CTI total score was $r = .69$.

Although the coefficients of $.72$ for DMC, $.70$ for CA, and $.52$ for EC are low, adequate stability exists for the use of the instrument (Sampson et al.). The low stability score for EC is due to the small number of items and the interaction of age-specific developmental issues with respect to conflict with authority figures in general (Sampson et al., p. 51).

Table 1

Current and Previous Study Cronbach Alpha Reliability Estimates for Independent Variables and Dependent Variables Measures

<i>Scale or Subscale</i>	<i>Number of Items</i>	<i>Previous α</i>	<i>n</i>	<i>Current α</i>	<i>n</i>
IPPA Total Score	28	.93	400	.95	461
Trust	10	.91	400	.92	461
Communication	10	.91	400	.88	461
Alienation	8	.93	400	.85	461
Parental Involvement	8	.82	10,311	.75	463
CTI Total Score	48	.96	396	.95	464
DMC	14	.91	396	.91	464
CA	10	.85	396	.85	464
EC	5	.74	396	.71	464

Note: Inventory of Parent and Peer Attachment (IPPA); Career Thoughts Inventory (CTI); Decision Making Confusion (DMC); Commitment Anxiety (CA); External Conflict (EC)

Research Question One

Procedures

Ordinary least squares (OLS) multiple regressions were used to examine the influences of this study's nine independent variables on the four dependent variables of career thoughts and its three subscales. Ordinary least squares is most appropriate for this study because in this type of regression, the regression line represents the straight line that produces the smallest sum of squared deviations from the line (Urdu, 2001, p. 121).

Multiple regressions were used for examining bivariate relationships, examining interrelationships among independent variables, and examining for the presence of statistical interactions (Afifi, Clark, & May, 2004; Pedhazur, 1997). A hierarchical model was used to test the hypothesis $H_0: R^2 = 0$. The hierarchical model or SPSS blockwise entry procedure was used to select how to enter this study's independent variables into the regression model. In hierarchical regression independent variables are selected based on the past work and the experimenter decides in which order to enter variables into the model (Field, 2005, p.160). Therefore, hierarchical regression with three blocks was selected based on historical occurrences. The independent variables were entered into the model based on the variables' temporal proximity in the order that the variables occur over each participant's lifetime. For example, people are born male or female, and since these independent variables occur first in a person's history then these variables were entered first into the model. Therefore, the independent variables were entered in the following order: background variables, parental attachment and its three subscales, and parental involvement.

Ordinary Least Squares Multiple Regressions.

A simple linear regression uses a formula to calculate the predicted value of one variable with the known value of a second variable (Urduan, 2001; Field, 2005). With this equation, the intercept is added to the slope of the line multiplied with the independent variable to predict an increase or decrease in the dependent variable. This method assumes a linear relationship in the study. Multiple regression inputs the addition of a second or several independent variable, which changes the regression equation from Y (predicted) = $a + bX_1 + \text{error}$ to Y (predicted) = $a + bX_1 + bX_2 + b_i + x_i + \text{error}$. This allows for the examination of the following:

1. Are the two predictor variables related to the dependent variable, and how much variance in the dependent variable can be explained by independent variables?
2. Using partialing can take out or control the variance for one predictor variable, and examine how much the other predictor variable is related to the dependent variable.
3. This method can measure for the predictor variable that is the stronger predictor of the dependent variable.
4. This method can test whether one predictor variable is related to the dependent variable after controlling for the other predictor variable (Urduan, 2001, p. 124).

Orthogonal/Independent and Non-orthogonal/Correlated analyses.

Using the SPSS statistical software, the data were examined by descriptive and correlation statistics. Running correlation in SPSS enables the examination of the strength of relationships among all the variables. Ideally, you want scores for the independent

variables to be highly correlated with scores for the dependent variable. Thus, an inference is made that these independent variables might predict the dependent variables. An examination was done to check for low correlation between independent variables scores because a strong correlation could lead to multicollinearity. Multicollinearity can affect the measure of variance explained by the independent variables with the dependent variable. Therefore, a check was also completed to see if the scores for the independent variables were highly correlated with scores for the dependent variable, but not with one another. Checked Variance Inflation Factor (VIF) and tolerance statistics according to Field (2005) those conditions are:

If the largest VIF is greater than 10 then there is cause for concern (Myers, 1990; Bowerman & O'Connell, 1990). If the average VIF is substantially greater than 1 then the regression may be biased (Bowerman & O'Connell, 1990). Tolerance below .1 indicates a serious problem. Tolerance below .2 indicates a potential problem (Menard, 1995) (p. 196).

Table 2

Coding of Variables Used in Regression Analysis Procedure

Variable	Source	Type	Dummy Code or Scale
Student Gender	Student Background	Nominal	0 = Girl
	Questionnaire		1 = Boy
Student Disability	Student Background	Nominal	0 = No Disability
	Questionnaire		1 = Yes Disability
Student Grade	Student Background Questionnaire	Nominal	1 = 10 th Grade
			2 = 11 th Grade
			3 = 12 th Grade
Level of Education for Most Educated Parent	Student Background	Ordinal	0 = Don't Know ^a
	Questionnaire		1 = High School or GED
			2 = Some College and Associates Degree
			3 = Bachelors or Higher
Parental Attachment and its Three Subscales	IPPA	Interval	Summated Likert Scale Score
Parental Involvement	NELS:88 Student Survey	Interval	Summated Likert Scale Score
Social Desirable Responding	BIDR	Interval	Summated Likert Scale Score
Career Thoughts and its Three Subscales	CTI	Interval	Summated Likert Scale Score

Note: Don't know^a participants' responses were recoded as missing data and removed from the regression analysis

Regression Assumptions

Afifi Clark, and May (2004), Chatterjee et al. (2000), Hair, Anderson, Tatham, and Black (1992), Field (2005), and Pedhazur (1997) strategies were used for testing the regression assumptions.

The distribution of residuals is normal at each value of the dependent variable.

A check for a normal distribution was done to test this assumption. First, the symmetrical bell-shaped curve was checked. Next, a check was done for skewness, kurtosis, and outliers. Skewness is a non-symmetrical or one tail longer than the other shape. Kurtosis is a flat or peaked shape, and an outlier is an individual case that is far from the distribution.

All independent variables are uncorrelated with the error term.

This assumption was checked to ensure the independent variables as being separate cases from one another.

There is a perfect linear function of other independent variables.

This deals with the issue of multicollinearity with independent variables. Multicollinearity was checked for by examining correlation coefficients to make sure there are no independent variables that were highly correlated. Also the VIF, tolerance, and condition index values were examined to assess multicollinearity (See Afifi Clark, & May, 2004; Chatterjee et al., 2000; Pedhazur, 1997).

The mean of the error term is zero.

For this assumption a check was done to ensure that the means of the residuals = 0 with a standard deviation of 1.0.

Research Question Two

Procedures

For the second research question Cohen's d was used to examine for effect sizes (see Cohen, 1988). Specifically, Cohen's d was used for comparing the relative sizes of effect for the research study by Sampson et al.'s (1996c) normative sample of high school students' career thoughts scores with this study's sample of career and technical high school students' career thoughts scores. According to Ferrin, Bishop, Tansey, and Swett (2007) stated "effect size estimates inform the researcher on the magnitude of an association or difference" (p. 90). In addition, confidence intervals were used to find the upper and lower bound limit within which the estimated population effect size resides (Cohen, 1999). Confidence intervals were used to determine if the two samples confidence intervals overlap and capture the same population parameter (Schmidt, 1996).

CHAPTER IV

Results

This chapter begins with a discussion of the sample characteristics for the study participants. The sample characteristics section includes information about sample background information, and sample pre-analysis procedures. In addition, this section includes information on sample missing and excluded data. The following sections include the findings for research questions one and research questions two. In the Research Question 1 section, I provide a description of the results from univariate, bivariate, and multivariate analysis. Finally, in the Research Question 2 section of this chapter, I describe the results from Cohen's *d* for effect sizes and confidence intervals between academic students and career and technical students' career thoughts.

Sample

A total of 471 student participants out of 982 from a south central career and technical school in Pennsylvania volunteered to complete the Student Background Questionnaire, NELLIS:88 Survey, Inventory of Parent Attachment, and the Career Thoughts Inventory. The sample size was further reduced by 7 students because of scores found on the socially desirable response scale of impression management. The descriptive data explained from this point forward are based on the post filtered data. Please see Table 3 for details of pre and post filtered sample background information and size.

The number of girls and boys in the sample was balanced. The range for the number of 10th, 11th, and 12th grade students was 132 to 167, with 12th graders having the lowest number of participants and 11th graders having the highest number of participants.

Although, grade was used instead of age in the four multiple regressions, age ranges for the students were from 15 to 19 years old. Thirty four percent of the 464 students who completed surveys identified themselves as having a disability. This sample had 4% more of the students who had a disability participate than the number of students who actually identified themselves as having a disability from the total school population. The total percentage of 982 students identifying themselves as having a disability at the school was 28% of the students whereas the sample percentage was 34%. Parents' level of education of the most educated parent was recoded as mentioned previously and the majority of the students identified their parents' level of education as completing their high school diploma or GED.

Table 3

Participant Background Information

	n ^a	Percent ^a	n ^b	Percent ^b
Gender				
Girls	225	47.8	221	47.6
Boys	246	52.2	243	52.4
Total	471	100.0	464	100.0
Grade				
Tenth	167	35.5	165	35.6
Eleventh	170	36.1	167	36.0
Twelfth	134	28.5	132	28.4
Total	471	100.0	464	100.0
Disability				
Yes	162	34.4	159	34.3
No	309	65.6	305	65.7
Total	471	100.0	464	100.0
Parents Education				
Don't Know ^c	86	18.3	85	18.3
High School or GED	238	50.5	238	51.3
Some College/Associates	101	21.4	97	20.9
Bachelors or Higher	46	9.8	44	9.5
Total	471	100.0	464	100.0

Note: n^a and percent^a = unfiltered sample size.

n^b and percent^b = filtered sample size by extreme outliers for 7 cases on the impression management scale.

Don't Know^c participant responses recoded as missing data and removed from the regression analysis.

Pre-analysis

All participant response items were entered into an SPSS data file. A codebook was created to coincide with the items in the SPSS data file. Data were cleaned by generating a frequency report for each item response and inspecting for any miscoded data and patterns of missing data. Also participants who had scores outside the items range were inspected. Changes were made to any data that were miscoded by examining for data that scored outside of item ranges. Each participant's surveys were numbered and coordinated with their SPSS participant number and therefore all item score changes were made by referring back to their surveys. For example, if a scale had a range of one to five and the frequency was showing a participant's score for an item as being six or higher than that participant's surveys were examined to correct for miscoded item scores.

Missing data

Missing item responses for the dependent variable scale the Career Thoughts Inventory (CTI) were treated according to CTI professional manual recommendations. Specifically, the recommendation was "if the number of missing items is 5 or more, the CTI should be considered invalid. Otherwise, treat missing responses as 0s (Strongly Disagree) when calculating raw scores (Sampson et al., 1996c, p. 22). The SPSS16 Missing Values Analysis (MVA) function found 10 participants who had one missing response each and therefore those responses were scored as 0s.

Missing Values Analysis was also used on the three independent variables scales, namely, the Inventory of Parent and Peer Attachment (IPPA), NELS: 88 Student Questionnaire, and the Balanced Inventory of Desirable Responding (BIDR) impression management scale. Impression management items did not have any missing responses so

nothing was done for that particular scale. However, the IPPA had 3 participants who did not complete 50% of the survey. Also, the NELS: 88 Parental Involvement questionnaire had 1 participant who did not respond to any of the items on his or her survey. These 4 participants were removed from analysis using SPSS missing listwise function because they had incomplete responses for the IPPA and the NELS: 88 surveys.

Further, the SPSS16 MVA function found that the IPPA had a total of 8 participants with one missing response each and found that the NELS: 88 Student Questionnaire had a total of 2 participants with one missing response each. The MVA analysis found that the overall item no response rate for both surveys was .2%. According to Tabachnick and Fidell (2001) when missing items do not exceed 5% it is acceptable to substitute the MVA's estimates for the missing response items. Field (2005) concurred that it was acceptable to use the MVA item estimates especially when there was a large sample size and the number of missing items was small. Therefore, the MVA estimates were used to replace the 8 missing responses for the IPPA and the 2 missing responses for the NELS: 88 Questionnaire.

Excluded data

All the participants' items were filtered using the SPSS16 filter function based on high scores on the impression management scale. As mentioned previously, impression management was used as a socially desirable response variable to control participants' responses that would bias the analysis (Paulhus, 1984, 1991). Box plots for impression management were checked and extreme outliers were examined. Next, participants' impression management scale scores were converted to z-scores to standardize and to set benchmarks that were applied to the data. According to Field (2005) expected values of

z-scores in a normal distribution should fit within one of the four valid percent columns: (a) 95% of cases with an absolute value less than 1.96, (b) 5% (or less) with an absolute value greater than 1.96, (c) 1% (or less) with an absolute value greater than 2.58, and (d) no cases above 3.29 (p. 77). Participant scores that were greater than 3.29 were considered to be extreme outliers and excluded from the analysis. From this process a total of 7 participants were filtered from the data analysis.

As mentioned in Chapter III, participants who responded to the Student Background Questionnaire item, parent highest level of most educated parent, as “don’t know” were recoded as missing data and excluded from the regression analysis. This response was recoded because “don’t know” was not an appropriate measurable response category and would bias the regression analysis. Thus, this response was treated as missing data. This response item (i.e., don’t know) excluded 85 participants from the post-filtered analysis (see Table 2 and Table 3).

A frequency analysis confirmed that of the 4 participants who were excluded from the data analysis because of incomplete survey items on the Inventory of Parent Attachment and NELS: 88 Questionnaire, 1 of those 4 participants was also among the 85 participants who responded “don’t know” to the parents’ level of education. Therefore, from the original sample size of 471 participants, 88 were excluded and 7 were filtered leaving a total of 376 participants who were included in the regression analysis for Research Question 1. For Research Question 2, the sample size was the combination of 11th and 12th grade students, which totaled 299 participants.

Research Question 1

What are the independent and correlated effects of student gender, student disability, student grade, highest education level of most educated parent, attachment relationships, and Parental Involvement on the career thoughts of 10th-, 11th, and 12th-grade CTC high school?

Ordinary least squares multiple regression analysis was used to answer this question. The regression assumptions were met by checking the distributions for outliers, skewness, and kurtosis by examining the univariate and bivariate statistics, histograms, and boxplots. This section ends with the results of the multivariate data analysis.

Univariate Analysis

For the univariate data analysis outliers and influential cases for the variables with scaled scores were checked using SPSS16 case wise diagnostic function. Previous examinations of the descriptive analysis and boxplots for scaled variables led to some concern about several possible cases influencing the regression models. Outliers and influential cases were examined using these five case wise diagnostic procedures:

1. Standardized residuals were examined to check if any cases were greater than 3. Please see the excluded data section for expected values of z-scores in a normal distribution.
2. DFBeta statistics were examined to check for absolute values greater than 1, and to ensure that all cases lie within + or - 1.
3. Cook's distances were examined to check for any cases having undue influence on the regression models. Cases greater than 1 were considered problematic.
4. The average leverage or hat values were examined to check if all cases were

within boundaries. The average leverage was calculated as

.02 ($k + 1/n = 9/376$). Cases three times the average (.06) were problematic.

5. Mahalanobis distances were examined to check for problematic cases that were beyond 25.

Examination of all scaled variables found a concern for 1 case on the Decision Making Confusion (DMC) subscale of the Career Thoughts Inventory. The DMC scale had 1 case, case number 18 that had a standardized residual higher than 3. Further examination for case 18 found a DFBeta statistic less than 1, Cooks distance less than 1, and the average leverage and Mahalanobis distance within their limits. Therefore, case 18 was not found to be an undue influence to the regression model.

Next skewness and kurtosis values were analyzed for all dependent and independent variables to assess for normality. Values for significant skewness were checked. Significant skewness occurs when the skewness divided by the standard error of the skewness is above 2 and, therefore is considered to be problematic because it can lead to inaccurate results when generalizing findings to the population (Field, 2005). Scores on the dependent variable, Decision Making Confusion scale had a positive skewness slightly above 2 and scores for the dependent variable Commitment Anxiety scale had a negative skewness slightly above 2. The independent variables, Alienation and Trust scaled scores both had negative skewness above 2. This was corrected for by doing square root transformations on the negatively skewed scaled scores and power transformations on the positively skewed scaled scores. However, nonlinear transformations for Decision Making Confusion and Commitment Anxiety scaled scores

were ineffective in shifting the skewness in these distributions, and scores were retained in their original form.

In addition, all the scaled scores for both independent and dependent scaled measures were transformed into z-scores and then t-scores. A z-score gives a distribution with a mean of 0 and standard deviation of 1. A T-score gives a distribution with a mean of 50 and a standard deviation of 10. This conversion allowed comparisons of different scaled scores that are measured in different units (Field, 2005).

Bivariate Analysis

Prior to running the correlations for the four regressions, the control variable impression management's correlations were checked with the dependent and independent variables to see if it needed to be included in the regression equation. Impression management was found to have no correlation with the dependent variables and just one weak correlation to the independent variable Alienation (.09, $p < .05$). Therefore, impression management was kept out of the four regressions because of its lack of correlation with the independent and dependent variables.

A check for multicollinearity with the independent variables found that the Inventory of Parent and Peer Attachment's (IPPA) parental attachment total score was highly correlated with scores on the IPPA subscales of Trust, Communication, and Alienation. Specifically, the Pearson correlations among the four variables ranged from .84 to .93 and Variance Inflation Factors (VIF) values among the four variables ranged from 27 to 246. Removing the IPPA's Parental Attachment total score from the regression analysis resulted in the Pearson correlations and VIF returning to acceptable ranges as noted in Chapter III. Therefore, the Parental Attachment total score was

removed as an independent variable and scores on the IPPA's subscales of Trust, Communication, and Alienation were used as independent variables in the four regression analysis to quantify parental attachment. Finally, a re-check of all four regression models' VIF values were all well below 10 and the tolerance statistics were all above .2. All of the models' average VIF values were not substantially greater than 1, thereby confirming that collinearity was not a problem.

In addition, autocorrelation was checked using Durbin Watson and a plot of the predicted and residual values. These were acceptable as evidenced by a Durbin Watson for the four regression analyses ranging from 1.70 to 1.79. A score closer to 2.0 meant the residuals were uncorrelated and a score below 2 indicated positive correlation. Also, examinations for curvilinear relationships were done by checking the bivariate scatterplots. The scatterplots did not present evidence of any curvilinear relationships.

Correlations: Regression 1 Career Thoughts Total.

Table 4 contains the correlations for Regression 1 through 4 because only the independent correlations changed, but the dependent variables correlations remained constant across all four regressions. The Career Thoughts Inventory (CTI) total score was found to have a small negative correlation with the demographic variable student grade. The other demographic variables of student gender, student disability, and parent's education were found to have no significant correlation with CTI scores and therefore explained no variance in the CTI regression analysis. All of the subscale independent variables measuring parental attachment were found to be negatively and significantly correlated with CTI scores. The correlations for the Parental Attachment subscales of Communication, Trust, and Alienation ranged from small to moderate with

Communication scores having the lowest correlation and Alienation scores having the highest correlation. Total scores for Career Thoughts were also found to have a small negative correlation with Parental Involvement. With these small to moderate negative correlations we would expect the independent variables of student grade, Communication, Trust, Alienation, and Parental Involvement to explain a small to moderate amount of variance in CTI's regression models.

Scores for the independent variables of Communication, Trust and Alienation had large correlations with each other as expected because they were combining to measure the variable parental attachment. However, the correlation between scores on the Trust and Communication scales were very high because those two constructs combine to measure the level of felt security perceived by adolescents towards their attachment figure (Armsden & Greenberg, 1987). This relationship was examined further in the multivariate analysis section; these correlations were constant across all four regression models. Their correlations with the demographic variables were small with scores on the Communication scale having no correlation with any of the demographic variables. Scores on the Trust scale were positively correlated with student grade. Alienation scores were positively correlated with student gender and student grade. These correlations were held constant across all four regressions.

Parental Involvement was found to have small to moderate positive correlations with scores on the Alienation, Trust, and Communication scales. These correlations were constant across all four regression models. Parental Involvement scores also had small and significant correlation with the demographic variable parents' level of education. According to Field (2005) a substantial correlation of $r > .9$ is a concern for

multicollinearity. These correlations among all independent variables were constant across all four regressions and were therefore acceptable correlations for all four regressions.

Correlations: Regression 2 Decision Making Confusion.

The correlations for Regression 2 are presented on Table 4. Scores on the Decision Making Confusion (DMC) scale were found to have small positive correlation with the demographic variable student disability. The other demographic variables of student grade, student gender, and parent's education were found to have no correlation with DMC scores and therefore explained no variance in Regression 2. All of the subscale independent variables measuring parental attachment were found to be significantly correlated with DMC scores. Alienation scores were positively correlated with DMC scores and Communication and Trust scores were both negatively correlated with DMC scores. The correlations for scores on the subscales of Communication, Trust, and Alienation ranged from small to moderate with Communication scores having the lowest correlation and Alienation scale scores having the highest correlation. Decision Making Confusion scores were also found to have a small negative correlation with Parental Involvement scores. With these small to moderate positive and negative correlations one would expect the independent variables of student disability, scores on the Communication, Trust, Alienation scores, and Parental Involvement scores would explain a small to moderate amount of variance in the DMC's regression models.

Correlations: Regression 3 Commitment Anxiety.

Regression 3 correlations can be found on Table 4. Scores on the Commitment Anxiety (CA) scale were found to have a small negative correlation with the demographic variable student grade. The other demographic variables of student gender, student disability, and parent's education were found to have no correlation with CA scores and therefore explained no variance in Regression 3. All of the scores for the three subscales measuring parental attachment were found to be significantly correlated with CA scale scores. Communication, Trust, and Alienation scale scores were negatively correlated with CA scores. The correlations for the subscale scores of Communication, Trust, and Alienation ranged from small to moderate with Communication scores having the lowest correlation and Alienation scores having the highest correlation. Commitment Anxiety scale scores were found to have no correlation with Parental Involvement scale scores. With these small to moderate positive and negative correlations we would expect the independent variables of student grade, scores on the Communication, Trust, and Alienation scales would explain a small to moderate amount of variance in the CA's regression models.

Correlations: Regression 4 External Conflict.

Regression 4 correlations can be found on Table 4. External Conflict (EC) scale scores were found to have small negative correlation with the demographic variable student grade. The other demographic variables of student disability, student gender, and parent's education were found to have no correlation with EC scores and therefore explained no variance in Regression 4. All three subscale scores measuring parental attachment were found to be significantly correlated with EC scale scores. Alienation

scores were positively correlated with EC scores and Communication and Trust scores were both negatively correlated with EC scores. The correlations for the subscale scores of Communication, Trust, and Alienation ranged from small to moderate with Communication scores having the lowest correlation with EC scores and Alienation having the highest correlation EC scores. External Conflict scale scores were also found to have a small negative correlation with Parental Involvement scale scores. With these small to moderate positive and negative correlations we would expect the independent variables of student grade, scale scores on Communication, Trust, Alienation, and Parental Involvement would explain a small to moderate amount of variance in the EC's regression models.

Table 4

Correlation Matrix for Background Variables, Attachment Variables, and Parental Involvement on Career Thoughts Total, Decision Making Confusion, Commitment Anxiety, and External Conflict

	1 ^a	2	3	4	5	6	7	8	9
1 ^a . Career Thoughts	.00	.05	-.11*	-.04	-.23***	-.35***	-.42***	-.13**	
DMC	<.01	.11*	-.05	-.08	-.18***	-.29***	-.34***	-.17***	
CA	-.07	-.03	-.11*	-.03	-.16**	-.25***	-.35***	-.06	
External Conflict	.03	.02	-.08*	.04	-.26***	-.37***	-.41***	-.12*	
2. Student Gender			.13**	-.01	.04	-.02	-.01	.16**	-.01
3. Student Disability				.03	-.05	.02	.04	<-.01	-.08
4. Student Grade					.03	.07	.13**	.15**	-.12*
5. Parents' Education						.02	.02	-.03	.16**
6. Communication							.79***	.61***	.57***
7. Trust								.72***	.43***
8. Alienation									.24***
9. Parental Involvement									

Note: * $p < .05$ ** $p < .01$ *** $p < .001$; 1^a Shows the dependent variables four separate regressions.

Decision Making Confusion (DMC); Commitment Anxiety (CA)

n = 376

Multivariate Analysis

In order to answer Research Question 1, four multiple regressions were used to find the degree that career and technical high school students' gender, grade, disability, parents' highest educational level, and students perceptions of their parents' levels of Communication, Trust, Alienation, and involvement explain career and technical high school students career thoughts and its three constructs of Decision Making Confusion, Commitment Anxiety, and External Conflict. The demographic variables of student gender, student grade, student disability, and parents' highest level of education were measured by the Student Background Questionnaire and constituted Model 1 entered in all four regressions. The independent variables of Communication, Trust, and Alienation were measured by the Inventory of Parent and Peer Attachment and combined yield a total score for Parental Attachment and constituted Model 2 entered in all four regressions. The independent variable of Parental Involvement was measured by the NELS:88 student questionnaire and constituted Model 3 entered in all four regressions.

The dependent variable, Career Thoughts was measured by the Career Thoughts Inventory that yielded a score for total Career Thoughts and three subscale scores for Decision Making Confusion, Commitment Anxiety, and External Conflict. The total score for Career Thoughts as well as its constructs were indicators of dysfunctional thoughts that inhibited the career decision making process (Sampson et al., 1996c). So higher scores indicated more dysfunctional thoughts and lower scores indicated less dysfunctional thoughts. In addition, a check of the analysis of the residual statistics for all four regressions revealed that errors were normally spread around the mean ($M = .000$; $SD = .989$).

As noted earlier in the bivariate section, the independent variables Trust and Communication were highly correlated with one another (see Tables 4). Both of these independent variables are constructs measuring level of attachment to parents. When the four regressions' b-values were examined the direction in the correlations between Communication scale scores and the dependent variables scores changed from negative relationships to positive relationships (see Tables 5-8). Further, because strong bivariate relationships between Trust and Communication scores were found the regressions were re-run to check for suppressor effects. A suppressor variable is defined as a variable that suppresses error in the other, and the beta with the opposite sign is not reflecting a genuine effect (Cohen & Cohen, 1983). According to Walker (2003) "suppressor variables are important within regression models because they increase effect size, which shows the extent, strength, or effect of a relationship and accounts for the total variance of an outcome (Kirk, 1996; Thompson, 1998)". So Communication was found to be suppressing error in the Trust variable, and thus making the effect stronger. This was due to their close strong relationship with one another while measuring the level of perceived felt security by the participants towards their significant attachment figures. Therefore, Communication scale scores were kept in the regressions because of its importance in gauging the overall level of felt security in parent attachment when combined with Trust scale scores and its influence in the regression analysis' relationships with the dependent variables. However, since Communication was found to be a suppressor variable and therefore is not reflecting a genuine effect in all four regressions then it was kept out of the multivariate analysis discussion.

Regression 1 Career Thoughts Total.

SPSS16 was used to analyze the data for all four regressions. The results of the Career Thought's regression analysis are presented on Table 5. First, the F Change value was examined to find if the change in R^2 of 18.5% for Model 2 was significant. The regression equation for Model 2 was statistically significant, F Change (3, 368) = 28.420, $p < .001$. However, the Model 1 F Change (4, 371) = 1.530, $p = .193$ and Model 3 F Change (1, 367) = 1.35, $p = .246$ were not significant. Overall, the regression model was not statistically significant. In addition, analysis of variance (ANOVA) tests were examined to test whether the model is significantly better at predicting the outcome than using the mean as a 'best guess' (Field, 2005, p. 189). The F-ratio for Model 1 was not found to be statistically significant. However, Model 2 F-ratio (7, 368) = 13.248, $p < .001$ and Model 3 F-ratio (8, 367) = 11.772, $p < .001$ were statistically significant. This can be interpreted to mean that Model 1 demographic independent variables did not improve the ability to predict Career Thought total scores, but Model 2 additional independent variables of Communication, Trust, and Alienation scores and Model 3 additional independent variable of Parental Involvement scores did improve the ability to predict Career Thought total scores, but it was only significant for Model 2.

Next, the regression model parameters were examined. The unstandardized regression coefficients or b-values are the intercept that tells the degree each independent variable's scores affect the dependent variable Career Thought total scores if the effects of all other predictors' scores are held constant. The t-statistic was used to determine if the b-values were significantly different from zero meaning that the independent variable's scores were making a significant contribution to the model. Also the

standardized regression coefficient or Beta was used to interpret the number of standard deviations the dependent variable scores would change as a result of one standard deviation change in the independent variable scores when all other independent variables' scores were held constant.

Parameter results for Model 2 are discussed because it was the only model that was found to be significant. Note, Communication scores is suppressing the error variance in Trust scores and was kept out the discussion because it does not have a genuine effect on Career Thought total scores. For Model 2 no demographic variables were found to be statistically significant contributors to the regression equation for Dysfunctional Career Thought total scores. However, Parental Attachment subscale scores of Trust ($t(368) = -2.220, p < .05$), and Alienation ($t(368) = -5.570, p < .001$) were found to be statistically significant. First, Trust scores were found to have a small negative relationship with Dysfunctional Career Thought total scores. Trust standardized Beta indicated that as Trust scores increased by one standard deviation (10.018), Dysfunctional Career Thought total scores decreased by $-.195$ standard deviations. Using the previous formula, but with Trust scores entered this constituted a change of -1.940 ($-.195 \times 9.951$). Therefore, for every 10.018 increase in students' Trust with parents, there was a decrease in students' Dysfunctional Career Thinking by -1.940 . Next, Alienation scores were found to have a moderate negative relationship with Career Thought total scores. However, Alienation subscale scores was reverse scored for all items and therefore higher scores on Alienation meant less Alienation. This is important to note to avoid confusion in the interpretation of how Alienation scores influences the direction of Dysfunctional Career Thought total scores. This will hold true for all four regressions.

Alienation standardized Beta indicated that as Alienation scores decreased by one standard deviation (10.022), Dysfunctional Career Thought total scores decreased by $-.389$ standard deviations. This constitutes a change of -3.870 ($-.389 \times 9.951$). Therefore, for every 10.022 decrease in students' Alienation from parents, there was a decrease in students' Dysfunctional Career Thinking by -3.870 . These results were true for each independent variable of Trust, and Alienation scores while controlling for the effects of the other independent variables' scores.

Finally, the explained variance for Models 1 through 3 had R values of .127, .449, and .452 and R^2 values of .016, .201, and .204. The R values showed an increase in correlation with Career Thought total scores from small to moderate between Model 1 and 2 and then a minimal increase in correlation with Career Thought total scores between Model 2 and 3. The R^2 values in the four regression analysis measured effect sizes and practical significance between the dependent and independent variables' scores (Trusty, Thompson, & Petrocelli, 2004). The R^2 value for the demographic variables in Model 1 explained 1.6% of the variance in Career Thought total scores. However, when the three independent variables' scores of Communication, Trust, and Alienation were included in Model 2 the R^2 value increased to 20.1% of the variance in Career Thought total scores a change in R^2 of 18.5%. When Model 3, Parental Involvement scores were entered, there was a minimal increase of .3% of the variance in Career Thought total scores. So the inclusion of the three variables' scores of Communication, Trust, and Alienation in Model 2 explained a moderate amount of variance (moderate effect size) in Career Thought total scores whereas the descriptive variables in Model 1 and Parental

Involvement in Model 3 explained a minimal amount of variance (minimal effect size) in Career Thought total scores.

According to Field (2005) the R^2 value reveals how much variance or size of effect in Y (Career Thought total scores) is accounted for by the regression model from our sample, where the adjusted R^2 value reveals how much variance or size of effect in Y (Career Thought total scores) would be accounted for if the model had been derived from the population from which the sample was taken. Field reported that SPSS derives adjusted R^2 values using Wherry's equation, and recommends using Stein's formula because Wherry's equation does not tell how well the regression would predict scores of a different sample of data from the same population (see Field, p.172, 188; Stevens, 1992, p. 96-101 for examples of Stein's formula). Using Stein's formula adjusted $R^2 = .169$ compared to the observed value of $R^2 = .204$ was dissimilar by .035 that indicated the cross-validity of this regression model for Career Thought total scores was good.

Table 5

Effects of Background Variables, Attachment Variables, and Parental Involvement on Career Thoughts Total

	B	SE B	β
Model 1			
Student Gender	-.190	1.034	-.010
Student Disability	1.148	1.133	.053
Student Grade	-1.375*	.645	-.110
Parents' Education	-.524	.738	-.037
Model 2			
Student Gender	1.160	.966	.058
Student Disability	.988	1.029	.045
Student Grade	-.433	.593	-.035
Parents' Education	-.756	.670	-.053
Communication	.166*	.076	.168
Trust	-.193*	.087	-.195
Alienation	-.386***	.069	-.389
Model 3			
Student Gender	1.204	.967	.061
Student Disability	.849	1.036	.039
Student Grade	-.562	.603	-.045
Parents' Education	-.622	.679	-.044
Communication	.209*	.084	.210
Trust	-.186*	.087	-.188
Alienation	-.398***	.070	-.401
Parental Involvement	-.069	.060	-.070

Note: R^2 Change Model 1 = .016; R^2 Change Model 2 = .185***; R^2 Change Model 3 = .003

* $p < .05$ *** $p < .001$

n = 376

Regression 2 Decision Making Confusion.

The results of the Decision Making Confusion regression analysis are presented on Table 6. First, the F Change values were examined to find if the change in R^2 of 14.2% for Model 2 and 1.1% for Model 3 were significant. The regression equation for Model 2, F Change (3, 368) = 20.776, $p < .001$ and Model 3, F Change (1, 367) = 4.761, $p < .05$ were statistically significant. However, Model 1, F Change (4, 371) = 1.793, $p = .130$ was not significant. Overall, the regression model was statistically significant at the $p < .05$. In addition, ANOVA tests found the F-ratio for Model 1 was not statistically significant. However, Model 2 F-ratio (7, 368) = 10.092, $p < .001$ and Model 3 F-ratio (8, 367) = 9.516, $p < .001$ were statistically significant. This can be interpreted to mean that Model 1 demographic independent variables did not improve the ability to predict Decision Making Confusion scores, but Model 2 additional independent variables of Communication, Trust, and Alienation scores and Model 3 additional independent variable of Parental Involvement scores did improve the ability to predict Decision Making Confusion scores and the addition of those four independent variables were statistically significant.

Next, parameter results for Model 3 are discussed because Model 3 was found to be statistically significant and it includes all 8 independent variables. For Model 3 no demographic variables were found to be statistically significant contributors to the regression equation for Decision Making Confusion scores. However, independent variables scores for the parental attachment subscales of Trust ($t(368) = -2.022$, $p < .05$), and Alienation ($t(368) = -4.972$, $p < .001$) and scale scores for Parental Involvement ($t(368) = -2.182$, $p < .05$) were found to be statistically significant. First, Trust scores were found to have a small negative relationship with Decision Making Confusion. Trust

standardized Beta indicated that as Trust scores increased by one standard deviation (10.018), Decision Making Confusion scores decreased by $-.181$ standard deviations. This constituted a change of -1.785 ($-.181 \times 9.864$). Therefore, for every 10.018 increase in students' Trust with parents, there was a decrease in students' Decision Making Confusion by -1.785 . Second, Alienation scores were found to have a moderate negative relationship with Decision Making Confusion scores. Again, all Alienation items were reversed scored meaning that higher scores for Alienation constituted less Alienation. Alienation standardized Beta indicated that as Alienation scores decreased by one standard deviation (10.022), Decision Making Confusion scores decreased by $-.358$ standard deviations. This constituted a change of -3.531 ($-.358 \times 9.864$). Therefore, for every 10.022 decrease in students' Alienation from parents, there was a decrease in students' Decision Making Confusion by -3.531 . Finally, Parental Involvement scores were found to have a small negative relationship with Decision Making Confusion scores. Parental Involvements standardized Beta indicated that as Parental Involvement scores increased by one standard deviation (9.983), Decision Making Confusion scores decreased by $-.133$ standard deviations. This constituted a change of -1.311 ($-.133 \times 9.864$). Therefore, for every 9.983 increase in students' perceptions of their parents' involvement in their educational, career, and personal development, there was a decrease in students' Decision Making Confusion by -1.311 . These results were true for each independent variable of Trust, Alienation, and Parental Involvement scores while controlling for the effects of the other independent variables.

Finally, the explained variance for Models 1 through 3 had R values of .138, .401, and .414 and R^2 values of .019, .161, and .172. The R values showed an increase in

correlation with Decision Making Confusion scores from small to moderate between Models 1 and 2 and then a small increase in correlation with Decision Making Confusion scores between Models 2 and 3. The R^2 value for the demographic variables in Model 1 explained 1.9% of the variance in Decision Making Confusion scores. However, when the three independent variables' scores of Communication, Trust, and Alienation were included in model 2 the R^2 value increased to 16.1% of the variance in Decision Making Confusion scores a change in R^2 of 14.2%. When model 3, Parental Involvement scores were entered, there was a small increase of 1.1% of the variance in Decision Making Confusion scores. So inclusion of the three variables' scores of Communication, Trust, and Alienation from Model 1 to Model 2 explained a moderate amount of variability (moderate effect size) in Decision Making Confusion scores. The inclusion of Parental Involvement scores from Model 2 to Model 3 explained a small amount of variability (small effect size) in Decision Making Confusion scores.

As noted in Regression 1, Stein's formula was used to tell how well the regression would predict scores of a different sample of data from the same population. Stein's formula value of adjusted $R^2 = .136$ compared to the observed value of $R^2 = .172$ was dissimilar by .036 that indicated the cross-validity of this regression model for Decision Making Confusion scores was good.

Table 6

Effects of Background Variables, Attachment Variables, and Parental Involvement on Decision Making Confusion

	B	SE B	β
Model 1			
Student Gender	-.097	1.024	-.005
Student Disability	2.328*	1.122	.108
Student Grade	-.574	.639	-.046
Parents' Education	-.962	.730	-.068
Model 2			
Student Gender	1.063	.982	.054
Student Disability	2.201*	1.046	.102
Student Grade	.247	.602	.020
Parents' Education	-1.161	.680	-.082
Communication	.169*	.077	.172
Trust	-.191*	.088	-.194
Alienation	-.329***	.070	-.334
Model 3			
Student Gender	1.146	.978	.058
Student Disability	1.938	1.047	.090
Student Grade	.012	.610	.000
Parents' Education	-.905	.687	-.064
Communication	.249**	.085	.254
Trust	-.178*	.088	-.181
Alienation	-.352***	.071	-.358
Parental Involvement	-.132*	.060	-.133

Note: R^2 Change Model 1 = .019; R^2 Change Model 2 = .142***; R^2 Change Model 3 = .011**

* $p < .05$ *** $p < .001$

n = 376

Regression 3 Commitment Anxiety.

The results of the Commitment Anxiety regression analysis are presented on Table 7. First, the F Change values were examined to find if the change in R^2 of 11.6% for Model 2 was significant. The regression equation for Model 2, F Change (3, 368) = 16.469, $p < .001$ was statistically significant. Overall, the regression model was not statistically significant. In addition, ANOVA tests found the F-ratio for Model 1 was not statistically significant. However, Model 2 F-ratio (7, 368) = 8.161, $p < .001$ and Model 3 F-ratio (8, 367) = 7.137, $p < .001$ were statistically significant. This can be interpreted to mean that Model 1 demographic independent variables did not improve the ability to predict Commitment Anxiety scores, but Model 2 additional independent variables of Communication, Trust, and Alienation scores and Model 3 additional independent variable of Parental Involvement scores did improve the ability to predict Commitment Anxiety scores and the addition of those four independent variables were statistically significant.

Next, parameter results for Model 2 are discussed because it was the only model that was found to be significant. For Model 2 no demographic variables were found to be statistically significant contributors to the regression equation for Commitment Anxiety scores. However, one independent variable's scores for the parental attachment subscale of Alienation ($t(368) = -4.861$, $p < .001$) was found to be statistically significant. Alienation scores were found to have a moderate negative relationship with Commitment Anxiety scores. Again, all Alienation items were reversed scored meaning that higher scores for Alienation constituted less Alienation. Alienation standardized Beta indicated that as Alienation scores decreased by one standard deviation (10.022), Commitment Anxiety scores decreased by -.354 standard deviations. This constituted a change of

- ($-.354 \times 9.980$). Therefore, for every 10.022 decrease in students' Alienation from parents, there was a decrease in students' Commitment Anxiety by -3.532. These results were true for Alienation scale scores while controlling for the effects of the other independent variables' scale scores.

Finally, the explained variance for models 1 through 3 had R values of .135, .367, and .367 and R^2 values of .018, .134, and .135. The R values showed a moderate increase in correlation with Commitment Anxiety scores between Models 1 and 2 and then no change in correlation with Commitment Anxiety scores between Models 2 and 3. The R^2 value for the demographic variables in Model 1 explained 1.8% of the variance in Commitment Anxiety scores. However, when the three independent variables' scores of Communication, Trust, and Alienation were included in model 2 the R^2 value increased to 13.4% of the variance in Commitment Anxiety scores a change in R^2 of 11.6%. When Model 3, Parental Involvement scores were entered, there was no change of the variance in Commitment Anxiety scores. So inclusion of Communication, Trust, and Alienation scores from Model 1 to Model 2 explained a small amount of variability (small effect size) in Commitment Anxiety scores and the inclusion of Parental Involvement scores from Model 2 to Model 3 explained no change of variability (no effect size) in Commitment Anxiety scores.

Again, Stein's formula was used to tell how well the regression would predict scores of a different sample of data from the same population. Stein's formula value of adjusted $R^2 = .097$ compared to the observed value of $R^2 = .135$ was dissimilar by .038 that indicated the cross-validity of this regression model for Commitment Anxiety scores was good.

Table 7

Effects of Background Variables, Attachment Variables, and Parental Involvement on Commitment Anxiety

	B	SE B	β
Model 1			
Student Gender	-1.370	1.036	-.069
Student Disability	-.481	1.136	-.022
Student Grade	-1.371*	.646	-.109
Parents' Education	-.424	.739	-.030
Model 2			
Student Gender	-.136	1.009	-.007
Student Disability	-.681	1.075	-.031
Student Grade	-.627	.619	-.050
Parents' Education	-.651	.699	-.045
Communication	.138	.079	.138
Trust	-.098	.091	-.099
Alienation	-.353***	.072	-.354
Model 3			
Student Gender	-.123	1.011	-.006
Student Disability	-.722	1.083	-.033
Student Grade	-.665	.630	-.053
Parents' Education	-.611	.711	-.043
Communication	.150	.088	.151
Trust	-.096	.091	-.097
Alienation	-.356***	.073	-.385
Parental Involvement	-.021	.062	-.021

Note: R^2 Change Model 1 = .018; R^2 Change Model 2 = .116*** R^2 Change Model 3 = .000

* $p < .05$ *** $p < .001$

n = 376

Regression 4 External Conflict.

The results of the External Conflict regression analysis are presented on Table 8. First, the F Change values were examined to find if the change in R^2 of 18.2% for Model 2 was significant. The regression equation for Model 2, $F(3, 368) = 27.689$, $p < .001$ was statistically significant. However, Model 1, $F(4, 371) = .948$, $p = .436$ and Model 3 $F(1, 367) = .057$, $p = .812$ were not significant. Overall, the regression Model was not statistically significant. In addition, ANOVA tests found the F-ratio for Model 1 was not statistically significant. However, Model 2 $F(7, 368) = 12.525$, $p < .001$ and Model 3 $F(8, 367) = 10.939$, $p < .001$ were statistically significant. This can be interpreted to mean that Model 1 demographic independent variables did not improve the ability to predict External Conflict scores, but Model 2 additional independent variables' scores of Communication, Trust, and Alienation and Model 3 additional independent variable scores of Parental Involvement did improve the ability to predict External Conflict scores and the addition of those four independent variables were statistically significant.

Next, parameter results for Model 2 are discussed because it was the only model that was found to be significant. For Model 2 no demographic variables were found to be statistically significant contributors to the regression equation for External Conflict scores. However, parental attachment subscale scores of Trust ($t(368) = -2.532$, $p < .05$), and Alienation ($t(368) = -4.685$, $p < .001$) were found to be statistically significant. First, Trust scores were found to have a small negative relationship with External Conflict scores. Trust standardized Beta indicated that as Trust scores increased by one standard deviation (10.018), External Conflict scores decreased by $-.223$ standard deviations. This

constituted a change of -2.227 ($-.223 \times 9.990$). Therefore, for every 10.018 increase in students' Trust with parents, there was a decrease in students' External Conflict by -2.227. Finally, Alienation scores were found to have a moderate negative relationship with External Conflict scores. Again, all Alienation items were reversed scored meaning that higher scores for Alienation constituted less Alienation. Alienation standardized Beta indicated that as Alienation scores decreased by one standard deviation (10.022), External Conflict scores decreased by -.329 standard deviations. This constituted a change of -3.286 ($-.329 \times 9.990$). Therefore, for every 10.022 decrease in students' Alienation from parents, there was a decrease in students' External Conflict by -3.286. These results were true for each independent variable's scores of Trust and Alienation while controlling for the effects of the other independent variables' scores.

Finally, the explained variance for Models 1 through 3 had R values of .101, .439, and .439 and R^2 values of .010, .192, and .193. The R values show a small increase in correlation with External Conflict scores between Models 1 and 2 and then a minimal increase in correlation with External Conflict scores between Models 2 and 3. The R^2 value for the demographic variables in Model 1 explained 1.0% of the variance in External Conflict scores. However, when the three independent variables' scores of Communication, Trust, and Alienation were included the Model 2 R^2 value increased to 19.2% of the variance in External Conflict scores a change in R^2 of 18.2%. When Model 3, Parental Involvement scores were entered, there was no increase in the variance. So the inclusion of the three variables' scores of Communication, Trust, and Alienation from Model 1 to Model 2 explained a moderate amount of variability (moderate effect size) in External Conflict scores and the inclusion of Parental Involvement scores from

Model 2 to Model 3 explained no change of variability (no effect size) in External Conflict scores.

Stein's formula was used to tell how well the regression would predict scores of a different sample of data from the same population. Stein's formula value of adjusted $R^2 = .158$ compared to the observed value of $R^2 = .193$ was dissimilar by .035 that indicated the cross-validity of this regression model for External Conflict scores was good.

Table 8

Effects of Background Variables, Attachment Variables, and Parental Involvement on External Conflict

	B	SE B	β
Model 1			
Student Gender	.453	1.042	.023
Student Disability	.553	1.141	.025
Student Grade	-1.093	.650	-.087
Parents' Education	.534	.743	.037
Model 2			
Student Gender	1.581	.976	.079
Student Disability	.474	1.039	.022
Student Grade	-.173	.598	-.014
Parents' Education	.359	.676	.025
Communication	.113	.077	.114
Trust	-.222*	.088	-.223
Alienation	-.328***	.070	-.329
Model 3			
Student Gender	1.590	.978	.080
Student Disability	.446	1.047	.020
Student Grade	-.200	.610	-.016
Parents' Education	.387	.687	.027
Communication	.122	.085	.123
Trust	-.221*	.088	-.222
Alienation	-.330***	.071	-.331
Parental Involvement	-.014	.060	-.014

Note R^2 Change Model 1 = .010; R^2 Change Model 2 = .182***; R^2 Change Model 3 = .000

* $p < .05$ *** $p < .001$

n = 376

Research Question 2

Is there a statistically significant difference in 11th- and 12th-grade CTC high school students' CTI global and construct scores compared to 11th- and 12th-grade academic high school students CTI global and construct scores?

To find if the two means for samples of 11th and 12th grade academic high school students and career and technical (CTC) high school students means scores on the Career Thoughts Inventory and its subscales were associated or different, effect sizes and confidence intervals were calculated. Results for effect sizes are on Table 9 and results for confidence intervals are presented on Table 10. Effect sizes and then confidence interval results are reviewed. The null hypothesis is ($H_0: M = M$).

Effect Sizes

Using Cohen's d effect size calculator, web based software (Becker, n.d.), effect sizes for academic students and CTC students' Career Thoughts total scores and its constructs of Decision Making Confusion, Commitment Anxiety, and External Conflict scores were calculated. Effect sizes between groups were found to be small and positive for Career Thoughts total, Decision Making Confusion, and Commitment Anxiety scores and moderate and negative for External Conflict scores. According to Cohen (1988) for effect sizes between 0.1 and 0.2 the distribution of scores between the academic students and CTC students would have a percentage of non-overlap ranging from 7.7% to 14.7%. These results meant that approximately 92.3% of the distribution of scores on Career Thoughts total, Decision Making Confusion, and Commitment Anxiety for academic and CTC high school students overlap. For External Conflict 85.3% of the distribution of

scores overlap. However, to check if these results were significant 95% confidence intervals (CI) were calculated.

Table 9

Cohen's d and Effect Sizes between 11th and 12th Grade Academic High School Students and 11th and 12th Grade Career and Technical High School Students

	Academic Students ^a		Career and Technical Students ^b		Cd	r
	M	SD	M	SD		
CTI	48.78	20.50	45.44	21.97	.15	.07
DMC	11.89	7.03	9.88	7.21	.28	.13
CA	12.19	4.89	11.48	5.58	.13	.06
EC	3.84	2.15	5.13	3.02	-.49	-.23

Note: Career Thoughts Total Score (CTI), Decision Making Confusion (DMC), Commitment Anxiety (CA), External Conflict (EC)

Cd = Cohen's d; r = Effect Size

^an = 396, ^bn = 299

Confidence Intervals

Confidence intervals (CI) were calculated for both samples scores using the formula $M \pm 1.96 (SEM)$. The confidence intervals for academic students' Career Thoughts total and Commitment Anxiety scores were found to overlap with the confidence intervals for CTC students' Career Thoughts and Commitment Anxiety scores. This meant that with 95% confidence the sample mean for CTC students' Career Thoughts total and Commitment Anxiety scores were not statistically different ($H_0: M = M$) from the sample mean of academic students' Career Thoughts total and Commitment Anxiety scores. However, even with the small to moderate effect sizes the confidence intervals for academic students' Decision Making Confusion and External Conflict scores did not overlap with the confidence intervals for CTC students' Decision Making Confusion and External Conflict scores. This meant that with 95% confidence the sample mean for CTC students' Decision Making Confusion and External Conflict scores were statistically significantly different ($H_A: M \neq M$) from the sample mean of academic students' Decision Making Confusion and External Conflict scores. Further, the magnitude of the difference for Decision Making Confusion scores and External Conflict scores between the two samples has practical significance because the size of the effect is not affected by the size of the sample.

Table 10

Confidence Intervals for 11th and 12th Grade Academic High School Students and 11th and 12th Grade Career and Technical High School Students

	Academic Students ^a			Career and Technical Students ^b		
	Upper	95% CI M	Lower	Upper	95% CI M	Lower
CTI	51.32	48.78	46.72	47.92	45.44	42.96
DMC	12.57	11.89	11.21	10.68	9.88	9.08
CA	12.68	12.19	11.70	12.01	11.48	10.86
EC	4.05	3.84	3.63	5.46	5.13	4.80

Note: Career Thoughts Total Score (CTI), Decision Making Confusion (DMC), Commitment Anxiety (CA), External Conflict (EC), Confidence Interval (CI)

^an = 396. ^bn = 299

CHAPTER V

Discussion

Chapter V will start with the restatement of the problem. Next, this chapter will discuss significant findings for Research Question 1 and Research Question 2. The Research Question 1 section includes implications for counselors, students, and parents. The Research Question 2 section includes implications for practice. Next, there will be a discussion of this study's limitation. Finally, this study will end with suggestions for future research.

Restatement of the Problem

High school students are faced with many problems and have to make decisions to solve those problems. Students have to make difficult decisions about their social, family, education, and career problems. Socially, students have to make decisions about sex, peers, drugs, and other personal psychological concerns. Regarding family, students can become distracted coping with the changing trends of today's traditional and non-traditional families' problems such as divorces, conflicts, and finances. With education, students might have to make decisions about staying in school or dropping out because of career uncertainty or because of family and social problems such as those mentioned above. Finally, students eventually will have to decide on career paths that are intertwined with constant changing local, state, national, and international employment trends due to globalization of job markets and the changes in technology. High school students can avoid becoming dropout or unemployment statistics by learning how to make healthy and effective decisions. Specifically, students need to learn how to make career decisions so they can improve their chances to graduate, further their education,

and select a career that fits their skills, interests, characteristics, and values. This is important because all high school students will have to think about and decide on a career prior to becoming adults. High school students who learn how to distinguish between dysfunctional and functional career thoughts might improve their ability to identify and lessen career problems. In addition, most research on career thoughts focuses on college students and adults, and problems high school students deal with do not disappear after they complete high school. Therefore, students' career development does not stop after high school, but it continues over their lifespan. Career development is "the total constellation of economic, sociological, psychological, educational, physical and chance factors that combine to shape one's career" (Sears, 1982, p. 139). This is why it is important for high school students to acquire career problem solving skills prior to entering adulthood. The Cognitive Information Processing (CIP) model is one approach that can be used to help high school students learn how to lessen dysfunctional career thoughts and increase functional career thoughts to improve their decision making skills so they can solve career problems now and throughout their lifespan.

As noted in the literature review, parents play a significant role in their adolescents' development of decision making skills; specifically career decision making skills because parents are the initial role models from which their children learn to interpret their situations in their experienced world. This is important because Attachment theory (Bowlby, 1969) and CIP theory (Tulving, 1972; 1984; Sampson et al., 2004) converge on the idea that a person's thoughts and perceptions are the foundation for emotional and behavioral responses to experienced situations. Bowlby (1969) defined this as a person's *internal working model*. A person's internal working model starts in

infancy because children learn to behave based on episodic memories from experiences with their families during infancy. Therefore, individuals' internal working models develop early in childhood and continue throughout the lifespan and internal working models are the means individuals use to make decisions. According to CIP approach, students use their internal working model by evaluating past experiences and present experiences in determining outcomes when making life or career decisions. These past and present experiences are where memories of self knowledge and occupational knowledge are stored and accessed when making career decisions. So, individuals make decisions by examining positive or negative thoughts in relationship with positive or negative behavioral and emotional outcomes from past and present life experiences. If students' developed a poor internal working model during early adolescence because of past negative experiences with parents then their thoughts about themselves might be negative and lead to choices that cause them to have negative emotional and behavioral outcomes. This concept of a students' internal working model transcends career and life decisions and will be explained further in the next section. This study identified students' perceptions of their parental attachment relationships and parental involvement as possible important factors in the development of students' career thoughts that influence students' career development.

Research Question 1

Research Question 1 asked what types of influences will independent variables of student gender, student disability, and student grade, highest education level of most educated parent, attachment relationships, and parental involvement have on the dependent variables of career thoughts for 10th, 11th, and 12th grade CTC high school?

The results of all four multiple regressions indicated that the demographic variables of student gender, disability, grade, and highest education level of most educated parent had no independent effects in determining career and technical high school students' career thoughts and related constructs in the presence of other variables. However, parental attachment variables Trust, and Alienation were found to relate significantly to career thoughts and related constructs. As previously found students perceived level of Communication with parents was found to be suppressing error variance in Trust and therefore had no genuine effect in determining CTC students' career thoughts. Since, Communication is a suppressor variable that increased the regression weight for Trust and thus contributed to the predictive validity of the Inventory of Parent and Peer Attachment. So Communications strong relationship with Trust was contributing to the predictability for students who perceived relationships with their parents as caring and as open to discussing problems were experiencing less dysfunctional career thoughts and Decision Making Confusion.

Students felt level of Trust with parents were negatively related to their dysfunctional career thoughts, Decision Making Confusion, and External Conflict. Students who perceived that their parents respected and accepted them had less negative thoughts about career choices and less conflict with significant others opinions about careers. Students felt level of Alienation or anger towards parents was negatively related to their dysfunction career thoughts, Decision Making Confusion, Commitment Anxiety, and External Conflict. Students who perceived that their parents as being proud, happy, and understanding in their relationship with them had less negative thoughts about career choices and the career decision making process.

Parental Involvement was the final variable in the four regressions and was significantly negatively related to Decision Making Confusion. Students who perceived their parents were involved in their educational, career, and personal life had less confusion when thinking about making a career decision. As noted in the literature review, parents who are perceived by their children as being more involved in their students' life are viewed as having an authoritative parenting style. Therefore, parents who are demanding and responsive when rearing their children improves their children's ability to make career decisions. The next section will discuss the above findings in further detail for the independent variables in the following order: student background variables, attachment relationships, and then Parental Involvement.

Student background variables.

As noted previously, Sampson et al. (1996c) indicated that the Career Thoughts Inventory (CTI) was designed to measure career thoughts that are common across groups. Sampson et al. reported that it is difficult to design a measure that is unbiased across all groups, and therefore any issues of diversity can be dealt with by using the results from the CTI to work collaboratively with students from various backgrounds by identifying, challenging, and altering career thoughts that disrupt the career decision making process. For this study the results for student background variables were found to support Sampson et al.'s design of the CTI measuring career thoughts that are common across groups. These findings will be discussed further in the next few paragraphs.

The literature review found no studies on high school students' background variables, but discussed college students results found for the Career Thoughts Inventory (CTI) total score and its subscales of Decision Making Confusion, Commitment Anxiety,

and External Conflict. This study found results supporting the findings of Kleiman et al. (2004) and Lustig and Strauser (2002) that career thoughts are not influenced by gender for college and high school students, respectively college students' gender as well as high school students' gender. This finding adds support for Sampson et al. (1996c) CTI for measuring career thoughts that are common across gender from high school to college students.

For the background variable student disability, results from this study indicate that career thoughts for high school students' with disabilities did not differ from high school students without disabilities. These findings were different from Strauser et al. (2004) findings that career thoughts for college students with disabilities were significantly different than college students. Thus, more research on career thoughts of high school students and college students with and without disabilities needs to be done to verify if in fact a student's disability is a factor in determining career thoughts. However, the findings from the four regression analysis for high school students with disabilities and without are congruent with Sampson et al. (1996c) design of the CTI as being unbiased across groups and Strauser et al. findings are not. A reason for this difference in findings might be because in Strauser et al. study the individuals with disabilities were compared to a convenience sample of college students without disabilities and participation in post-secondary education might have been acting as a modifying variable reducing the presence of career dysfunctional thoughts (p. 29). This study defers to Sampson et al. suggestion to use the CTI's findings with high school students for evaluating each student's needs and identifying areas of career dysfunctional thinking.

Attachment relationships.

As mentioned in the results section Communication scores were suppressing the error in Trust scores because of their strong correlations, and therefore Communication was not having a genuine effect on dysfunctional career thoughts. However, students' who had higher scores on the parental attachment subscales of Trust and Alienation, where higher scores indicate a secure attachment with parents when subscales are totaled or examined as a block in the regressions, had lower scores on the global score for dysfunctional career thoughts, Decision Making Confusion, and External Conflict. Therefore, students' who perceive higher felt levels of security in attachment towards significant others also experience less dysfunctional career thoughts, Decision Making Confusion, and External Conflict than those not. However, Alienation was the only predictor for Commitment Anxiety. Meaning students' perceiving less felt Alienation or anger towards parents contributes to students' perceiving less felt Commitment Anxiety in making career decisions. Therefore, this study's findings support previous research that secure attachments are associated with the career development process (Blustein et al., 1991; Blustein et al., 1995; Ketterson & Blustein, 1997).

These findings show a relationship between Bowlby's attachment theory and Cognitive Information Processing (CIP) model with the concept of a person's internal working model. Bowlby (1969) suggested that people develop their internal working models based on attachment relationships with parents during early childhood. The experiences from early childhood attachment relationships with significant figures are stored in their memory and are used to process current experiences. According to Bowlby, behavioral and emotional problems occur when a person's beliefs about past

experiences conflicts with beliefs about current facts. The CIP approach converge on this concept of internal working model by explaining that adolescents past experiences create a functional or dysfunctional belief system (internal working model) about themselves; adolescents then apply this belief system on interpreting current events, and therefore when interpreting those current events with their functional or dysfunctional belief system presents them with positive or negative behavioral and emotional outcomes. As part of the CIP model's theory, Tulving (1972, 1984) describes that these beliefs are stored in episodic and semantic memory. Further, Bowlby described episodic memories develop in early childhood through attachment relationships towards significant others. Therefore these findings add to understanding the basis for where individuals develop and process their perceptions about their world; that also adds to the theoretical knowledge of attachment and cognitive theory. In addition, this studies results coincide with the findings by Roisman et al. (2000) that adolescents secure attachment to parents is a predictor of career exploration and planning and therefore, Bowlby's (1969/82) concepts that early attachment to parents forms internal working models that are used throughout peoples' lifetimes and supports the above conclusions.

This studies findings that students who have higher scores on the attachment subscales of Trust and Alienation predicts lower scores on dysfunctional career thoughts, and its subscales of Decision Making Confusion, Commitment Anxiety, and External Conflict supports Blustein, Prezioso, and Schultheiss (1995) two propositions for adolescents' attachment relationships and career development. Blustein et al. proposed that experiences of felt security in attachment relationships with significant others promotes exploration of the self and the educational and vocational environment

(Proposition 1), and adolescents who have access to a secure attachment figure with felt levels of security provide internal working models that assist in effective career decision making and commitment to career process, and continuation in selection and implementation of a career plan (Proposition 2).

Parental Involvement.

Parental Involvement was found to have a negative relationship with decision making confusion. Parental involvement in the educational, career, and personal development of their children contributes to decreases in students' Decision Making Confusion. This study proposed that students' who perceive parents as more involved tend to view their parents as authoritative in their parenting style. According to Baumrind's (1966) theory of parental control would support the concept that parents who are authoritative in their parenting style are more demanding and responsive in their parenting style and will be more involved in their children's career development. This study did find supportive evidence that more Parental Involvement relates to career thoughts by decreasing students Decision Making Confusion. Therefore, this study supports the findings of Trusty (1996) and Trusty et al. (1997) that Parental Involvement is a factor in determining adolescents' career development outcomes, specifically for career Decision Making Confusion. However, parental involvement did not contribute to decreases in the total score of career thoughts, and subscale scores of Commitment Anxiety and External Conflict. Overall, parental attachment subscale scores were a better predictor of career thought total and subscale scores than parental involvement scores.

Implications.

The primary purpose of Research Question 1 was to address a research gap related to our understanding of high school students' career thoughts by examining parental attachment and involvement as predictors of high school students' career thoughts. The findings for this question link constructs of Bowlby's Attachment theory and Baumrind's parental control theory to Peterson et al. (1991) Cognitive Information Processing career theory. Prior to this study, there was no research done on high school students' attachment relationships and Parental Involvement with their career thoughts. This study found that parents' attachment relationships and involvement with their children are important contributors in determining their children's career thoughts.

High school counselors can use this information when providing career counseling services to students by helping students identify career thoughts and identify significant relationships that can impact their career choices; this also includes involving parents. First, high school counselors can use the Cognitive Information Processing (CIP) model to identify students who have dysfunctional career thoughts and then use the model to help students lessen these dysfunctional career thoughts so they can improve their career decision making skills. When using the CIP approach with students, school counselors can identify and discuss significant relationships that might influence their career thinking. School counselors can use Bowlby's attachment theory with students to identify and discuss how relationships to significant others can influence their internal working models in understanding how they perceive themselves and their career decision making problems. Therefore, students identify and lessen dysfunctional career thoughts by examining their self-talk and exploring how relationships with parents might have

impacted their positive or negative perceptions about themselves and their career problems. School counselors can teach students use CIP models' CASVE process when making career decisions. The CASVE process involves using self and occupational knowledge to find solutions to career problems. The CASVE process can be simplified as follows: (a) Communication, noticing the gap; (b) analysis, understanding the causes; (c) synthesis, discovering alternate courses of action; (d) valuing, selecting an alternate course of action; and (e) execution, implementing the solution and taking the risks involved in following through to complete the plan (Peterson et al., 1991; Reardon et al., 2000a).

Next, school counselors can involve parents in helping their children make career decisions by contacting parents and discussing information about the influence their relationships can have on their children's career development. School counselors can encourage increased parental interaction with their children's career development by meeting and discussing with parents information identifying signs that their children might be struggling with when searching for a career. The CIP model could be taught to parents so they can help their children identify issues of career dysfunctional thinking and reinforce functional thinking so that their children can explore and eventually decide on viable career paths. Also, school counselors can provide information to parents about the importance of how their relationships and involvement can influence the career development of their children. Information can be disseminated to parents by newsletters, internet resources, parent conferences, or other school functions that involve parents. School counselors can also encourage and recommend additional resources to assist parents who need and want more help with parent/child relationship issues or

social/personal issues that are impacting their mental health or their children's mental health and career development.

Finally, students can benefit from learning how to use the Cognitive Information Processing model by applying it not only to career problems, but to social, personal, family, and educational issues. Students can be taught to understand that their negative thoughts or negative self-talk about themselves can lead to a faulty system and distortions when interpreting everyday events that cause them to have negative behavioral and emotional consequences. Students can then learn how to reverse this process by identifying these dysfunctional beliefs and changing them so they can lessen negative behavioral and emotional outcomes and increase positive behavioral and emotional outcomes. Ultimately, students who are able to apply the CIP approach to career, and other issues, and improve relationships with parents might encourage them to stay in school, cope with everyday adolescent social pitfalls, and pursue a meaningful career.

Research Question 2

Research Question 2 asks is there a statistically significant difference in 11th- and 12th-grade career and technical (CTC) high school students' CTI global and construct scores compared to 11th- and 12th-grade academic high school students CTI global and construct scores? The purpose of this question was to investigate whether the Career Thoughts Inventory (CTI) would measure statistically significant differences in CTI scores for different high student groups because there has been no other research done using the CTI on the population of high school students. Note the findings for the sample of academic high school students were taken from the original sample used in creating the normative data for the CTI (see Sampson et al., 1996c). The results from the effect

sizes and confidence intervals found that dysfunctional career thinking and Commitment Anxiety were not statistically different between academic high school students and CTC high school students, but Decision Making Confusion and External Conflict mean scores were statistically significantly different, with 95% confidence. Therefore there was no practical significance for dysfunctional career thinking and Commitment Anxiety for between group effect sizes, but there was practical significance for between group effect sizes for Decision Making Confusion and External Conflict.

This means with 95% confidence participants' global scores for career dysfunctional thinking and Commitment Anxiety did contain the means for both samples. However, with 95% confidence participants' scores on the two subscales of Decision Making Confusion and External Conflict did not contain the means for both samples. Overall the mean scores for CTC students and academic students were similar for dysfunctional career thinking total scores and Commitment Anxiety scores, but the mean scores for Decision Making Confusion were lower for CTC students and External Conflict mean scores were higher for CTC students. The different findings in Decision Making Confusion scores and External Conflict scores for the two samples could be because of the following three sample differences: different samples, different historical period, and different experiences with career services.

First, the original research done on academic students had a different make-up of high school students than current sample. The original sample included geographic distributions in the southern, midwestern, and western regions, but did not include the northeastern (CTC student sample) part of the United States. The samples of academic students and CTC students were comparable with participants' gender, but the academic

sample had a diverse ethnic group where the CTC sample had no diversity. Also, academic students attended academic subjects all day where the CTC students attended academic subjects for half a day and focused on a career area the other half of a day.

Next, the original research sample of academic students was exposed to a different zeitgeist or historical events. There were differences in the samples family backgrounds because of economic and technologic changes between the times the two samples were taken (1994 and 2008) could contribute to the differing response on the 5 External Conflict items. According to Cognitive Information Processing theory, high school students have less of an opportunity to have external conflicts because they have yet to decide on a career choice that can create negative discourse with parents (Sampson et al., 1996c). However, the sample of CTC students have made a career choice for the next three years of high school to study and possibly work in a career field that parents might object to, and this might explain the differences between higher External Conflict scores for CTC students versus lower scores for academic students.

Finally, participants from this study received career counseling whereas only 44.2% of the norm sample of academic students received career counseling. The sample of CTC students were also in a selected career program. These two reasons could have led to lower scores on Decision Making Confusion scores for the sample of CTC students and also shows a difference between the amounts of career services that were being offered by schools in the early 1990s compared to current times.

The results from this study are important because they show that the Career Thoughts Inventory (CTI) is a reliable measure for identifying different groups of high school students' career thoughts. Cognitive Information Processing theory suggests using

the results of the CTI global and construct scores to help each student identify dysfunctional career thoughts that impair the career decision making process by comparing each student's scores with the norm ranges for high school students, by using global and construct scores, and by using individual item scores (Sampson et al., 1996c). In addition, internal consistency reliabilities for academic high school students' CTI total scores (.96), Decision Making Confusion (.91), Commitment Anxiety (.85), and External Conflict (.74) were almost identical to internal consistency reliabilities for CTC high school students' CTI total scores (.95), Decision Making Confusion (.91), Commitment Anxiety (.85), and External Conflict (.71).

Implications.

The primary purpose of Research Question 2 was to find if there would be a difference on the Career Thoughts Inventory (CTI) total score and its subscales between academic high school students and career and technical high school students. The implication from the results of this study for using the CTI across varying groups of high school students' career thoughts is encouraging. The CTI is reliable in identifying high school students' dysfunctional career thoughts and can be used in conjunction with the Cognitive Information Processing model to improve students' career decision making skills. However, it is suggested that school counselors who plan to use the CIP approach and CTI with their high school students should follow all recommendations in the CTI professional users manual and also become versed in CIP theory.

Limitations

The first limitation of the present study is the generalizability of its findings to all high school students because the obtained sample was a sample of convenience and not

obtained by a random sample. Even with this study's large sample size, caution should be used specifically when generalizing the findings to either academic high school students or career and technical high school students. Although, both academic and career and technical high school students are considered in high school, both groups might have different goals. Academic students classically plan to attend college upon graduation and career and technical students classically plan to go directly into the world of work upon graduation. However, today's changing job market and push for high school students to have more practical skills means that both academic students and career and technical students are facing the same career decision making problem; "What will I do when I graduate?" The career choices are the same for all graduating high school students and those three choices are typically: college, military, or work. In addition, the category of college includes students' choices to gain training and skills by attending post secondary schools that offer associates or bachelors' degrees, or that offer professional or technical certifications. Also the findings of this study have limited applicability across cultures because the sample obtained did not include a culturally diverse group.

Next, this study is limited by the statistical methods to make statements of strength and direction among independent and dependent variables relationships. Specifically, statistical analyses used in the current study helped explain relationships among the variables of interest and were not intended to find causality among independent and dependent variables. The use of multiple regression analysis has the ability to examine individual and combined relationships among independent and dependent variables (Urdu, 2005).

Finally, this study's sample is limited by not being able to compare its findings to other research studies on high school students career thoughts because other research studies findings were on post secondary students. This study is the first study to find information about high school students' gender, grade, disability, parental highest educational level, parental attachment, and parental involvement on career thoughts.

Suggestions for Future Research

Of primary concern is that there are no other research findings on high school students using the Career Thoughts Inventory (CTI) and Cognitive Information Processing model. The only other study done on high school students' career thoughts was the research completed to find the norms for the CTI. More research needs to be done to verify the reliability, validity, and utility of the CTI for high school students. A second recommendation for future research is to verify this study's findings that high school students' parental attachment relationships and parental involvement influence their career thoughts.

A third recommendation for future research is to verify this study's findings and the design of the CTI that CTI scores for high school students are unbiased across groups. This includes high school students' background information variables used in this study of gender, grade, disability, and parents highest level of education, and other high school student background information variables not used in this study.

This study examined students with and without disabilities, but did not address types of disabilities of the students. A fourth suggestion for future research is to examine differences among types of student disabilities on high school students' career thoughts. Some examples of categories of student disabilities that can be examined are cognitive,

physical, and other disabilities such as ADHD or other health impairments that might not necessarily impair the students learning but might impact their career decision making processes.

A final recommendation for future research is to use a different scale measuring attachment relationships. The scale used for this study had high correlations among its subscales of Communication and Trust. This high correlation lead to Communication scores suppressing error variance in Trust scores causing Communication scores to not have a genuine effect on high school students' Career Thought scores and its subscale scores. Brennan, Clark, and Shaver (1998) recommend using parts or a combination of different attachment scales or items of the scales to get a more precise measure of attachment relationships. The new attachment scale might also examine the types of attachment such as ambivalent, avoidant, secure, and insecure that might influence high school students' career thoughts. Also, the use of a different attachment scale or the creation of an improved measure of attachment might be able to verify the results found in this study that high school students' attachment to parents predicts their career thoughts.

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Appendix A

Recruitment Script

My name is Mr. Parrillo, as you know I am one of the guidance counselors at _____. I am also a student at Penn State and I am currently working on finishing my PhD in Counselor Education. To complete my PhD at the Pennsylvania State University I need to collect data on my research study and follow their guidelines as well as CPAVTS guidelines. My study is: An Examination of Career and Technical High School Students' Career Decisions with Parental Relationships and Involvement. I am seeking research volunteers and I am asking if you would be willing to participate in my study. To participate you have to be in 10th grade or higher, age does not matter. You don't have to tell me today if you want to participate or not because I can't record names due to confidentiality. However, I am sending a letter home to your parents or guardians and you can discuss this with them and then on the day of the study if you have not returned the bottom portion of the letter opting out of the study then you can participate. This is the letter I am sending home:

I will read the Opt-out consent letter. During the reading of the letter I will explain the meaning of Opt-out consent as it is written in the letter (see Appendix B). I will tell them that on the day of the study if you changed your mind and do not want to participate then that is permitted. I will let them know that students who choose not to participate will be working with their teachers on their everyday shop tasks. At the end I will give them my name and contact information so if they have any further questions they know where to contact me. I will also tell them the date of the study so they know the due date for the parent/guardian permission slips.

Appendix B

Participant and Parental Consent Form

December XX, 2007

«Live_With»
«Address»
«Address_2»
«City», PA «ZIP_Code» «Zip_Ext»

RE: «First_Name» «Middle_Name» «Last_Name» «Name_Suffix»

Dear «Parent_Prefix» «Parent_Last_Name»:

My name is Albert Parrillo and I am one of the Guidance Counselors at _____. I am also currently working on completing my PhD in Counselor Education at Penn State. I am asking for your help in permitting «First_Name» to be a participant in my research study. «First_Name»'s participation will help me in completing my PhD. Please see below for details.

Title of Project: An examination of career and technical students' career decisions with parental relationship and involvement

Principal Investigator: Albert Parrillo, PhD Candidate, Penn State University

Advisor: Dr. Spencer Niles, Department Chair

1. **Purpose of the Study:** The purpose of this research study is to explore how career and technical high school students' career development is influenced by their relationships with their parents or guardians.
2. **Procedures to be followed:** Your son or daughter will be asked to answer a total of 108 questions on 5 different surveys.
3. **Discomforts and Risks:** There are no risks in participating in this research beyond those experienced in everyday life. Some of the questions are personal and might cause discomfort.
4. **Benefits:** This research might provide a better understanding of how the career development of high school students is influenced by their parents or guardians. This information could help plan programs and make student services better by addressing issues such as student drop out rates and career decision-making.

5. **Duration:** It will take about 45 minutes, one class period at _____ to complete the surveys.
6. **Statement of Confidentiality:** Your son or daughters participation in this research is confidential. The surveys do not ask for any information that would identify who the responses belong to. Penn State's Office for Research Protections, the Social Science Institutional Review Board and the Office for Human Research Protections in the Department of Health and Human Services may review records related to this research study. In the event of any publication or presentation resulting from the research, no personally identifiable information will be shared because your son's or daughter's name is in no way linked to your responses.
7. **Right to Ask Questions:** Please contact Albert Parrillo at _____ extension ____ with questions, complaints or concerns about this research. You can also call this number if you feel this study has harmed you. Questions about your son or daughters rights as a research participant may be directed to Penn State University's Office for Research Protections at (814) 865-1775. You may also call this number if you cannot reach the research team or wish to talk to someone else.
8. **Voluntary Participation:** Your decision to allow your son or daughter to be in this research is voluntary. On the day of the study your son or daughter can ask to stop participation in the study at any time. Your son or daughter does not have to answer any questions he or she does not want to answer. Refusal to take part in or withdrawing from this study will involve no penalty or loss of benefits your son or daughter would receive otherwise.

Not completing and returning the refusal to participate form on the next page implies that you have read the information in this form and consent to allow your son or daughter to take part in the research. Please keep this form for your records or future reference. Also, Please discuss this information with your son or daughter to make them aware that his or her participation in voluntary.

We hope that you will allow «First_Name» to participate in my research study. *If you do not want «First_Name» to participate in my study*, then please complete the form below and have «First_Name» return the form to the Student Services office by January XX, 2007.

If you have any additional questions regarding the surveys being used please feel free to contact me at _____ extension ____.

Sincerely,

Albert Parrillo III, Guidance Counselor

***Only complete this form if you do NOT want «First_Name» to participate in my study.**

_____ I do **NOT** give permission for «First_Name» «Middle_Name» «Last_Name» «Name_Suffix» to participate in the Mr. Parrillo's study on high student career development at CPAVTS.

Signature of Parent/Legal Guardian

Date

Appendix C

Student Background Questionnaire

Write in your age:

Age _____

What is your grade and gender (**Circle**)?

Grade: 1. Tenth 2. Eleventh 3. Twelfth

Gender: 1. Boy 2. Girl

Please answer the following by placing an “X” on the appropriate line:

Do you have a Special Education Plan: ____ Yes ____ No

Please answer the following by placing an “X” on the line for the highest level of education of your most educated parent or guardian:

Level of Education most educated parent or guardian:

- | | |
|---------------------------------------|--|
| 1. _____ Less than high school | 5. _____ Bachelor’s degree |
| 2. _____ High school diploma or GED | 6. _____ Masters degree |
| 3. _____ Some college/ post secondary | 7. _____ Ph.D, MD., or professional degree |
| 4. _____ Associates degree | 8. _____ Don’t know |

Appendix D

Inventory of Parent and Peer Attachment

This Questionnaire asks about your relationships with important people in your life; your parents, step-parents, and legal guardians. Please read the directions to each part carefully. Some of the following statements ask about your feelings about your parents or the people who have acted as your parents. If you are in the care of step-parent(s), people or person acting as your legal guardian(s), answer the questions as you feel they or she or he has most influenced you now.

	Almost Never or Never True	Not Very Often True	Some- times True	Often True	Almost Always or Always True
1. My parents respect my feelings.	1	2	3	4	5
2. I feel my parents are successful as parents.	1	2	3	4	5
3. I wish I had different parents.	1	2	3	4	5
4. My parents accept me as I am.	1	2	3	4	5
5. I have to rely on myself when I have a problem to solve.	1	2	3	4	5
6. I like to get my parents' point of view on things I'm concerned about.	1	2	3	4	5
7. I feel it's no use letting my feelings show around my parents.	1	2	3	4	5
8. My parents sense when I'm upset about something.	1	2	3	4	5
9. Talking over my problems with my parents makes me feel ashamed or foolish.	1	2	3	4	5
10. My parents expect too much from me.	1	2	3	4	5
11. I get upset easily at home.	1	2	3	4	5
12. I get upset a lot more than my parents know about.	1	2	3	4	5

	Almost Never or Never True	Not Very Often True	Some- times True	Often True	Almost Always or Always True
13. When we discuss things, my parents consider my point of point of view.	1	2	3	4	5
14. My parents Trust my judgment.	1	2	3	4	5
15. My parents have their own problems, so I don't bother them with mine.	1	2	3	4	5
16. My parents help me to understand myself better.	1	2	3	4	5
17. I tell my parents about my problems and troubles.	1	2	3	4	5
18. I feel angry with my parents.	1	2	3	4	5
19. I don't get much attention at home.	1	2	3	4	5
20. My parents encourage me to talk about my difficulties.	1	2	3	4	5
21. My parents understand me.	1	2	3	4	5
22. I don't know whom I can depend on these days.	1	2	3	4	5
23. When I am angry about something, my parents try to be understanding.	1	2	3	4	5
24. I Trust my parents.	1	2	3	4	5
25. My parents don't understand what I'm going through these days.	1	2	3	4	5
26. I can count on my parents when I need to get something off my chest.	1	2	3	4	5
27. I feel that no one understands me.	1	2	3	4	5
28. If my parents know something is bothering me, they ask me about it.	1	2	3	4	5

Appendix E

NELS:88 Survey

In the past school year, how often do you spend time discussing or doing the following with either your parents or guardians?

	Never/ Rarely	Less than once a week	Once or twice a week	Every day or almost every day
1. Selecting courses or programs at school?	1	2	3	4
2. School activities or events of particular interest to you?	1	2	3	4
3. Things you've studied in class?	1	2	3	4
4. Your grades?	1	2	3	4
5. Specific jobs you might apply for after high school?	1	2	3	4
6. Community, national, and world events?	1	2	3	4
7. Things that are troubling you?	1	2	3	4
8. Talking or doing things with your parents or guardians?	1	2	3	4

_____ 19. I have some pretty awful habits.

_____ 20. I don't gossip about other people's business.

VITA

Albert L. Parrillo III, Ph. D., LPC, PA Secondary & Elementary Certified School Counselor

804 Nesbit Dr. • Carlisle, PA 17013 • alp232@psu.edu

EDUCATION

PhD, Counselor Education, Penn State University, December 2008

Med, Counselor Education, Shippensburg University, May 2001

BA, Criminal Justice, Shippensburg University, December 1995

PROFESSIONAL EXPERIENCES

School Guidance Counselor

Cumberland Perry AVTS, Mechanicsburg, PA (August 2005 to present)

Tech Prep Coordinator

Cumberland Perry AVTS, Mechanicsburg, PA (August 2005 to present)

Private Practice Counselor/Consultant

Counseling Alternatives Group, State College, PA (May 2002 to August 2005)

Counselor Supervisor

CEDAR Clinic, Penn State University, University Park, PA (January to May 2003)

Counseling Coordinator

Summer College Opportunity Program in Education (SCOPE), College of Education
Penn State University, University Park (May to September 2003)

Diagnostic Technician/Substitute Teacher

Cornell-Abraxas Education Department, South Mountain, PA (January 1996 to December 1998)

Counselor

Abraxas Leadership Development Program, South Mountain, PA (January 1995 to December 1996)

PUBLICATIONS

Trusty, J., Skowron, E. A., Watts, R. E., & Parrillo, A. L. (2004). Modeling the effects of counselor-trainees' perceptions of early childhood on trainees' social influence attributes. *The Family Journal: Counseling and Therapy for Couples and Families*, 12, 6-13.

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