

2008

Young adult risky behavior: a comparison of adoptee vs. non-adoptee outcomes

Shannon Patricia Hoffman
Iowa State University

Follow this and additional works at: <https://lib.dr.iastate.edu/rtd>

 Part of the [Applied Behavior Analysis Commons](#), [Developmental Psychology Commons](#), and the [Other Psychology Commons](#)

Recommended Citation

Hoffman, Shannon Patricia, "Young adult risky behavior: a comparison of adoptee vs. non-adoptee outcomes" (2008). *Retrospective Theses and Dissertations*. 15287.
<https://lib.dr.iastate.edu/rtd/15287>

This Thesis is brought to you for free and open access by the Iowa State University Capstones, Theses and Dissertations at Iowa State University Digital Repository. It has been accepted for inclusion in Retrospective Theses and Dissertations by an authorized administrator of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.

Young adult risky behavior: A comparison of adoptee vs. non-adoptee outcomes

by

Shannon Patricia Hoffman

A thesis submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Major: Human Development and Family Studies

Program of Study Committee:

Sedahlia Jasper Crase (Major Professor)

Cathy Hockaday

Mack C. Shelley, II

Iowa State University

Ames, Iowa

2008

UMI Number: 1453103

INFORMATION TO USERS

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleed-through, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.



UMI Microform 1453103
Copyright 2008 by ProQuest LLC
All rights reserved. This microform edition is protected against
unauthorized copying under Title 17, United States Code.

ProQuest LLC
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106-1346

DEDICATION

to my parents, Mike and Sandy, for their unconditional
love and support,

to my brother and sister, Sean and Sarah, for always believing in me,

to Teske and Brandie, for giving me strength and motivation to achieve my academic goals,

to my major professor, Dr. Sedahlia Jasper Crase, for her time, patience, and friendship
throughout this entire project,

and to my husband, Alex, who has always encouraged me to pursue my dreams. Your
patience and understanding will never be forgotten. I love you.

THANK YOU!

TABLE OF CONTENTS

| | |
|--|----|
| ABSTRACT | v |
| GENERAL INTRODUCTION | 1 |
| LITERATURE REVIEW | 2 |
| Theoretical Framework | 2 |
| Adoption | 5 |
| Age at Adoption | 8 |
| Young Adult Risky Behavior | 9 |
| Young Adult Impulsive Behavior | 13 |
| METHODOLOGY | 14 |
| Adolescent Health (Add Health) Data Set | 14 |
| Wave I | 15 |
| Wave II | 16 |
| Wave III | 16 |
| Instruments | 18 |
| Research Questions | 19 |
| RESULTS/DISCUSSION | 20 |
| Demographics | 20 |
| Internal Consistency | 21 |
| Between Group Comparison-Young Adult Risky Behavior Outcomes | 22 |
| Between Group Gender Differences | 24 |
| Between Group Racial Differences | 26 |
| Within Group Gender Differences | 29 |
| Within Group Racial Differences | 31 |
| Type of Adoption | 32 |
| Age at Adoption | 32 |
| LIMITATIONS | 33 |
| GENERAL CONCLUSION/SUMMARY | 35 |
| APPENDIX A: IRB APPROVAL FORM | 37 |
| APPENDIX B: Delinquency Composite | 38 |
| APPENDIX C: Violence Composite | 39 |
| APPENDIX D: Tobacco Composite | 40 |
| APPENDIX E: Alcohol Composite | 41 |

| | |
|--|----|
| APPENDIX F: Drug Composite | 42 |
| APPENDIX G: Impulsive Behavior Composite | 43 |
| APPENDIX H: Self Perception Composite | 44 |
| REFERENCES | 45 |

ABSTRACT

The purpose of this study was to examine whether adoptees and non-adoptees, aged 18-26, differed on risky behavior outcomes. Variables such as delinquency, violence, impulsive behavior, drug use, alcohol use, and tobacco use were defined as risky behaviors. Participants ($n=280$) were taken from Wave III of the Adolescent Health (Add Health) data set. Individuals who answered “yes” to the variable “Have you ever been adopted?” made up the adopted sample ($n=140$, male= 67, female = 73). Non-adopted individuals were randomly selected from the remaining pool of participants and made up the control group, ($n=140$, male =69, female=71).

Results from this study indicate that adoption status does not predict young adult risky behavior. Additionally and probably more importantly, there was no common theme among the significant findings, indicating that there was no one single variable or combination of variables in the current study that could show any differences in risky behaviors in young adults based on their adoption status.

Findings from this study are difficult to generalize with current research, primarily due to the small sample size. However, limited research in this area has also made it difficult to assess whether findings from the current study compare to those of other studies. Recommendations for future researchers are to study the possible interactions of family environment, higher degrees of parental warmth, and socioeconomic status.

GENERAL INTRODUCTION

In 2007, approximately 46,300 children were adopted in the United States; 19,300 were adopted from abroad and about 27,000 children were adopted domestically (Adoptive Families, 2008). Currently, at least 119,000 children are waiting to be adopted in the United States alone. The number of adoptions has remained relatively constant since 1987; however, the type of adoptions (i.e., international, public, kinship) has seen a shift with an increase in domestic and public adoptions. Hence, there are a greater number of adoptive families with diverse backgrounds and experiences (Child Welfare, 2004). As prospective adoptive families see an increase in the number of available inter-country and public adoptions, it is important for prospective families, adoption agencies, and social workers to better understand how adopted individuals differ from their non-adopted peers.

The purpose of the present study was to compare adopted young adults and non-adopted young adults ages 18-26 and to identify whether adoptees are at greater risk for exhibiting risky behaviors, such as alcohol, tobacco, and drug use. Adoptee and non-adoptee groups were compared on tobacco use, drug use, alcohol use, and impulsivity. In addition, within-group analyses of both the adoptee and non-adoptee groups were done to better understand how gender, ethnicity, and age affect outcomes such as delinquency and violence, tobacco use, alcohol use, drug use, and impulsive behavior among both the adoptee and non-adoptee cohorts. The information from the current study can be used to identify which adopted individuals are at most risk for young adult delinquency and violence; tobacco, drug, or, alcohol use; and impulsive behaviors. As a result, prospective parents, social workers, and adoption agencies will be better informed and can implement more effective intervention strategies.

LITERATURE REVIEW

Theoretical Framework

An individual's sense of self worth and basic instinct to trust others are developed beginning at initial contact with his or her primary caregiver. According to attachment theory, individuals are not biologically predisposed with inner emotions such as self worth and trust. Rather, the interactions and responsiveness of the caregiver to the infant elicits an intimate exchange of behaviors between caregiver and child, creating an attachment bond that influences how the infant will respond to others over time.

One difficulty that many adoptive families and adoption agencies face is acquiring and utilizing appropriate attachment-based intervention strategies during pre- and post-adoptive placements, due in part to the lack of implementation of the attachment theory by practitioners in the adoption area. Few attachment theorists and practitioners have expanded past attachment research in respect to adoption. While attachment theory has gained acceptance over the past several decades, current adoption trends make it imperative that research in the field continues, particularly in relation to people who are adopted. Current research on adoption and attachment has provided many families and agencies with useful intervention strategies, especially in adoptions involving abused or neglected children. It has provided explanations as to why some adoptees may experience emotional and behavioral challenges when placed with new caregivers. Further research will help provide information that adoption agencies and caregivers can use to foster appropriate developmental and relational skills essential to the adoptee over the life course.

Various views of attachment theory have been presented and disputed over time, creating a compilation of studies and critiques that are beneficial to present researchers and

practitioners in the field. Bowlby (1982) believed that attachment was more than just a “bond” formed between an infant and caregiver. Rather, he viewed attachment as a system formed within each individual beginning in infancy. This system induces feelings of security and safety created by an intricate relationship formed between an infant’s internal goal-seeking behaviors (i.e., fear or anxiety) and the caregiver’s responsiveness when it is positive. When the caregiver assuages the infant’s distressed behaviors, that response elicits a pervasive sense of secure attachment between the infant and caregiver. Based on this perspective of attachment, emphasis is focused on internal functions of attachment (Bowlby).

While Bowlby viewed attachment as an internal system within the individual, Howe (2006) expanded on this ideology by categorizing types of attachment based upon caregiver responsiveness. It can be assumed that secure attachment is the optimal goal of caregivers as it encourages healthy social development, trust, resilience, self esteem, and self efficacy over an individual’s life course.

Foster and adoptive parents commonly deal with children who display avoidant and ambivalent attachment behaviors (Howe, 2006). According to Howe an avoidant attachment style is typically the result of anxious and/or rejecting caregivers. Children who have encountered direct physical and/or emotional abuse will refrain from seeking any type of comfort when upset, frightened, or sick. Due to the lack of security, availability, and trust, and feelings of anxiety and aggression between the child and his/her caregiver, the child will avoid establishing any other relationships within his or her environment. Ambivalent behaviors occur when a child’s primary caregiver is inconsistent in his/her responsiveness to the child. As a result, the child persistently seeks attention, such as escalating disruptive behaviors (e.g., crying or screaming), to get a response from the caregiver (Howe). Their

primary anxiety is due to fear of abandonment and loss of control over their environment. This feeling of unpredictability about the world around them often leaves these children with a lost sense of hope and determination to survive.

The primary task for adoption and foster care agencies, practitioners, and adoptive and foster parents is to identify these attachment styles, understand why they occur, and to develop strategies to counteract the undesirable behaviors that may be the outcome. Of course, this is often not as easy as researchers or theorists might think. Many studies (Golding & Picken, 2004; Marvin, Cooper, Hoffman & Powell, 2002; Schofield & Beek, 2006) have shown that children from abused or neglected environments bring with them adaptive strategies and experiences that do not work well within their new placements. Although the new caregiver's best interest is to provide a secure sense of attachment with the child, the caregiver often lacks education about and understanding of the attachment behaviors displayed by abused and/or neglected children. By understanding how and why these children had to develop adaptive strategies and defense mechanisms in their previous environment, new caregivers would be better equipped to handle difficult situations and implement intervention strategies and techniques to counteract these strategies the child learned in a previous environment. Continued research in attachment and adoption is essential in order to coincide with societal changes which seem to have produced more and more children with emotional needs and thus the need for public policy modifications.

Most research on adoption and attachment has focused primarily on child and adolescent development. During childhood and throughout adolescence, individuals face many physical and emotional changes. But when we throw in the aspect of adoption and all the related changes in the child's life, the new parents and the child are presented with

myriad challenges. Researchers continue to find that adolescence is a stage of growth, maturity, and identity formation. Even when adoption is examined, researchers still find that adolescence is a time of experimentation and growth. It is assumed that once an individual has surpassed the final hurdle of chaos in adolescence, he/she is ready to take on the world with a newly acquired sense of self. However, research pertaining to young adult development, particularly those young adults who are adopted, is lacking. Young adults face their own set of obstacles and experiences, such as moving away from home, establishing intimate relationships, having children, and balancing work and family. In regard to adoption, feelings developed from past attachment bonds during childhood may resurface. New relationships or the loss of a secure base due to moving away from home or to college may trigger these feelings of anxiety, particularly in young adults who were abused and/or neglected as a child.

Adoption

Most research on adoption has focused primarily on adopted children and adolescents with respect to behavioral and psychological outcomes over time; how adopted young adults cope remains an unanswered concern. The relative absence of concrete research on adoption and young adult risky behavior indicates the need for more research in this area. The few researchers who have studied adoption and young adult risky behavior have focused on longitudinal outcomes of children and adolescents and the effects on young adults. Although little research has been done on adoption and young adult risky behavior, the research available on adoption is quite useful in identifying how specific aspects of adoption influence individual responses and behaviors. It is important to note that the present study does not

assume that young adulthood outcomes are a result of what occurred in early childhood and adolescence.

Grotevant et al. (2006) compared antisocial behavior between adoptees and non adoptees using the Add Health data set. The main goals of the study were to identify how demographic characteristics and early peer and family relationships predicted aggressive behavior in young adulthood and to determine if adoption actually predicted the aggressive behavior once all other variables were controlled. The researchers looked at both aggressive antisocial behavior (AASB) and non aggressive antisocial behavior (NAASB) and reported that although adoption status did not predict AASB, it did predict NAASB, specifically among young adult males. Non aggressive antisocial behavior included theft, property damage, rule violations, and sale or possession of drugs. These adopted individuals also reported that they did not have a parent or guardian present during key aspects of their development. Female adoptees were also significantly more likely to engage in NAASB than non-adopted females.

Miller, Fan, Christensen, Grotevant, and Van Dulmen (2000) examined similarities and differences between adoptees and non adoptees on academic achievement, substance use, and physical and mental health while controlling for selected demographic and background variables. The authors found that adoptees were more likely than non-adoptees to report problems such as skipping school, being drunk, low self esteem, and physical problems – and the effect sizes for most of the outcome variables were larger for early adolescent, Hispanic and Asian, male adoptees. Miller et al. also studied the influence of family structure on adoption outcomes and found that on most of the outcome variables, adoptees living in a single parent household differed significantly from their non-adopted peers also living in a

single parent household. These adoptees in single parent homes showed a greater likelihood of exhibiting low academic achievement, substance use, and low self esteem.

In an effort to test how emotionally disturbed adopted children with behavioral symptoms of aggression and delinquency compared to a control group of non-adopted children, Menlove (1983) examined aggressive behaviors in emotionally disturbed adopted children, including 51 adopted children up to 14 years of age compared to a control group of 51 non-adopted children matched on gender, sex, age, annual family income, and number of siblings. The adopted group showed higher outcomes on seven of the nine aggressive symptoms (fire setting, impulsiveness, legal difficulties, sexual acting out, hyperactivity, hostility, and negativism) than the control group.

Burrow, Tubman and Finley (2004) also used the Add Health data set to study group differences between an adopted and non-adopted sample as well as within group differences of the adopted sample by adoption status and type of adoption (i.e., intercountry, kinship, public) and developmental aspects of adoptions, including gender and age. Burrow and his colleagues found that non-adopted adolescents had higher academic achievement and fewer problems with school than the non-adopted group. The non-adopted group also showed higher levels of perceived closeness with their mother than the adopted group. However, there were no significant differences between the groups relative to their reports of closeness to father. Within the adopted sample, there were significant findings related to gender; female adoptees had higher grades than male adoptees along with fewer learning problems. However, male adoptees showed less depression and an overall greater sense of self worth than female adoptees. The male adopted group also reported fewer psychosomatic conditions than adopted females. The most noteworthy outcome was that later developmental stages of

the adopted individuals were associated with lower academic performance, more distant peer and family relationships, and poor psychological adjustment when compared to later developmental stages of the non-adopted group.

Age at Adoption

The age at which adoption occurs appears to have a vast impact on individual behavioral and psychological outcomes. Sharma, McGue, and Benson (1996), comparing adolescent adoptees to a matched control group of non adoptees, divided the sample into four groups based on the age at which those in the adopted sample were adopted. The groups, adopted at ages 0-1 years, 2-5 years, 6-10 years, and after 10 years of age, were compared on twelve factors of emotional, behavioral, and family functioning. The authors found that as the adoption age increased, their behavioral and emotional adjustment level decreased. In the infant group, there were no significant differences between the adopted and control group; however, there were significant differences between the oldest age group of adoptees and the control group on antisocial behavioral, drug use, and parental warmth, with more antisocial behavior and drug use and less parental warmth among the adoptees.

Menlove (1983) also found differences related to the age at which an individual was adopted. He compared 25 children adopted before the age of six months and 26 children adopted after the age of six months with a control group to see if aggressive behaviors were more predictive of adoptions that occurred at a later age. Children adopted before six months were significantly more likely to be labeled passive-aggressive than the non-adopted group. Children adopted after six months of age had a higher frequency of hyperactivity than the control group, but fewer temper tantrums than the control group. These findings differed

from Sharma et al. (1996), where no differences were found between adopted infants and the control group.

Young Adult Risky Behavior

The concept of risky behavior as it relates to young adult well being continues to be of interest to many social scientists, especially in a society where young adults are exposed to unpredictable change and expectations. As society changes, the complex ideology of whether individual traits or environment influences contribute to young adult behavior becomes more difficult to answer. The term “risk” is often associated with engaging in an unpredictable or venturesome act that might cause harm to an individual, but the act of risk taking is applicable to most human behaviors, whether or not it is seen as harmful to the individual (Leigh, 1999). Since each individual conceptualizes risky behaviors differently (based on individual traits and environment influences), researchers and scholars struggle to agree on a universal definition of risk in order to substantiate how risky behavior impacts both the physical and emotional well being of young adults.

Leigh (1999) proposed that risk-taking behavior involves multiple dimensions that influence how an individual conceptualizes risky behavior. These dimensions include the positive or negative aspects of risk-taking behavior, the long or short term consequences of the risky behavior to the individual, the individual’s dispositions to different risk-taking behaviors, the probability that harm will actually occur to the individual, and the objectivity vs. subjectivity of the risk-taking behavior. Objectivity is the inability to determine whether a specific behavior is deemed as “risky,” whereas subjectivity is when an individual has knowledge of the harm or risk in a specific behavior or action. These dimensions may help

researchers and scholars understand how each individual perceives or measures certain behaviors as “risky.”

Delinquency is defined as the neglect or violation of duty or of law (Merriam-Webster, 2006). A variety of acts, such as theft, burglary, substance use, or non-compliance with an “official” authority figure, can be deemed as delinquent. In 2004 1,186,390 arrests were made for property crime including motor vehicle theft, larceny-theft, and burglary (Bureau of Justice Statistics Crime and Data, 2005). Of these cases, 28% of the offenders were between 18 and 25 years of age.

Many researchers propose that delinquency is a result of both environmental and genetic factors. Rowe and Flannery (1994) argued that delinquency cannot be attributed to a single common factor. Rather, multiple factors such as family environment, peer relationships, and individual traits interact simultaneously. However, Moffitt (1993) stated that delinquency is solely based on learned behavior from an individual’s environment. For example, a toddler who acts disorderly or is hyperactive is acting in a direct response to his/her environment. Until the toddler is taken out of this environment and placed into a more ideal environment, s/he will continue this delinquent behavior into adolescence and adulthood (Moffitt).

Violence is defined as the intention to injure or abuse through physical force (Merriam-Webster, 2006). The Bureau of Justice Statistics Crime and Data (2005) reported that 420,169 arrests were made in violent crime offenses including murder, forcible rape, and aggravated assault in 2004 and 28.7% of the offenders were between the ages of 18 and 25 years.

Statistics show that the number of violent crimes has drastically increased compared to previous years. Prior research focused on a change in individual characteristics as the reason for the incline (Cook, 1985). However, recent research indicates that while the inherent make up of an individual is a predictor of violent behavior, a change in societal and environmental factors over the past few decades have also contributed to the rise in violent crimes (Cook & Laub, 1998).

According to the 2006 National Survey on Drug Use and Health, young adults aged 18 to 25 had the highest rate of current use of a tobacco product (43.9 %) and of each specific product compared with youths aged 12 to 17 and adults aged 26 or older (National Survey on Drug Use and Health, 2006). Results from this survey also found that current use of a tobacco product among persons aged 12 or older was reported by a higher percentage of males (36.4 %) than females (23.3 %). Males also had higher rates of past month use than females of each specific tobacco product: cigarette smoking (27.8 % of males vs. 22.4 % of females), cigar smoking (9.3% vs. 2.1%), use of smokeless tobacco (6.6 % vs. 0.3 %), and use of pipe tobacco (1.7% vs. 0.2 %). When looking at race and ethnicity, results from the 2006 study show that cigarette smoking among 18-25 year olds is more prevalent among whites than blacks (44.5 % vs. 27.5 %).

Young adult alcohol use continues to be high and has been found to be associated with other risky behaviors such as tobacco and drug use (Widdle, 2003). The group at most risk for daily alcohol consumption and binge drinking are Caucasian males, ages 18-24, who are attending a four year college full time (Center for Disease Control, 1997). According to the 2006 National Survey on Drug Use and Health, the current rate for alcohol use for 18-20 year olds is 51.6%, and is 68.6% for 21 to 25 year olds (National Survey on Drug Use and

Health, 2006). In the same survey, males (65.9%) aged 18-25 years old were consuming alcohol at a higher rate than females (57.9%) in the same age group. Alcohol use varied by race/ethnicity, where whites showed the highest rate of alcohol use than any other racial/ethnic group (55.8%).

The cause of high rates of alcohol use among young adults is of interest to many social scientists. Several studies have indicated that the locale where drinking takes place may contribute to a greater increase in alcohol consumption (Widdle, 2003). Lee, Jones-Webb, Short, and Wagenaar (1997) reported that drinking in an outdoor setting, in a moving car or truck, and at another person's home were the three most favored places for young adults to consume alcohol. Of particular interest to many researchers are the other risk behaviors that co-occur with alcohol use. Johnson, Boles, Vaughan, and Kleber (2000) reported that binge drinking and smoking are highly associated.

The illicit drug abuse and dependence rate among the 18-25 year old age group was 36.9% in 2006 (National Survey on Drug Use and Health, 2006). Males 12 years and older were twice as likely as females to use marijuana in the past month, and showed higher rates than females on stimulant, ecstasy, sedatives, heroin, and prescription drug use. The 2006 survey also showed that the current rate of illicit drug use varied by race/ethnicity, with American Indians or Alaskan Natives having the highest rate of illicit drug use (28.5%), followed by Whites (22.7%), African Americans (17.3%), Hispanics (13.9%), and Asians (9%). The average age at first use varied by type of drug used, as follows: inhalants (15.7 years), marijuana (17.4 years), LSD (19.4 years), cocaine (20.3 years), and stimulants (23.0 years).

Young Adult Impulsive Behavior

Many studies suggest that individuals with a high degree of impulsivity are more likely to engage in risky behaviors, such as drug and alcohol use. Risky behavior is the result of an individual's desire to enhance or pursue positive affects and feelings of well being (enhancement motives) or a desire to avoid aversive emotional states (coping motives) (Cooper, Agocha, & Sheldon, 2000). Choices to engage in impulsive behaviors are based on neurotic and extravert aspects of an individual's personality developed within an individual's environment. Cooper et al. studied a group of 18-25 year olds to determine if a general motivational model of impulsivity supported the idea that personality aspects influences risky behavior. They found that neurotic individuals were more likely to engage in risky behaviors as a way to cope with aversive behaviors, while extraverted individuals engaged in risky behaviors that enhanced positive affective experiences.

METHODOLOGY

Adolescent Health (Add Health) Data Set

The data for the current study were derived from the Adolescent Health (Add Health) data set, a national longitudinal study which explores a vast array of adolescent behaviors. The study was designed with the intention to understand how external contexts and internal elements of adolescence influence either destructive or healthy life style choices or behaviors. Data were collected in two waves between 1994 and 1996, with a third wave follow up study that took place in 2001 and 2002 (University of North Carolina at Chapel Hill, 2003).

Add Health investigators sought to recruit representative adolescents from junior high and high schools across the United States: 90,118 adolescents from 145 junior high and high schools were asked to complete a 45-minute questionnaire which inquired about their family environment, demographics, social acquaintances, academic interests, and health status. School officials were also asked to complete a School Administrator Questionnaire, which provided investigators with information about the school setting and environment (University of North Carolina at Chapel Hill, 2003).

Participants for the Add Health study were randomly selected from the initial pool of 90,118 adolescents. Each school provided investigators with a roster of students who completed the initial survey and from these 27,000 students were randomly selected for an in-home interview. The selected students along with their parents were informed about the study and given the option of refusing or agreeing to participate in the study. Informed consent forms were completed and returned to the researchers by 20,745 families who agreed

to participate, comprising the sample for Wave I of the Add Health study (University of North Carolina at Chapel Hill, 2003).

Wave I

In-home interviews were administered to the 20,745 adolescents at Wave I of the study. Interviews were conducted in the home of each adolescent with only the adolescent and interviewer present for the interview. Each interview was implemented in the same manner but varied in length due to the age and experience of each adolescent. In order to maintain confidentiality, researchers used a computer assisted program to record responses from the adolescent. The Computer-Assisted Personal Interview (CAPI)/Audio Computer-Assisted Self Interview (ACASI) allowed adolescents to answer more sensitive questions via computer without having to verbally disclose this information to another person. Adolescents were instructed on how to use the program prior to the interview. The interviewer asked the questions that were not considered sensitive and did not require the use of CAPI/ACASI programs. A response card was presented to the adolescent so that the interview did not have to read each response aloud. Topics for the in-home interview covered a range of adolescent behaviors such as substance use, criminal activities, and sexual partnerships (University of North Carolina at Chapel Hill, 2003).

A parent questionnaire was administered to a parent or legal guardian of each adolescent interviewed in Wave I. The questionnaire was designed to help investigators understand the adolescent's family environment and composition. Additional topics in the parent questionnaire included parent-adolescent interaction and communication and awareness of their adolescent's peer groups and acquaintances (University of North Carolina at Chapel Hill, 2003).

Wave II

Wave II data were conducted one year after the initial interview at Wave I. The sample included most of the participants from Wave I; however, because the 12th grade students interviewed at Wave I did not meet the age eligibility requirements for Wave II, they were excluded from the sample. An additional 65 adolescents from that Add Health study who were not originally interviewed at Wave I were recruited for Wave II (University of North Carolina at Chapel Hill, 2003).

Procedures similar to Wave I was conducted for the Wave II follow up in-home interview. All participants were instructed on how to use the CAPI/ACASI computer assisted program designed to gather responses on sensitive interview questions. The sections of the interview that did not require the use of the program were read aloud to each student. A response card was shown to the participant so the interviewer did not have to read all response options. Questions asked during the follow up interview included the same questions from Wave I with the addition of questions related to sun exposure and nutrition. Parents were not re-interviewed during the follow up study (University of North Carolina at Chapel Hill, 2003).

Wave III

Wave III data collection was designed to investigate the external influences and internal factors of adolescence on young adulthood. Wave III interviews were conducted approximately six years after the initial Wave I interviews using 15,197 of the original respondents from Wave I and Wave II who were now between the ages of 18 and 26 years. Respondents were required to be at least 18 years of age or older and to provide a written

consent before participating in the interviews (University of North Carolina at Chapel Hill, 2003).

The questionnaire and interview procedures were modified to obtain additional information on the respondents' current marital or relationship status, childbearing, and post high school educational events. Therefore, in-home interviews were conducted with the participants individually and with their partners. The in-home interviews with each individual respondent were administered using the CAPI/ACASI program used in the two previous waves. Before the interview, participants were instructed on how to use the program, which was not used for non-sensitive questions; therefore, the interviewer read these questions aloud and response cards were shown to the participant to select from. A urine and/or saliva sample was collected during the in home interview at Wave III for participants who consented (University of North Carolina at Chapel Hill, 2003).

The partner in-home interview at Wave III included a sample of 1,507 partners of respondents. In order to participate, the partner was required to be at least 18 years of age, of the opposite sex, and in a relationship with the original Add Health respondent for at least three months (University of North Carolina at Chapel Hill, 2003).

Present Study

Due to confidentiality, the present research study utilized only the Add Health public use data set which is about half as large as the original data set described above. The Wave III public-use data set was designed to analyze the transition between adolescence and young adulthood. A total of 4,882 of the original Wave I respondents were re-interviewed between August 2001 and April 2002. Independent variables of gender, age, and ethnicity from Wave III of the public-use Add Health study were used. In addition, three adoption variables from

Wave III were also used. Subjects who answered “yes” to the question “Have you ever been adopted?” made up the adopted sample for this study ($n = 140$). The second and third adoption variables were age at adoption and type of adoption. A randomly selected comparison group of 140 young adults (ages 18-26) who were reared by their birth parents comprised the non-adopted sample. The dependent variables for the study, also taken from Wave III of the Add Health study, included delinquency, violence, use of tobacco, alcohol, and drugs, impulsive behavior, and self-perception.

Instruments

Institutional review approval was given for this research (see Appendix A). The delinquency scale consisted of eight questions and the violence scale consisted of six questions each using a four-point response scale (see Appendices B and C). These questions were taken from the delinquency and violence section of the Wave III in-home interview in which the young adult was asked to report on how often s/he was involved in delinquent and violent acts.

The impulsive behavior, self perception, tobacco, alcohol, and drug composite were taken from the tobacco, alcohol, drugs, and self image section of the Wave III in home interview. The tobacco composite consisted of four questions which asked the young adult the frequency of tobacco use and age at first use (see Appendix D). The alcohol composite was made up of five questions asking the young adult to report the frequency and amount of alcohol consumption in the past year (see Appendix E). Drug use was measured based on type of drug used (see Appendix F). The drug use composite was a total of nine questions that asked the respondent to report their use of drugs within the past year. Respondents were also asked to report whether they were a member of a 12-step recovery group or program to

determine if the individual's drug use had been severe enough to involve treatment.

Impulsive behavior and self perception composites were made up of nine questions each (see Appendices G and H).

Research Questions and Data Analysis

The analyses of the data were based on the following four questions:

- Are there differences between the adopted and non-adopted groups on the outcome variables -- drug use, alcohol use, tobacco use, violence, delinquency, impulsive behavior, and self perception?
- Are there differences between the adopted and non-adopted groups on outcome variables based on racial composition and gender?
- Are there differences within each of the two groups (adopted and non-adopted) on each of the outcome variables?
- Does age at adoption and/or type of adoption influence the outcome variables?

RESULTS AND DISCUSSION

Frequencies for demographic variables, including gender, race, and age of the participants in this study are located in Table 1. Although the respondents had a wide range of categories for race (White, African American, Native American, Asian, other), the number of Native American and Asian respondents in these two groups (adoptees with matched non adoptees) were so small that they were included in the “Other” group. All four composites were examined for internal consistency as shown in Table 2. Cronbach’s alpha values were found to be adequate, indicating that all items within each scale were measuring the same thing. The means for each of the composites for both the adopted and non-adopted groups are displayed in Table 3.

Table 1

Frequencies for Demographic Variables

| Variables | n/Percent | Mean | Range |
|---------------------|-----------|-------|-------|
| Gender | | | |
| <i>Adopted</i> | | | |
| Males | 67/47.9% | | |
| Females | 73/52.1% | | |
| <i>Non-Adopted</i> | | | |
| Males | 69/49.3% | | |
| Females | 71/50.7% | | |
| Age (Mean in Years) | | | |
| <i>Non-Adopted</i> | | 21.99 | 18-26 |
| <i>Adopted</i> | | 22.06 | 18-26 |
| Race | | | |
| <i>Adopted</i> | | | |
| Caucasian | 66/47.3% | | |
| African American | 30/20.7% | | |
| Other | 44/31.4% | | |
| <i>Non-Adopted</i> | | | |
| Caucasian | 92/65.7% | | |
| African American | 34/24.3% | | |
| Other | 14/10% | | |

Table 2

Internal Consistency of Composites

| Variables | Standardized Cronbach's alpha | Number of items |
|--------------------|-------------------------------|-----------------|
| Delinquency | .627 | 8 |
| Violence | | |
| <i>Weapons</i> | .500 | 3 |
| <i>Physical</i> | .696 | 3 |
| Impulsive Behavior | .852 | 9 |
| Self Perception | .651 | 9 |

Between Group Analysis of Adopted and Non-Adopted Sample

Question 1: Are there differences between the adopted and non-adopted groups on the outcome variables -- drug use, alcohol use, tobacco use, violence, delinquency, impulsive behavior, and self perception?

Independent *t*-tests were conducted to determine if there were significant differences between the adopted and non-adopted groups on each of the outcome variables. As shown in Table 3, results indicate that only two variables were statistically different. Age at First Use (Other Illegal Drugs) was significantly higher for the adopted sample, $t(df = 253) = 2.01, p < .05$. Past Year Use (Crystal Meth) was also significantly higher for the adopted sample, $t(df = 7) = 2.64, p < .05$.

Table 3

T-Tests Comparing Adopted and Non-Adopted Young Adults

| Variables | Range | Adopted | | Non-adopted | | <i>t</i> |
|--|--|----------------|------|----------------|------|----------|
| | | Mean/ <i>n</i> | S.D. | Mean/ <i>n</i> | S.D. | |
| Delinquency | (0-24) | .52/137 | 1.12 | .61/136 | 1.68 | -.49 |
| Violence | | | | | | |
| <i>Weapons</i> | (0-9) | .09/139 | .56 | .08/137 | .45 | .21 |
| <i>Physical</i> | (0-9) | .24/137 | .80 | .56/133 | 2.16 | -1.59 |
| Impulsive Behavior | (9-45) | 23.68/127 | 8.28 | 22.76/131 | 7.72 | .89 |
| Self Perception | (9-36) | 17.00/128 | 3.63 | 16.77/132 | 3.49 | .53 |
| Age at First Use: | | | | | | |
| <i>Marijuana</i> | (0-18) 0= never tried 1-18= If used, year first used (18=18+) | 4.57/138 | 6.69 | 3.91/137 | 6.50 | .84 |
| <i>Cocaine</i> | (0-18) 0= never tried 1=one year 2= two years 3= three years 7= four to seven years 10= eight to ten years 11-18= eleven to eighteen + yrs | .73/139 | 3.23 | .17/137 | 2.91 | 1.89 |
| <i>Alcohol</i> | (1-19) 1=one year of age 19=nineteen years + | 13.48/73 | 2.71 | 12.65/49 | 3.69 | 1.43 |
| <i>Inhalants</i> | (0-18) 0= never tried 18= eighteen years + | .90/138 | 3.47 | .74/136 | 2.91 | .42 |
| <i>Tobacco</i> | (5-24) | 15.94/89 | 2.91 | 15.58/81 | 2.49 | .87 |
| <i>Other Illegal Drugs</i> | (0-18) 0= never tried 1=one year 3=two to three years 6=four to six years 9=eight to nine years 11=ten to eleven years 12-18=twelve to eighteen + yrs | 2.22/139 | 5.31 | 1.09/136 | 3.90 | 2.01* |
| Member 12 Step Program | (0-1) 0=no 1=yes | .01/139 | -- | .03/138 | -- | -1.36 |
| Past 30 Days (Tobacco): | | | | | | |
| <i>Ever smoke reglrly 1 cigarette?</i> | (0-1) 0= no 1= yes | .76/89 | -- | .67/81 | -- | 1.40 |
| <i>How many cigarettes smoked?</i> | (0-30) | 26.10/52 | 7.92 | 25.11/46 | 8.95 | .58 |

Table 3 (Continued)

| Variables | Range | Adopted | | Non-Adopted | | <i>t</i> |
|---------------------------------------|---|----------------|------|----------------|-------|----------|
| | | Mean/ <i>n</i> | S.D. | Mean/ <i>n</i> | S.D. | |
| How many cigarettes smoked e/day? | (1-100) | 15.79/53 | 9.90 | 12.15/46 | 15.56 | 1.41 |
| Past 12 months (Alcohol): | | | | | | |
| <i>How many days drink alcohol?</i> | (0-6) 0=never 1= 1 or 2 days 2= 3 or 12 days 3= 2 or 3 days/mo 4= 1 or 2 days/wk 5= 3 to 5 days/wk 6= everyday | 2.74/105 | 1.61 | 2.83/93 | 1.49 | -.38 |
| <i>Avg # drinks at each time?</i> | (1-18) | 5.22/92 | 4.19 | 4.51/86 | 3.27 | 1.25 |
| <i>How many days drink 5+ drinks?</i> | (0-6) 0=never 1= 1 or 2 days 2= 3 or 12 days 3= 2 or 3 days/mo 4= 1 or 2 days/wk 5= 3 to 5 days/wk 6= everyday | 1.98/92 | 1.63 | 1.64/86 | 1.68 | 1.37 |
| <i>How many days been drunk?</i> | (0-6) 0=never 1= 1 or 2 days 2= 3 or 12 days 3= 2 or 3 days/mo 4= 1 or 2 days/wk 5= 3 to 5 days/wk 6= everyday | 1.73/92 | 1.53 | 1.49/86 | 1.39 | 1.10 |
| Past Year Use (Drugs) | | | | | | |
| <i>Marijuana</i> | (0-1) 0= no 1= yes | .67/67 | -- | .63/49 | -- | .43 |
| <i>Cocaine</i> | (0-1) 0= no 1= yes | .79/140 | -- | .73/140 | -- | .60 |
| <i>Crystal Meth</i> | (0-1) 0=no 1=yes | .50/8 | -- | .00/6 | -- | 2.27* |
| <i>Other Illegal Drugs</i> | (0-1) 0= no 1= yes | .65/26 | -- | .87/15 | -- | -1.49 |

*Mean difference is significant ($p < .05$)** Mean difference is significant ($p < .005$)

These findings suggest that adopted and non-adopted individuals might not differ as drastically as past research has indicated. However, several factors such as socioeconomic

status and household composition may have impacted these results. Future research should control these factors and investigate interactions. Additionally, the small sample size may have influenced the outcomes as well; therefore, it is important not to generalize these findings to the larger population.

Question 2: Are there differences between the adopted and non-adopted group on outcome variables based on gender and racial composition?

Gender differences were also analyzed using independent *t*-tests. Results, shown in Table 4, indicate there were significant differences on several variables between the adopted and non-adopted groups when looking at gender. Self perception was higher for females in the adopted sample ($n=68$), $t(df=134.9)=2.82$, $p<.01$ compared to females in the non-adopted sample ($n=70$). Delinquency was also significantly higher for females in the adopted sample $t(df=81.29)=2.59$, $p<.05$ than for females in the non-adopted group. Female adoptees also had smoked a significantly larger number of cigarettes each day, within the past 30 days, than their non-adopted female peers, $t(df=46)=2.3$, $p<.05$. Male adoptees reported a significantly higher use of crystal meth in the past year, $t(df=7)=2.64$, $p<.05$ and a younger Age at First Use (Other Illegal Drugs), $t(df=105)=2.24$, $p<.05$ when compared to males in the non-adopted sample.

These results indicate there are differences between the adopted and non-adopted groups by gender. The results of this study related to delinquency are consistent with past research in which delinquency has been found to be higher for adopted females (Grotevant et al., 2006) than non-adopted females. On the other hand, previous research has found that adopted females are more likely to have lower self perception than non-adopted females (Miller et al., 2002); however the current study found the opposite; adopted females actually

Table 4

T-Tests Between Adopted and Non-Adopted Young Adults by Gender

| Variable | Male | | | | | Female | | | | |
|--|-------------------|-------|-----------------------|-------|----------|-------------------|------|-----------------------|------|----------|
| | Adopted Mean/n | S.D. | Non-Adopted Mean/n | S.D. | <i>t</i> | Adopted Mean/n | S.D. | Non-Adopted Mean/n | S.D. | <i>t</i> |
| Delinquency | .63/65 | 1.19 | 1.17/65 | 2.30 | -1.68 | .42/72 | 1.04 | .08/71 | .28 | 2.59* |
| Violence | | | | | | | | | | |
| <i>Weapons</i> | .14/66 | .78 | .15/66 | .64 | -.12 | .05/73 | .28 | .01/71 | .12 | 1.12 |
| <i>Physical</i> | .37/65 | 84.00 | .88/64 | 2.57 | -1.51 | .14/72 | .76 | .27/69 | 1.67 | -.63 |
| Impulsive Behavior | 25.93/60 | 8.09 | 24.52/62 | 7.38 | 1.02 | 21.61/67 | 7.96 | 21.03/66 | 7.72 | .43 |
| Self Perception | 16.23/60 | 4.06 | 17.35/62 | 3.9 | -1.54 | 17.68/68 | 3.07 | 16.24/70 | 2.89 | 2.82** |
| Age at First Use: | | | | | | | | | | |
| <i>Marijuana</i> | 4.06/67 | 6.58 | 4.12/68 | 6.68 | -.05 | 5.04/71 | 6.85 | 3.68/69 | 6.36 | 1.22 |
| <i>Cocaine</i> | .61/67 | 2.86 | .24/68 | 1.94 | .89 | .85/72 | 3.56 | .10/69 | .52 | 1.73 |
| <i>Alcohol</i> | 13.29/38 | 2.83 | 12.85/27 | 3.85 | .53 | 13.69/35 | 2.61 | 12.41/22 | 3.55 | 1.56 |
| <i>Inhalants</i> | .84/67 | 3.35 | .66/68 | 3.05 | .32 | .96/71 | 3.56 | .81/68 | 2.78 | .27 |
| <i>Tobacco</i> | 16.38/45 | 3.28 | 15.49/47 | 2.60 | 1.44 | 15.50/44 | 2.45 | 15.71/34 | 2.36 | -.38 |
| <i>Other Ill. Drugs</i> | 2.42/67 | 5.52 | .68/68 | 3.19 | 2.24* | 2.03/72 | 5.13 | 1.50/68 | 4.49 | .65 |
| Member 12 Step Program | .02/66 | .12 | .04/67 | .2 | -.99 | .00/73 | .00 | .01/71 | .12 | -1.00 |
| Past 30 Days (Tobacco): | | | | | | | | | | |
| <i>Ever smoke reglrly 1 cigarette?</i> | .71/45 | .46 | .66/47 | .48 | .53 | .82/44 | .39 | .68/34 | .48 | 1.41 |
| <i>How many cigarettes smoked?</i> | 26.01/25 | 8.62 | 25.64/25 | 8.71 | .15 | 26.19/27 | 7.39 | 24.48/21 | 9.40 | .71 |
| <i>How many cigarettes smoked e/day?</i> | 16.04/26 | 10.38 | 14.04/25 | 19.99 | .45 | 15.56/27 | 9.60 | 9.90/21 | 7.42 | 2.23* |
| Past 12 months (Alcohol): | | | | | | | | | | |
| <i>How many days drink alcohol?</i> | 3.35/49 | 1.38 | 3.18/45 | 1.57 | .56 | 2.21/56 | 1.63 | 2.50/48 | 1.35 | -.96 |
| <i>Avg # drinks at each time?</i> | 6.04/47 | 4.31 | 4.98/42 | 3.64 | 1.25 | 4.36/45 | 3.92 | 4.07/44 | 2.84 | .39 |
| <i>How many days drink 5+ drinks?</i> | 2.47/47 | 1.56 | 2.21/42 | 1.69 | .74 | 1.47/45 | 1.56 | 1.09/44 | 1.49 | 1.16 |
| <i>How many days been drunk?</i> | 2.15/47 | 1.49 | 1.95/42 | 1.38 | .64 | 1.29/45 | 1.47 | 1.05/44 | 1.28 | .83 |

Table 4 (Continued)

| Variable | Male | | | | | Female | | | | |
|----------------------------|---------|----------------|-------------|----------------|----------|---------|----------------|-------------|------|----------|
| | Adopted | | Non-Adopted | | <i>t</i> | Adopted | | Non-Adopted | | <i>t</i> |
| Mean/ <i>n</i> | S.D. | Mean/ <i>n</i> | S.D. | Mean/ <i>n</i> | | S.D. | Mean/ <i>n</i> | S.D. | | |
| Past Year Use: | | | | | | | | | | |
| <i>Marijuana</i> | .72/39 | .46 | .67/30 | .48 | .45 | .61/28 | .50 | .58/19 | .51 | .19 |
| <i>Cocaine</i> | 6.36/67 | 1.90 | 6.12/69 | 2.17 | .69 | 6.64/73 | 1.49 | 6.63/71 | 1.51 | .04 |
| <i>Crystal Meth</i> | .50/8 | .54 | .00/6 | .00 | 2.64* | --- | --- | --- | --- | --- |
| <i>Other Illegal Drugs</i> | .69/16 | .48 | .88/8 | .35 | -.98 | .60/10 | .52 | .86/7 | .38 | -1.19 |

*Mean difference is significant ($p < .05$)

** Mean difference is significant ($p < .005$)

had significantly higher scores on self perception than non-adopted females. Many explanations are possible for this finding, such as family environment, higher degrees of parental warmth, and socioeconomic status. Future studies should examine these factors for possible interactions and especially in light of the departure from previous findings.

Independent *t*-tests also were conducted between the adopted and non-adopted groups by racial groups (White, African American and Other) (see Table 5). Significant findings were found among the White adoptees, where there was a significant difference between the adoptees and non adoptees on the variables Ever Smoke Cigarette Reglry in the Past 30 days, $t(df=118)=-2.28, p<.05$ and How Many Cigarettes Did You Smoke Each Day in the Past 30 Days, $t(df=73)=-2.16, p<.05$; both were significantly higher for the adopted group. White non adoptees, on the other hand, were significantly higher on Past Year Use on Other Illegal Drugs, $t(df=33)=1.84, p<.05$ than were White adoptees. The African American adoptees and non-adoptees were not significantly different on any of the variables. However, non-adoptees in the “Other” racial group were significantly higher on self perception, $t(df=31)=-2.69, p<.01$ than adoptees. These findings indicate few differences between the adopted and non-adopted groups when looking at racial composition.

Table 5

Independent *T*-Tests of Adopted and Non-Adopted Young Adults by Race

| Variable | White | | | | | African American | | | | | Other | | | | |
|-------------------------|----------------|------|----------------|------|----------|------------------|------|----------------|------|----------|----------------|------|----------------|------|----------|
| | Adopted | | Non-Adopted | | <i>t</i> | Adopted | | Non-Adopted | | <i>t</i> | Adopted | | Non-Adopted | | <i>t</i> |
| | Mean/ <i>n</i> | S.D. | Mean/ <i>n</i> | S.D. | | Mean/ <i>n</i> | S.D. | Mean/ <i>n</i> | S.D. | | Mean/ <i>n</i> | S.D. | Mean/ <i>n</i> | S.D. | |
| Delinquency | .44/102 | .99 | .55/91 | 1.68 | .55 | .89/28 | 1.54 | .90/32 | 1.96 | .03 | .38/16 | 1.02 | .28/18 | .57 | -.35 |
| Violence | | | | | | | | | | | | | | | |
| <i>Weapons</i> | .09/104 | .63 | .04/91 | .3 | -.71 | .10/28 | .42 | .22/32 | .75 | .70 | .12/17 | .49 | .00/19 | .00 | -1.06 |
| <i>Physical</i> | .18/103 | .65 | .31/89 | 1.28 | .91 | .46/28 | 1.23 | 1.53/30 | 3.88 | 1.43 | .50/16 | 1.26 | .05/19 | .23 | -1.52 |
| Impulsive Behavior | 23.52/97 | 7.83 | 22.76/86 | 7.64 | -.66 | 24.32/25 | 9.93 | 23.70/31 | 8.40 | -.25 | 26.67/15 | 9.80 | 21.0/19 | 7.34 | -1.91 |
| Self Perception | 17.32/96 | 3.22 | 16.88/86 | 2.88 | -.97 | 16.19/26 | 4.91 | 15.66/32 | 4.25 | -.45 | 14.64/14 | 3.27 | 18.11/19 | 3.90 | 2.69** |
| Age at First Use: | | | | | | | | | | | | | | | |
| <i>Marijuana</i> | 4.68/103 | 6.80 | 4.11/90 | 6.67 | -.58 | 3.82/28 | 6.24 | 4.64/33 | 6.93 | .48 | 5.94/17 | 7.39 | 2.32/19 | 5.51 | -1.68 |
| <i>Cocaine</i> | .55/103 | 2.81 | .22/91 | 1.71 | -.98 | 1.55/29 | 4.66 | .09/32 | .53 | -1.76 | --- | --- | --- | --- | --- |
| <i>Alcohol</i> | 13.63/56 | 2.79 | 12.32/34 | 3.92 | -1.84 | 13.31/13 | 2.43 | 13.92/12 | 1.83 | .70 | 13.25/8 | 2.44 | 13.40/5 | 5.41 | .07 |
| <i>Inhalant</i> | .70/102 | 3.09 | .90/90 | 3.33 | .44 | 1.28/29 | 3.96 | .25/32 | 1.02 | -1.42 | .94/17 | .388 | .58/19 | 2.52 | -.34 |
| <i>Tobacco</i> | 15.75/68 | 2.43 | 15.37/63 | 2.57 | -.88 | 17.47/15 | 3.44 | 16.17/12 | 2.21 | -1.13 | 14.55/11 | 3.78 | 16.00/8 | 2.07 | .98 |
| <i>Other Ill. Drugs</i> | 1.85/103 | 4.94 | 1.01/90 | 3.82 | -1.31 | 3.03/29 | 6.09 | 1.78/32 | 4.84 | -.89 | 1.71/17 | 4.82 | .89/19 | 3.90 | -.56 |
| Member 12 Step Program | .00/104 | .00 | .01/91 | .11 | 1.07 | .04/28 | .19 | .03/33 | .17 | -.12 | .00/17 | .00 | .11/19 | .32 | 1.37 |

Table 5 (Continued)

| Variable | White | | African American | | <i>t</i> | Other | | <i>t</i> | <i>t</i> | <i>t</i> | <i>t</i> | <i>t</i> | <i>t</i> | <i>t</i> | <i>t</i> |
|--|---------------------------|------|-------------------------------|------|----------|---------------------------|-------|----------|----------|----------|----------|----------|----------|----------|----------|
| | Adopted Mean/ <i>n</i> | S.D. | Non-Adopted Mean/ <i>n</i> | S.D. | | Adopted Mean/ <i>n</i> | S.D. | | | | | | | | |
| Past 30 Days (Tobacco): | | | | | | | | | | | | | | | |
| <i>Ever smoke reglrly 1 cigarette?</i> | .82/68 | .38 | .65/63 | .48 | -2.28* | .53/15 | .52 | .75/12 | .45 | 1.14 | .73/11 | .47 | .75/8 | .46 | .11 |
| <i>How many cigarettes smoked?</i> | 26.86/43 | 7.00 | 25.74/35 | 7.79 | -.67 | 21.00/5 | 12.45 | 21.56/9 | 13.07 | .08 | 26.17/6 | 8.90 | 30.00/4 | .00 | .84 |
| <i>How many cigarettes smoked e/day?</i> | 15.58/43 | 8.92 | 11.23/35 | 8.77 | -2.16* | 12.50/6 | 11.79 | 16.22/9 | 31.74 | .27 | 27.00/6 | 14.35 | 13.00/4 | .00 | 1.83 |
| Past 12 months (Alcohol): | | | | | | | | | | | | | | | |
| <i>How many days drink alcohol?</i> | 2.67/87 | 1.60 | 2.92/65 | 1.47 | 1.01 | 2.85/13 | 1.73 | 2.80/20 | 1.36 | -.09 | 3.08/13 | 1.49 | 2.33/12 | 1.72 | -1.54 |
| <i>Avg # drinks at each time?</i> | 5.41/76 | 4.16 | 4.23/60 | 2.86 | -1.87 | 3.36/11 | 2.73 | 4.45/20 | 4.35 | .75 | 5.50/12 | 6.11 | 5.30/10 | 3.20 | -.09 |
| <i>How many days drink 5+ drinks?</i> | 1.93/76 | 1.56 | 1.77/60 | 1.66 | -.60 | 2.00/11 | 2.00 | 1.05/20 | 1.70 | -1.39 | 2.08/12 | 1.78 | 1.80/10 | 1.75 | -.37 |
| <i>How many days been drunk?</i> | 1.76/76 | 1.51 | 1.63/60 | 1.33 | -.52 | 1.55/11 | 1.69 | .95/20 | 1.28 | -1.11 | 1.67/12 | 1.61 | 1.60/10 | 1.95 | -.09 |
| Past Year Use: | | | | | | | | | | | | | | | |
| <i>Marijuana</i> | .64/47 | .49 | .65/34 | .49 | .08 | .71/14 | .47 | .64/11 | .51 | -.39 | .82/11 | .41 | .57/7 | .54 | -1.12 |
| <i>Cocaine</i> | 6.40/104 | 1.84 | 6.26/92 | 2.02 | -.52 | 6.76/29 | 1.30 | 6.65/24 | 1.43 | -.32 | 6.65/17 | 1.46 | 6.00/19 | 2.38 | -.97 |
| <i>Crystal Meth</i> | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| <i>Other Illegal Drugs</i> | .65/52 | .49 | .92/34 | .28 | 1.84* | .50/25 | .71 | 1.00/15 | .00 | 1.00 | .60/17 | .55 | .50/19 | .71 | -.21 |

*Mean difference is significant ($p < .05$).

** Mean difference is significant ($p < .01$)

Within Group Analysis of Adopted and Non-Adopted Groups

Question 3: Are there differences within each of the two groups (adopted and non-adopted) on each of the outcome variables?

Independent *t*-tests were conducted within each group (adopted and non-adopted) to determine if gender was a significant variable within relative to the outcome variables. In the non-adopted sample, gender was found to be statistically significant on several of the outcome variables (see Table 6). On average, non-adopted males had significantly higher scores than non-adopted females on delinquency, $t(df=65)=3.80, p<.01$, impulsive behavior, $t(df=128)=2.65, p<.01$, # days drink alcohol, $t(df=87)=2.23, p<.05$, # days drink 5+ drinks, $t(df=81)=3.27, p<.01$, and # days drunk $t(df=82)=3.17, p<.01$.

Within the adopted sample, males reported significantly higher scores than females on impulsive behavior $t(df=123)=3.03, p<.01$, # of days drink alcohol $t(df=90)=3.82, p<.01$, average # drinks each day $t(df=90)=1.96, p<.05$, # of days drink 5+ drinks $t(df=90)=3.08, p<.05$, and # of days drunk $t(df=90)=2.79, p<.01$. Female adoptees were significantly higher on self perception, $t(df=109)=-2.42, p<.05$ than male adoptees. These findings are consistent with past research on gender and young adult risky behavior; according to the National Survey on Drug Use and Health (2005) males are more likely than females both to use and have higher uses of alcohol use, drug use, and illicit drug use whether or not they are adopted.

Table 6
T-Tests by Gender Within Adopted and Non-Adopted Groups of Young Adults

| Variables | Adopted | | | | | Non-Adopted | | | | |
|--|----------------|-------|----------------|------|----------|----------------|-------|----------------|------|----------|
| | Male | | Female | | <i>t</i> | Male | | Female | | <i>t</i> |
| | Mean/ <i>n</i> | S.D. | Mean/ <i>n</i> | S.D. | | Mean/ <i>n</i> | S.D. | Mean/ <i>n</i> | S.D. | |
| Delinquency | .61/65 | 1.93 | .41/72 | 1.04 | 1.12 | 1.17/65 | 2.30 | .08/71 | .28 | 3.95** |
| Violence | | | | | | | | | | |
| <i>Weapons</i> | .14/66 | .78 | .05/73 | .28 | .83 | .15/66 | .64 | .01/71 | .12 | 1.72 |
| <i>Physical</i> | .37/65 | .83 | .14/72 | .76 | 1.69 | .88/64 | 2.57 | .28/69 | 1.67 | 1.58 |
| Impulsive Behavior | 25.93/60 | 8.09 | 21.61/67 | 7.96 | 3.03** | 24.52/65 | 7.38 | 21.03/66 | 7.72 | 2.65** |
| Self Perception | 16.23/60 | 4.06 | 17.68/68 | 3.07 | -2.24* | 17.36/62 | 3.99 | 16.24/70 | 2.89 | 1.85 |
| Age at First Use: | | | | | | | | | | |
| <i>Marijuana</i> | 4.06/67 | 6.52 | 5.04/71 | 6.85 | -.86 | 4.12/68 | 6.68 | 3.68/69 | 6.36 | .39 |
| <i>Cocaine</i> | .61/67 | 2.86 | .85/72 | 3.56 | -.43 | .24/68 | 1.94 | .10/69 | .52 | .55 |
| <i>Alcohol</i> | 13.29/38 | 2.83 | 13.69/35 | 2.61 | -.62 | 12.85/27 | 3.85 | 12.41/22 | 3.55 | .41 |
| <i>Inhalants</i> | .84/67 | 3.35 | .86/71 | 3.5 | -.21 | .66/68 | 3.05 | .81/68 | 2.79 | -.29 |
| <i>Cigarette</i> | 16.38/45 | 3.28 | 15.50/44 | 2.45 | 1.43 | 15.49/47 | 2.60 | 15.71/34 | 2.36 | .38 |
| <i>Other Illegal Drugs</i> | 2.42/67 | 5.52 | 2.03/71 | 5.13 | .43 | .68/68 | 3.19 | 1.50/69 | 4.50 | -1.23 |
| Member 12 Step Program | .02/66 | .12 | .00/73 | .00 | 1.05 | .04/67 | .21 | .01/71 | .12 | 1.07 |
| Past 30 Days (Tobacco): | | | | | | | | | | |
| <i>Ever smoke reglrly 1 cigarette?</i> | .71/45 | .46 | .82/44 | .39 | -1.19 | .66/47 | .48 | .68/34 | .48 | -1.07 |
| <i>How many cigarettes smoked?</i> | 26.00/25 | 8.62 | 26.19/27 | 7.39 | -.08 | 25.64/25 | 8.71 | 24.48/21 | 9.40 | .44 |
| <i>How many cigarettes smoked e/day?</i> | 16.04/26 | 10.38 | 15.56/27 | 9.61 | .18 | 14.04/25 | 19.99 | 9.90/21 | 7.42 | .89 |
| Past 12 months (Alcohol): | | | | | | | | | | |
| <i>How many days drink alcohol?</i> | 3.35/49 | 1.38 | 2.21/56 | 1.63 | 3.82** | 3.18/45 | 1.57 | 2.50/48 | 1.35 | 2.23* |
| <i>Avg # drinks at each time?</i> | 6.04/47 | 4.31 | 4.36/45 | 3.92 | 1.96* | 4.98/42 | 3.64 | 4.07/44 | 2.84 | 1.29 |
| <i>How many days drink 5+ drinks?</i> | 2.47/47 | 1.56 | 1.47/45 | 1.56 | 3.08* | 2.21/42 | 1.69 | 1.09/44 | 1.49 | 3.27** |
| <i>How many days been drunk?</i> | 2.15/47 | 1.49 | 1.29/45 | 1.47 | 2.79** | 1.95/42 | 1.38 | 1.05/44 | 1.28 | 3.17** |

Table 6 (Continued)

| Variables | Adopted | | | | | Non-Adopted | | | | |
|----------------------------|----------------|------|------------------|------|-----|----------------|------|------------------|------|-------|
| | Male Mean/n | S.D. | Female Mean/n | S.D. | t | Male Mean/n | S.D. | Female Mean/n | S.D. | t |
| Past Year Use | | | | | | | | | | |
| <i>Marijuana</i> | .72/39 | .46 | .61/28 | .50 | .95 | .67/30 | .48 | .58/19 | .51 | .61 |
| <i>Cocaine</i> | 6.36/67 | 1.89 | 6.64/73 | 1.49 | .99 | 6.12/69 | 2.17 | 6.63/71 | 1.5 | -1.64 |
| <i>Crystal Meth</i> | .50/8 | .54 | --- | --- | -- | .00/6 | .00 | --- | --- | --- |
| <i>Other Illegal Drugs</i> | .69/14 | .48 | .60/13 | .52 | .44 | .88/8 | .35 | .86/7 | .38 | .09 |

*Mean difference is significant ($p < .05$).

** Mean difference is significant ($p < .01$).

A one way analysis of variance was conducted to determine if race was a significant factor in contributing to young adult risky behavior in the adopted and non-adopted groups. Because the number of Native American and Asian respondents in these two groups was very small, they were included in the Other group. Few significant differences were found between the three racial groups. Within the adopted group, White young adults were significantly higher than the African American and Other young adults, $F(2, 125)=4.01$, $p < .05$ on self-perception. Also within the adopted sample, the Other group of young adults were significantly higher on how many cigarettes they had smoked each day within the past 30 days, $F(2, 50)=5.17$, $p < .01$ compared to the White and African American young adults. Within the non-adopted sample, the Other group was significantly higher on self perception, $F(2, 129)=3.85$, $p < .05$, than the White and African American groups. African Americans within the non-adopted sample were significantly higher on physical violence variable, $F(2, 130)=4.49$, $p < .01$, compared to the White and Other groups.

Results from this analysis are not consistent with recent statistics, which indicated that non-adopted White young adults are higher than any other group on alcohol use, a variable that was not statistically significant in this study. Drug use is also known to be

higher among Native Americans, which could not be studied as a stand-alone group in this study due to the low numbers in the sample. .

Question 4: Does age at adoption and/or type of adoption influence the outcome variables?

Type of Adoption

A one way analysis of variance was used to determine if type of adoption (i.e., blood relative, transracial, and international) predicted risky behavior among adopted young adults. Results revealed no significant differences among type of adoption and the 23 different categories of risky behaviors. Due to the limited sample size of adopted individuals who responded to this particular variable, these findings should not be generalized to the larger population. Very few researchers have examined how type of adoption might influence young adult risky behaviors, so this needs further study.

Correlation Analysis of Age at Adoption and Young Adult Risky Behavior

Correlation analyses were done to determine if age at adoption was associated with any of the 23 risky behaviors for adopted young adults but no significant correlations were found. Past research on age at adoption and risky behavior has focused primarily on adolescent outcomes. Since this research focuses on young adults, it is difficult to determine how these results compare to other studies using the younger age group.

LIMITATIONS

The Add Health data set was useful for this research primarily because it is a large, nationally representative, and ethnically diverse sample that included both adopted and non-adopted young adults. Additionally, the Add Health data set is a longitudinal study, which allows researchers using the data set to study participants over a long period of time.

However, the Add Health data set had many limitations for this research. One of the main limitations is the use of self-reports by the participants. Although participants were given tabulated responses and had some questions read to them, individual errors in memory and bias are likely to occur in self reports, which was apparent to the researcher as she crosschecked various responses from the three waves. Another limitation is that adopted children are not well represented in this data set. Only 140 young adults had been adopted. One of the reasons for this might have been that many parents, both now and especially in the past, did not want their adopted children exposed to anything that would serve to put them or their children at risk for being found or taken away. This attitude might have caused the parents to not allow their children to be in the research from the very beginning, thus producing the lower relative numbers of adopted young adults in this data set at Wave III.

The current study had several limitations, which should be addressed in future studies. Due to the small number of adopted individuals in the Add Health data set, results were somewhat difficult to interpret and generalize. The small sample size also made it difficult to look at several variables of interest to the researcher, including age at adoption and type of adoption. When attempting to break down these variables by age and type, the sample size became so small that results were null or meaningless. The current study did not look at factors such as socioeconomic status, influence of siblings, parental warmth, and

household composition, all of which could have had an impact on the outcomes. Future studies should examine these factors to determine if an interaction exists between these variables and the risky behavior variables and adoption status.

Finally, the lack of research on young adult risky behavior and adoption status made it difficult to assess and compare these results to other studies. Much of the past research focused on adolescent outcomes of adopted individuals and paid little attention to young adults.

GENERAL CONCLUSION AND SUMMARY

This study examined whether risky behavior outcomes in young adults differed based on adoption outcomes. Delinquency, violence, impulsive behavior, self perception, drug use, alcohol use, and tobacco use were identified as risky behaviors in this study and used in statistical analyses to determine if adoption status (adopted and non-adopted) made a difference in these variables in young adulthood. The sample was drawn from Wave III of the Add Health data set.

Independent *t*-tests were conducted between both the adopted and non-adopted groups on each of the variables. Additional *t*-tests were performed between the two groups to determine if findings were different due to race and gender. A within group comparison was also performed to further examine each of the groups independently. Independent *t*-tests and one way analysis of variance were conducted on gender and ethnicity. A correlation analysis was performed to examine whether age at adoption correlated with any of the risky behavior variables. Finally, an analysis of variance was done to determine if type of adoption (i.e., blood relative, international, and transracial) of the adopted sample made a difference in risky behaviors in these young adults.

Results from the independent *t*-tests between the adopted and non-adopted groups produced very few findings. Adopted females were found to be more likely to exhibit delinquent behaviors and had higher cigarette use than non-adopted females. An interesting finding was that non-adopted females had lower self perception than adopted females. Very few differences were found between racial groups. White adoptees were significantly higher on cigarette usage than White non-adoptees. Analysis on age at adoption and type of adoption produced no significant results. Findings from the within group analysis showed

that within both the adopted and non-adopted groups, males are more likely than females to exhibit risky behaviors, specifically impulsive behaviors and alcohol use, consistent with findings from previous studies of gender and risky behaviors.

In summary, not only were there very few significant results but more importantly, there was no common theme among the findings, indicating that there was no one single variable or combination of variables in the current study that appeared to make a difference in risky behaviors in young adults based on their adoption status.

While there are several limitations to this study, the information it provides is useful for prospective adoption families. There are many factors that contribute to the behavioral outcomes of both adopted and non-adopted adults. Findings from this study will help researchers better understand how nature (genetic tendencies) and nurture (environmental responses and interactions between genetic and environment) explain the behaviors of adoptees versus non-adoptees. Several findings from this study suggest that inherited aspects of an adopted individual do not necessarily contribute to risky behaviors in young adulthood. However, due to the small sample size of the study and several limitations, it is difficult to assess whether the biological make-up of an individual, his/her environment, or the interaction between the two is the primary explanation to his/her risky behaviors. Overall, the results of this study are really quite good news for parents of adopted children or the adopted children themselves, indicating that adoption does not appear to be a determining factor in determining the level of risky behaviors in which young adults engage.

APPENDIX B

Delinquency Composite

The following eight questions were included in the delinquency composite from the Add Health codebook. The responses to these questions were answered based on the 4 responses using a 0-3 scale in which never=0, 1 or 2 times=1, 3 or 4 times=2, and 5 or more times=3.

- In the past 12 months, how often did you deliberately damage property that didn't belong to you? (H3DS1)
- In the past 12 months, how often did you steal something worth more than \$50? (H3DS2)
- In the past 12 months, how often did you go into a house or building to steal something? (H3DS3)
- In the past 12 months, how often did you sell marijuana or other drugs? (H3DS5)
- In the past 12 months, how often did you steal something worth less than \$50? (H3DS6)
- In the past 12 months, how often did you buy, sell, or hold stolen property? (H3DS8)
- In the past 12 months, how often did you use someone else's credit card, bank card, or automatic teller card without their permission or knowledge? (H3DS9)
- In the past 12 months, how often did you deliberately write a bad check? (H3DS10)

APPENDIX C

Violence Composite

The following six questions were included in the violence composite from the Add Health codebook. The violence scale is divided between weapon use and physical use. The following six questions were answered based on the same 0-3 response format as the delinquency composite in which never=0, 1 or 2 times=1, 3 or 4 times=2, and 5 or more times=3.

Violence-Weapons

- In the past 12 months, how often did you use a weapon to threaten to use a weapon to get something from someone? (H3DS4)
- In the past 12 months, how often did you use a weapon in a fight? (H3DS11)
- In the past 12 months, how often did you carry a handgun at school or work? (H3DS12)

Violence-Physical

- In the past 12 months, how many times did you take part in a physical fight in which you were so badly injured that you were treated by a doctor or a nurse? (H3DS16)
- In the past 12 months, how often did you hurt someone badly enough in a physical fight that he or she needed care from a doctor or nurse? (H3DS17)
- In the past 12 months, how often did you take part in a physical fight where a group of your friends was against another group? (H3DS7)

APPENDIX D

Tobacco Composite

The following four questions are taken from the tobacco composite in the Add Health codebook. Not all questions from the tobacco scale composite in the Add Health codebook were represented as they were not of importance to the researcher. These numeric responses were coded as numbers representing larger amounts (e.g. 1=1 to 2 times, 2=3 to 12 times); the yes/no responses were coded as yes=1 and no=0.

- How old were you the first time you smoked an entire cigarette? (H3TO3 =AGECIG)
- Have you ever smoked cigarettes regularly –that is, at least one cigarette every day for 30 days? (H3TO4=SMKREG)
- During the past 30 days, on how many days did you smoke cigarettes? (H3TO7 = P30CIGDAY)
- During the past 30 days, on the days you smoked, how many cigarettes did you smoke each day? (H3TO10 =P30CIGNUM)

APPENDIX E

Alcohol Composite

The following five questions were taken from the alcohol composite in the Add Health codebook. For the purpose of this study, not all questions were represented from the alcohol composite of the Add Health codebook. These numeric responses were coded as numbers representing larger amounts (e.g. 1= 1 to 2 times, 2= 3 to 12 times).

- During the past 12 months, how many days did you drink alcohol? (H3TO38 = P12DAYS)
- Think of all the times you have had a drink during the past 12 months. How many drinks did you usually have each time? (H3TO39 = P12DRINKS)
- During the past 12 months, on how many days did you drink five or more drinks in a row? (H3TO40 = P12DAYS5)
- During the past 12 months, on how many days have you been drunk or very high on alcohol? (H3TO43 = P12DRUNK)
- Age First Drink Alcohol? (AGEDRINK)

APPENDIX F

Drug Composite

The following nine questions were included in the drug composite from the Add Health codebook. However, for the purpose of the current study, not all questions from the drug composite in the Add Health codebook were represented. The following questions were answered based on “yes/no” responses, where yes=1 and no=0.

- In the past year, have you used anabolic steroids or other illegal performance-enhancing substances for athletes? (H3TO107 = ILLENHANCE)
- In the past year, have you used marijuana? (H3TO109=MARIJUA)
- In the past year, have you used any kind of cocaine? (H3TO112 = COCAINE)
- In the past year, have you used crystal meth? (H3TO115 = CRYSMETH)
- In the past year, have you used any types of these illegal drugs? (LSD, PCP, ecstasy, mushrooms, inhalants, ice, heroin, or prescription medicines not prescribed for you) (H3TO118=OTHERILL)
- Are you a member of any kind of 12-step recovery group or program?
(H3TO129=RECOVGRP)

The responses to the following questions are based on the actual age at which the individual first used the specified drug.

- Age First Tried Marijuana? (AGEMAR)
- Age First Tried Cocaine? (AGECOCAINE)
- Age First Tried Inhalants? (AGEINHALANT)
- Age First Tried Other Illegal Drugs? (AGEOTHERILL)

APPENDIX G

Impulsive Behavior Composite

The impulsive behavior composite was part of the tobacco, alcohol, drugs, and self image section of the Add Health codebook. Although there was no specific section on impulsive behavior in the Add Health codebook, the following nine questions were interpreted by the current researcher and her major professor as impulsive behaviors. These questions used the following response format: not true=1, a little true=2, somewhat true=3, pretty true= 4, and very true=5.

- I often try new things just for fun or thrills, even if most people think they are a waste of time. (H3TO27)
- When nothing new is happening, I usually start looking for something exciting. (H3TO28)
- I can usually get people to believe me, even when what I am saying isn't quite true. (H3TO29)
- I often do things based on how I feel at the moment. (H3TO30)
- I sometimes get so excited I lose control of myself. (H3TO31)
- I like it when people can do whatever they want, without strict rules and regulations. (H3TO32)
- I often follow my instincts, without thinking through all the details. (H3TO33)
- I can do a good job of "stretching the truth" when I'm talking to people. (H3TO34)
- I change my interests a lot, because my attention often shifts to something else, (H3TO35)

APPENDIX H

Self Perception Composite

The following nine questions are taken from the self image composite in the Add Health codebook. The variable was renamed for the purpose of the current study, but no questions were eliminated. Responses for this composite were based on a Likert-type scale in which low=1 and high=4. Respondents were asked how they perceived themselves on the following questions:

- How intelligent are you? (HT3O94)
- How popular are you? (H3TO95)
- How immature are you? (H3TO96)*
- How confident are you of yourself? (H3TO97)
- How independent are you? (H3TO98)
- How careful are you? (H3TO99)
- How attractive are you? (H3TO100)
- How considerate are you? (H3TO101)
- How self-centered are you? (H3TO102)*

*These items were reverse coded

REFERENCES

- Backinger, C.L., Fagan, P., Matthews, E., & Grana, R. (2003). Adolescent and young adult tobacco prevention and cessation: Current status and future directions. *Tobacco Control, 12*, 46-53.
- Bowlby, J. (1982). *Attachment and Loss: Vol. 1. Attachment (2nd ed)*. New York: Basic Books.
- Burrow, A., Tubman, J., & Finley, G. (2004). Adolescent adjustment in a nationally collected sample: Identifying group difference by adoption status, adoption subtype, developmental stage and gender. *Journal of Adolescence, 27*, 267-282.
- Center for Disease Control and Prevention (CDC). (1997). Youth risk behavior surveillance: National college health risk behavior survey-United States, 1995. *Morbidity and Mortality Weekly Report, 46*(SS-6), 1-54.
- Child Welfare Information Gateway. (2004). How many people were adopted in 2000 and 2001? Retrieved November 2nd, 2006 from <http://www.childwelfare.gov/systemwide/statistics/adoption.cfm#inter>.
- Cook, P.J., & Laub, J.H. (1998). The unprecedented epidemic in youth violence. *Crime and Justice, 24*, 27-64.
- Cook, P. J. (1985). The case of the missing victims: Gunshot woundings in the National Crime Survey. *Journal of Quantitative Criminology, 1*, 91-102.
- Cooper, M., Agocha V., & Sheldon, M. (2000). Motivational perspective on risky behaviors: The role of personality and affective on regulatory responses. *Journal of Personality, 68*, 1059-1088.

- Current Adoption Statistics. (2008). Retrieved April 2nd, 2008 from <http://www.adoptivefamilies.org>.
- Golding, K., & Picken, W. (2004). Group work for foster carers caring for children with complex problems. *Adoption and Fostering*, 28, 25-37.
- Grotevant, H., Van Dulmen, M., Dunbar, N., Nelson-Christinedaughter, J., Christensen, M., Fan, X., & Miller, B. (2006). Antisocial behavior of adoptees and non adoptees: prediction from early history and adolescent relationships. *Journal of Research on Adolescence*, 16, 105-131.
- Howe, D. (2006). Developmental attachment psychotherapy with fostered and adopted children. *Child and Adolescent Mental Health*, 11, 128-134.
- Johnson, P.B., Boles, S.M., Vaughan, R., & Kleber, H.D. (2000). The co-occurrence of smoking and binge drinking in adolescence. *Addictive Behaviors*, 25, 779-783.
- Johnston, L.D., O'Malley, P.M., & Bachman, J.G. (2003). Monitoring the future national survey results on drug use, 1975-2002: Volume 1. *Secondary school students*. National Institute of Drug Use. Bethesda, MD.
- Lee, J.A., Jones-Webb, R., Short, B.J., & Wagenaar, A.C. (1997). Drinking location and risk of alcohol-impaired driving among high school seniors. *Addictive Behaviors*, 22, 387-393.
- Leigh, B. (1999). The risks of drinking among young adults. Peril, chance, adventure: Concepts of risk, alcohol use and risky behavior in young adults. *Addiction*, 94(3), 371-383.

- Marvin, R., Cooper, G., Hoffman, K., & Powell, B. (2002). The circle of security project: attachment-based intervention with caregiver-pre-school child dyads. *Attachment and Human Development, 4*, 107-124.
- Menlove, F. (1983). Aggressive symptoms in emotionally disturbed adopted children. *Child Development, 36*, 519-532.
- Merriam-Webster's collegiate dictionary* (11th Ed.). (2003). Springfield, MA: Merriam-Webster.
- Miller, B., Fan, X., Christensen, M., Grotevant, H., & Van Dulmen, M. (2000). Comparisons of adopted and nonadopted adolescents in a large, nationally represented sample. *Child Development, 71*, 1458-1473.
- Moffitt, T. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review, 100*, 674-701.
- Rowe, D., & Flannery, D. (1994). An examination of environmental and trait influences on adolescent delinquency. *Journal of Research of Crime and Delinquency, 31*(4), 374-389.
- Schofield, G., & Beek, M. (2006). *Attachment handbook for foster care and adoption*. London: BAAF.
- Sharama, A., McGue, M., & Benson, P. (1996). The emotional and behavioral adjustment of United States adopted adolescents: age at adoption. *Children and Youth Services Review, 18*, 101-114.

Substance Abuse and Mental Health Services Administration. (2006). *Results from the 2005 National Survey on Drug Use and Health: National Findings* (Office of Applied Studies, NSDUH Series H-30, DHHS Publication No. SMA 06-4194). Rockville, MD.

Substance Abuse and Mental Health Services Administration. (2007). *Results from the 2006 National Survey on Drug Use and Health: National Findings* (Office of Applied Studies, NSDUH Series H-32, DHHS Publication No. SMA 07-4239). Rockville, MD.

U.S. Department of Health and Human Services, National Institute on Drug Abuse. (2005). National results on adolescent drug use: Overview of key findings 2004. Retrieved October 20th, 2006 from www.nida.nih.gov/DrugPages/mtf.html.

U.S. Department of Justice, Bureau of Justice Statistics. (2005). Crime and victim statistics. Retrieved November 1st, 2006 from <http://www.ojp.usdoj.gov/bjs/cvict.htm>.

University of North Carolina, Chapel Hill, UNC Carolina Population Center. (2003). Add Health: A national longitudinal study of adolescent health. Retrieved September 5th, 2006 from the Add Health Web site: <http://cpc.unc.edu/projects/addhealth>.

Widdle, M. (2003). Alcohol use among adolescents and young adults. *Alcohol Research and Health*, 27(1), 79-85.