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EXAMINING THE VALIDITY OF THE LIFE HISTORY CALENDAR

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ABSTRACT OF THESIS

EXAMINING THE VALIDITY OF THE LIFE HISTORY CALENDAR

This study examined validity of the Life History Calendar by comparing retrospective and prospective reports of adolescent substance use. Agreement was calculated using kappa and phi coefficients for dichotomous variables, and Bivariate correlations for average substance use. Effects of potential personality, psychopathology, and demographic moderators on agreement were assessed through hierarchical regression analyses and curvilinear relations determined. Results reflected moderate agreement between retrospective and prospective reports of substance use, moderated by personality and psychopathology variables, particularly Agreeableness, symptoms of antisocial personality disorder, and symptoms of substance abuse. Agreement between retrospective and prospective reports was adequate for reports of alcohol and marijuana use for at least six years after initial reports of use. Agreement for cigarette reports was adequate a year after initial reporting.

KEYWORDS: Validity, Substance Use, Life History Calendar, Retrospective Reports, Prospective Reports, Agreement, Personality.

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EXAMINING THE VALIDITY OF THE LIFE HISTORY CALENDAR

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THESIS

Leslie-Ann Robertson Toney

The Graduate School
University of Kentucky
2005

EXAMINING THE VALIDITY OF THE LIFE HISTORY CALENDAR

THESIS

A thesis submitted in partial fulfillment of the requirements for the Degree of Master of Science in the College of Arts and Sciences at the University of Kentucky.

By

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Chapter 1: Introduction

The Life History Calendar (LHC) is a data-collection method for obtaining reliable retrospective data about life events and activities. The LHC was developed in the context of longitudinal research to record central events that can occur in a respondent's life. It uses visual aids, inquires about streams of events, records event sequences, and contextualizes questions about various life events. This method serves to facilitate the recall of multiple life-events, their timing and their duration, and the gathering of event-histories that provide a comprehensive picture of life-course dynamics. Consequently, charting event histories may allow the disentangling of the timing of different events from their sequence. As such, there are many potential applications of this methodology including the approximation of a longitudinal design using cross-sectional data, and the augmenting of longitudinal data.

Composition of the LHC

Usually the LHC is formulated as a chart with a series of columns and rows. For example, column headings may be designated by years, sub-headed with academic terms or semesters (as in the current study) and further identified by months on the calendar year. Each row on the chart represents an area of interest to the researchers. Interviewees are asked about the frequency or occurrence of the events or behaviors indicated in each row, and their responses are marked in the boxes on the chart according to when they occur. The interviewer usually punctuates each segment of questioning with clarification as to when a behavior or event occurred. Interviewers use the LHC chart as a visual aid to verify that sequential order and frequency of events are accurate according to the respondent’s accounts. Researchers can construct very detailed sequences that identify the states, transitions and timings of events over an extended period of time. The LHC attempts to improve collection of retrospective data by using important reference points to cue less salient events. The interview method and visual display of time periods along key variables (e.g. marriage, births, education, or relocation) help both interviewer and respondent to notice any inconsistencies and correct them. Recording is in such detail as to facilitate accurate accounts of frequency and patterns of events to allow for event history analysis, whereas questionnaires might garner less valuable or less comprehensive

information. For instance, in the current LHC the interviewer asks the participant to indicate the frequency of alcoholic drinks, cigarettes smoked, marijuana smoked (along with questions about other substances) per calendar period. The calendar period referenced is the school year, which is divided into semesters, and then by months in each semester. Importantly, the participant's birth-month is highlighted on the chart as another key reference point. A reduced version of our LHC is illustrated in Figure 1.

Utility of the LHC

Four key design features in the LHC may help to achieve such complex data collection. To begin with, the LHC acts as a visual aid, presenting the respondent with a calendar contextualizing the sequence of time. Further, the LHC allows for a continuous flow of events in the relevant domains rather than static or isolated ones, detailing sequences such as incidence, timing, duration, and, contextualization of the life course – connecting events to each other. These elements increase accuracy and help avoid or resolve inconsistencies. Finally, the interview administration of the LHC allows for it to be a more collaborative experience, as opposed to simply filling out of a paper and pencil survey. The LHC is divided into units of time that are applicable to the purpose of research – small enough to allow for precise measurement and large enough that respondents can make accurate statements about the occurrence of events in each unit (Freedman et al. 1988). Similarly the research aims be they delinquent behavior during adolescence, physical health during the life course, or marital/relationship status, dictate the domains used.

Therefore, LHC data can capture a more comprehensive picture than a questionnaire might permit. This allows the easy observation of patterns of behavior and their coincidence with pivotal life events. Traditional methods capture sequential snapshots of static information rather than a continuous flow of information. One of the problems with collecting longitudinal data is the charting of continuous or frequently occurring events as if they were single points in time. Often gaps in the data exist because researchers do not ask about events that occurred between assessment periods (for example, relationship or employment status during the course of the year between assessment periods) (Caspi et al., 1996). Use of the LHC helps to sort out temporal order for more precise description of the sequence of events allowing better disclosure of any patterns of stressors. Also, the

interviewing method, in which data are collected using simple panels divided into relevant time blocks, allows the respondent a clearer and more compartmentalized view of time. The respondent can then use a visual display of specific units of time and events, rather than attempt to remember the frequency and sequence of events over a long period of time. Such detailed, time-ordered mapping of individual behaviors within the scope of specific life events allows for better tracking of the development of the phenomena of interest.

The Utility of Developmental Data

Psychologists, particularly clinical psychologists and developmental psychopathologists attempt to address temporal order or development. For example, research has documented links between neuroticism and alcohol abuse, but we are yet to discover the causal mechanisms that drive that relation. Longitudinal research is helpful in understanding the temporal ordering of behaviors and traits related to alcoholism and neuroticism. For instance, do high levels of neuroticism precede heavy alcohol use or do they follow alcohol use? Developmental data allow, among other things, the determination of temporal precedence and the identification of subtypes based on developmental history. Moffitt's (1993) developmental theories on adolescent criminal behavior epitomize this idea. She makes the case for qualitatively distinct categories of juvenile offenders based on trajectories of delinquency from childhood to adulthood. Antisocial behavior has been widely accepted as more frequent during adolescence and only persistent and stable for a very small portion of the population. However, Moffitt (1993) argues that during the period in which delinquent acts peak those whom she describes as life course persistent offenders and adolescent-limited offenders appear identical in intensity and frequency of acts. Moreover, childhood histories of those in the life course persistent category frequently give account of difficult temperaments, aggressive behavior and conduct problems before any recorded contact with authorities. In the absence of developmental data with which to tease apart the different trajectories, researchers may often miss the distinction between the two groups of offenders if they are only assessed during that peak. Consequently, data that provide a basis for temporal precedence are essential to understanding numerous psychological phenomena.

Figure 1: Life History Calendar

	1986	1987		1988			1989			1990			1991			1992			1993		
	Fifth Grade			Sixth Grade			Seventh Grade			Eighth Grade			Ninth Grade			Tenth Grade			Eleventh Grade		
	Sep Dec	Jan Apr	May Aug	Sep Dec	Jan Apr	May Aug	Sep Dec	Jan Apr	May Aug	Sep Dec	Jan Apr	May Aug	Sep Dec	Jan Apr	May Aug	Sep Dec	Jan Apr	May Aug	Sep Dec	Jan Apr	May Aug
Substance Use																					
Cigarettes	x	x		x	x	x			x	x			x	x	x		x	x		x	x
Pattern	2	1		1	1	3			4	4			5	7	5		8	8		9	5
Smokeless Tobacco																					
Pattern																					
Marijuana/ Hashish	x	x			x		x	x	x		x	x	x					x			x
Pattern	3	1			1		2	1	2		2	4	1					2			4
Alcohol	x	x	x				x	x	x		x	x	x	x		x		x	x	x	X
Pattern	1	1	2				2	2	3		5	6	7	1		2		2	1	1	4
Cocaine																					
Pattern																					
Crack																					
Pattern																					
Psychedelics															x						
Pattern															1						
Inhalants									x												
Pattern									1												

The LHC may aid in answering questions of temporal precedence and development in two ways. First, it may allow approximation of a longitudinal design in the context of a cross-sectional study. Since the LHC is a retrospective measure that allows for data gathering across a span of time, researchers can simultaneously capture developmental information on different age cohorts without the expense and time of a longitudinal study. Second, in the context of a longitudinal design, the LHC embedded within a longitudinal design will provide a much better temporal resolution and extend the power and utility of its findings.

Approximating a Longitudinal Design

Researchers do not always have the luxury of a multi-year follow-up. Longitudinal studies may be cost-prohibitive, or the opportunity to gather data over an extended period simply may be unavailable to the researcher. The LHC provides a good opportunity for analysis in longitudinal studies because it enables researchers to measure historical events and acts (Freedman et al., 1988; Caspi, et al., 1996). Demarcating time periods with consistent, specific illustrations on the calendar allows for specific questions about the occurrence of past events. Consequently, participants provide information about how many times a past behavior of interest occurred, and at what times in the life course they occurred. Moreover, data can be collected although the period of interest has passed (e.g. high school substance use data collected during the early twenties). Additionally, data spanning several years can be collected at one time point.

For example, Horney et al. (1995) used the LHC methodology in a cross-sectional study of the impact of informal mechanisms of social control. They conducted interviews on serious offenders, inquiring whether life circumstances such as school attendance, residence with spouse or significant other, employment status, parole or probation status, substance abuse and heavy drinking influenced recidivism to crime in the short term. This cross-section of offenders provided information in interviews using event calendars and crime calendars – versions of the LHC relevant to the behaviors and events of interest. Hierarchical Linear Modeling (HLM) aided in concluding that life circumstances served as informal mechanisms of social control and strengthened or weakened relations between the propensity commit crime and actual rates of criminal activity in the short term. One phase of the Epidemiological Catchment Area Study (ECA) incorporated retrospective longitudinal data into the follow-up study of psychopathology (Lyketsos et al. (1994). The LHC was used to obtain information on incidence and course of mental illness from the cross-section of respondents.

Augmenting Longitudinal Designs

Although longitudinal research improves over cross-sectional research in terms of causal design and argument, in its current typical application it misses an opportunity to do more. One solution to this problem has been to introduce repeated cross-sectional designs, where data are collected on the same or a similar cross-section multiple times. The ECA program (Eaton et al., 1984) is one such example. The ECA database is a vast repository of information on the prevalence of mental disorders and substance abuse from 18,571 persons interviewed in community samples. Researchers conducted follow-up data collections using samples that matched original groupings on a number of demographic variables. The ECA has been used to understand the prevalence of various mental disorders as functions of age, gender, ethnicity, socioeconomic status, and comorbid disorders, to name a few examples.

Typically however, longitudinal designs involve assessing a large sample of respondents at discrete intervals across time. Various forms of this design are sometimes referred to as panel designs. One example – a representative panel – entails randomly sampling respondents and collecting data at discrete intervals across a relatively long time-span – usually once every six months to a year. Studies such as the Pittsburg Youth Study – a longitudinal survey of the causes and correlates of juvenile delinquency – use this method. The Pittsburg Youth Study is comprised of three different age cohorts of children selected from the Pittsburg school system, and identified as high risk through parental, teacher and self-reports, or those randomly selected from initial screening assessments. Participants were initially assessed every six months and then at yearly intervals. Two books (Loeber et al., 1998; Stouthamer-Loeber & Van Kammen, 1995) and over 85 papers have been written or are in press on this sample, and much important information on the development of antisocial behavior has been gleaned from this research (Loeber et al., 2001). These studies are exemplary cases of longitudinal research, yet they lack the time-ordered data that would assist with temporal ordering of events.

Moffitt (2002) used the LHC to augment developmental and global functioning data from teenage mothers of twins on events in the family's and twins' lives. Beyond demographic information they documented residence moves, the timing of mother's depressive episodes, mother's and father's mental health and criminal history, and relationship status. These were combined with cognitive and social behavior assessments for mothers and children. Study findings indicate more socio-economic hardship among young mothers, partners less reliable or

supportive and more likely to engage in anti-social behavior. Additionally, teenage mothers experienced more mental illness, and children had more emotional and educational problems.

Another example is the Dunedin Multidisciplinary Health and Development Study – a longitudinal study of a birth cohort of over 1,000 children born in New Zealand between 1972 and 1973, and studied up to age 27. It provides a comprehensive description of the epidemiology of sex differences in anti-social behavior from early childhood to young adulthood. Hundreds of studies have been published from this sample. The data have been used to develop a number of theories and test a variety of hypotheses. From the Dunedin sample we have learned more about gender differences in delinquent behavior, and the development of anti-social behavior across time. For instance, boys were significantly more likely to be convicted of a violent crime and significantly more likely to be sentenced to jail time than female participants. Spanning the time of the Dunedin study boys engaged in significantly more anti-social behavior than girls, with the smallest sex differences occurring during late adolescence (ages 17-21) (Moffitt, Caspi, Rutter & Silva, 2001).

These studies track behavior and psychosocial variables over extended periods in hopes of determining cause and effect. However, their resolution is not perfect. While assessment at discrete and fixed intervals allows us to control the consistency with which respondents report, it confines our sampling of events and minimizes the opportunity to adequately capture nuances of the human experience. This is problematic in cross-sectional studies that only provide a snapshot of individual lives, but equally so in most longitudinal studies which address the issue by providing sequential snapshots at multiple intervals (Caspi et al, 1996). Even when researchers seek to minimize the gaps between data collection periods or to reduce time blocks to miniscule fragments, there is no time ordering of events that allows us to determine how factors in the interplay between the individual and his environment or between actions and consequences precipitate the outcomes.

Moreover, several other problems can be identified in traditional longitudinal research. The intervals between assessment periods are too long – much happens between each assessment period that is not captured by typical longitudinal data collection. The dynamic interplay between individuals and their environments is occurring on a day to day basis, not year by year. The resulting data are static and what we learn is merely an approximation of what exists in nature.

Reliability and Validity of the LHC

Thus, there are many potential benefits to using the LHC in either a cross-sectional or longitudinal design. However, the LHC is only useful if it provides reliable and valid data; that is, it is useful only to the extent that it is accurate. The LHC has been used successfully to examine a variety of domains, including development from adolescence to adulthood (Freedman et al., 1988; Caspi et al., 1996). Freedman et al. (1988) used the LHC to collect data from children born to women who originally participated in a longitudinal study of fertility behavior among a sample of young adults beginning in 1962. Through use of the LHC they gathered retrospective data on school attendance, marital and birth events, and employment status. Freedman et al. (1988) have tested reliability by referencing reports from the original longitudinal study, and provided extensive documentation on design, personnel training, and statistical analysis issues related to the LHC.

Few studies have been identified that test the reliability and validity of LHC data. In 1994 Caspi and Amell compared responses on the LHC to prospectively collected data on life events such as residential status, cohabitation, school attendance, and employment status. The gap between prospective reports of life events and the retrospective data collection was three years. They found that respondents had greater than 90% agreement between their prospective and retrospective reports. Examining percentage of agreement, however, does not account for the possibility that agreement could have occurred by chance since the likelihood of each category is assumed to be predicted from the largest category of optima prediction (Cohen, 1960). Although this study has its merits and attests to proportionate accuracy of the LHC, the results can be misleading.

In another study Freedman et al. (1988) compared LHC data with other second and third-party sources such as official records, parent, teacher, and peer accounts. When cross-referenced with these other sources there were few inconsistencies. Comparison with third party accounts provides information that reports are as reliable as official records. However, arguably certain behaviors (e.g. delinquency and early substance abuse) fail to capture the attention of authorities or warrant documentation in official records until they are relatively severe, thus omitting valuable information about onset (Moffitt, 1993; Moffitt et al., 2001). Moreover, to evaluate the validity of this method above that of conventional retrospective data collection necessitates a

study that combines both retrospective and prospective data. Unfortunately there are few studies of this type, particularly using data collected from the same source.

Aims of the Current Study

One purpose of the proposed project is to examine the degree to which data gathered during a prospective follow-up study of adolescent substance use correlates with retrospective data gathered with the LHC when these participants were adults. The proposed study will utilize data from the Lexington Longitudinal Study, a large, well-designed, follow-up study of the DARE project on substance use education/prevention. One aim is to examine correlations between data on substance use derived from prospective measures across a ten-year follow-up study and the retrospective measure – the LHC. This will be expanded to determine whether responses on prospective and retrospective measures correlate when questions are asked about incidence versus quantities of use (i.e. having ever used a substance, compared to how much). We do not know how accuracy is affected by whether demographic variables, such as age, gender or ethnicity affect reliability. Therefore, another purpose of this study is to examine the variables that potentially moderate validity of these measures on the LHC. A broad variety of individual difference variables that were available in the data set were included as moderators in this study. Among the measures included were personality based on the five factor model (Costa & McCrae, 1992), psychopathology variables, neuropsychological functioning, onset of substance abuse and demographic variables. The rationale was that individuals' current characteristics and level of functioning might have an impact on how they completed the calendar. Although there was no previous evidence on which to make predictions, it was generally expected that individuals who were more open and agreeable to an interview method, fewer symptoms of psychopathology and less substance abuse would have greater agreement between retrospective and prospective reports.

Chapter 2: Method

Participants

The participants in this study were 242 males and 239 females aged 21 to 22 years who are part of an ongoing longitudinal study (the Lexington Longitudinal Study) that was designed to assess the causes and correlates of substance use (see Clayton, Cattarello, & Johnstone, 1996 for more details). These individuals are part of a larger sample (n = 1017) that has been followed since the 1987-1988 school year, at which time participants were in the 6th grade. Data were collected from the students through school-based questionnaires over a five-year period from 6th through 10th grades and again via mailed survey at average age 20.0. These assessments constitute the prospective portion of the data collection and are referenced as such. Following the mailed survey at age 20, 481 of the individuals participated in an extensive, 3-4 hour laboratory protocol which included personality assessments, a diagnostic interview, and Life History Calendars for substance use and delinquency. Data from the LHC at this assessment are referred to as retrospective in what follows. The average age of the participants during this protocol was 21.4. The sample was evenly split with 242 men and 239 women. In regards to ethnicity, 80% of the sample was white, 16% black, 1% Asian, 1% Hispanic, and 2% biracial.

Investigators conducted attrition analyses comparing the 481 participants on ethnicity, gender and pre-6th grade past month, past year and lifetime cigarette, alcohol and marijuana use, to the 536 who were eligible but did not participate. Analyses revealed that individuals in the lab sample were more likely to be male, had more pre-6th grade lifetime and past month use of alcohol than the other 536 individuals $F(1,990) = 3.97$, $p<.05$, $F(1, 105) = 4.81$ $p<.05$. Additional attrition analysis compared the 1,017 participants who were eligible for the laboratory protocol to the 642 participants who began the study in 6th grade but had not completed at least three of the five school questionnaires. Those who did not complete the three questionnaires were more likely to be male, χ^2 (1, N = 1,669) = 18.13, $p < .001$, and had significantly more lifetime use of cigarettes, alcohol, and marijuana (F range = 4.81-47.93, all ps <.05). Over sampling of this high use group served to mitigate the effects of such attrition in that the only significant differences between the 642 who were ineligible to complete the study and the 481 participants in the laboratory sample were that the former group had more past year and lifetime use of cigarettes, F (1, 1,111) = 14.19, $p < .001$, and F (1, 1,105) = 27.40, $p < .001$, respectively, and greater lifetime use of marijuana, F (1, 1,110) = 6.98, $p < .01$.

The young adults in the current study were from a metropolitan area, population 330,000. There were two hundred and forty-one (50.1 %) men and two hundred and forty (49.9%) women. The ethnic composition of the sample was as follows: Caucasian, 381 (79.2%), African American, 76 (15.8%), and other ethnic groups or mixed heritage, 24 (5%). Most participants (70%) had completed at least some college, while 21% had graduated from high school but had not attended college. A smaller group (9%) reported not having graduated from high school. More than 73% of the sample reported being currently being employed with 44% of them engaged in full-time work (≥35hr/ week). Approximately 81% of the sample earned below $900 per month, and 37% reported continued employment in the same job for over a year.

The laboratory sample was comparable to 1994 national prevalence estimates for young adults (ages 19-28) as reported in the Monitoring the Future Study (Johnston, O'Malley, & Bachman, 1996). Lifetime rates alcohol, marijuana, and illicit drugs in the sample were 88, 61, and 38% respectively, whereas estimates for The Monitoring the Future Study estimates for lifetime rates of 91, 54, and 33% for the same categories.

Procedure

Experimenters sent a survey to be completed and returned via mail to those individuals between the ages of 19 and 21 who had completed at least three of the five school questionnaires. Included in the survey were questions regarding frequency of current drug use and other items. Those who returned surveys were contacted by telephone and asked to participate in a 3 – 4 hr laboratory exercise. The 481 participants described above comprised the subset of those who agreed to the laboratory visit and who were mailed a consent form and description of the study before coming in. They were reimbursed for their participation in each phase of the study. Trained research assistants administered the laboratory protocol. Participants completed several measures of psycho-social functioning and psychopathology, portions of the Diagnostic Interview Schedule (Robins, Cottler, Bucholz, & Compton, 1997), and a Life History Calendar (LHC: Caspi, et al., 1996).

Measures

Demographics

Information was gathered in the prospective study and updated in the mailed survey on participants' ethnicity, sex, and age, residential, marital and occupational status.

Prospective Reports of Substance use

Measures of substance use frequency were taken from the in-school surveys for grades 6 through 10 and the mailed survey at follow-up between ages 19 and 21 years-old. Participants were asked questions regarding their use of tobacco, alcohol, marijuana, and a number of other drugs (e.g. cocaine, heroine, LSD). In the present study alcohol, cigarette and marijuana use are analyzed. For each substance, participants selected from seven choices, ranging from 0 (0 times) to 6 (40 or more times), to indicate how often they had used the substance in their lifetime, in the past year, and in the past month. Participants indicated how often they had used each listed substance in their lifetime, in the past year and the past month from a seven-point scale. For each substance participants' responses were indicated as follows: 0 = the participant had not drunk alcohol or smoked marijuana during the period of interest, 1 = 1-2 drinks/times smoked cigarettes or marijuana, 2 = 3-5 drinks/ times, 3 = 6-9 drinks/times, 4 = 10-19 drinks/times, 5 = 20-39, and 6 = 40 or more drinks/times. For the purpose of this study individuals were further classified as ever or never drank/smoked marijuana, thus having a score of 1 if they had consumed alcohol one or more times and 0 if they had not. Dichotomous (ever/never used) variables were derived for alcohol, cigarettes and marijuana for each grade in the follow-up study and the mailed survey. Additionally, past year use variables were calculated for alcohol, cigarettes and marijuana for each assessment year. Finally, means were calculated to derive alcohol, cigarette and marijuana variables averaged across the 10-year assessment period (6^{th} grade to the mailed survey at age 20).

Retrospective Reports of Substance use

Life History Calendar for Substance Use. The LHC is a retrospective method for collecting data on a range of behaviors (Caspi et. al, 1996). It is comprised of a large grid on which the rows represent the events of interest and the columns partition the grid into blocks of time. The LHC in the present study, which was administered by trained research assistants during the 3-4 hour laboratory protocol, includes questions about substance use. The columns divide the chart into school years and each school year is divided into three four month periods. The first period includes the months from September to December, the second includes the months between January and April, and the third period includes the months from May to August. These roughly correspond to fall semester, spring semester, and summer. Calendar years are also indicated on the chart. Rows on the chart are separated by the domains of interest, in this case one row for each drug used. The interviewee completes the calendar by answering several

questions administered by the interviewer based on the domain of interest. In this study the chart was separated by colored lines that marked roughly the month of the interviewee's birthday. The interviewer introduced the questions by showing the participant the chart and explaining its design.

To complete the LHC the interviewer also explained that they would be using the chart to fill in information about if, when and how much the participant had used certain drugs. The format included the interviewer asking questions and together with the participant recording information on the chart. The sequence of questions proceeded in a contingency format as detailed in the appendix. Each year was broken into three 4-month segments, and participants were asked about their use of tobacco, alcohol, marijuana, and hard drugs (including cocaine, heroine, barbiturates, amphetamines and inhalants) during these time intervals. For each substance interviewers questioned whether participants had ever used, period of first and last use, to identify any periods in which they had ceased use, and the duration of those periods, and patterns of use i.e. how many times per day did they use the substance. For the six years corresponding to each reporting period in the prospective design average use variables were created for the number of times one drank alcohol, or smoked cigarettes, or marijuana. Additionally, the ever/never used variables for alcohol, cigarettes, and marijuana were computed based on an individual's responses up to that particular point. For example, if a participant had indicated use of a substance two or more times at or before the time-point in question, they were counted as having used (ever) and coded with a 1. Alternatively, if they had not indicated use they were counted as never having used and coded with a 0. Finally, an average retrospective use variable was created by averaging the amount used across the periods that corresponded to the prospective assessment periods. Only periods for which the participant had the relevant prospective data available were included.

Moderating variables

Age of onset of substance use. Age of onset was calculated from the prospective study. Participants' age at first use was determined by the follow-up period in which they indicated first use of a substance. Age of onset for alcohol ranged from 3 to 21 (M = 15.51, SD = 3.77). Forty-five participants had not consumed alcohol by age 21. Onset for cigarette use ranged from 2 to 21 (M = 14.39, SD = 3.18), with 121 individuals reporting that they had not smoked cigarettes by age 21. People who reported trying cigarettes earlier smoked less. Age of onset for marijuana use

ranged from 8 – 21 (*M* 18.47, *SD* = 3.33), with 178 participants never having used marijuana by age 21. A dichotomous variable represented "*ever used*" or "*never used*" and a continuous variable represented age of first use.

Psychopathology

Psychopathy. The Levenson Self-Report Psychopathy Scale (LSRP) (Levenson, M., Kiehl, K. & Fitzpatrick, 1995; Lynam, Whiteside & Jones, 1999) was created specifically to assess both social deviance and the callous, remorseless view of others. The 26 items of the LSRP are scored on a four-point scale ranging from "disagree strongly" to "agree strongly". Factor analyses of the LSRP have shown that the items load on two factors consistent with its conceptualization (Levenson, et al., 1995; Lynam, 2002). Scores on the LSRP have been found to relate in predicted directions to serious antisocial behavior, personality dimensions of disinhibition, neuroticism, agreeableness, conscientiousness, and boredom susceptibility, and performance tasks on response modulation (Lynam et al., 1999 b). Internal consistency for the overall scale was α=0.98.

Symptoms of Substance Abuse and Dependence, APD, and Internalizing Disorder Symptoms. In the laboratory phase of the study participants were interviewed with sections of the diagnostic interview schedule (DIS; Robins, Cottler, Bucholz & Compton, 1997). The DIS is a structured interview designed for use by non-clinicians to assess the presence or absence of psychiatric disorders. In this study the DIS corresponds with the diagnoses in the DSM-IV (1994). The interview questions have been updated to stay abreast of revisions in the DSM; however, these changes have not altered the DIS as an assessment tool. Therefore, reliability and validity of the DIS are believed to be consistent across all versions. The DIS II, which corresponded to the DSM III, has had good sensitivity (0.75), excellent specificity (0.94) and moderate positive predictive power (0.76) (Robins, Helzer, Ratcliff, & Seyfried, 1982). Kappa, a measure of agreement, was conducted to see how reliable the DIS was for non-clinician versus psychiatrist administration. Kappa ranged from a low of 0.40 (for a diagnosis of panic disorder) to a high of 1.00 (for a diagnosis of anorexia nervosa), with all other diagnoses as high as 0.51 at the very least (Robins et al., 1982).

Participants in this sample were assessed for antisocial personality symptoms (APD) from age 15 years and generalized anxiety, depression, specific phobias, social phobia, and alcohol and marijuana abuse and dependence within the past 12 months. Due to the non-clinical

status of the sample it was examined in terms of number of symptoms for each section, rather than actual diagnoses. In this sample symptom counts for APD ranged from 0 to 5 (mean, 0.57), generalized anxiety ranged from 0 to 4 (mean, 0.54), depression ranged from 0 to 9 (mean, 1.41), specific phobia ranged from 0 to 4 (mean, 1.46), and social phobia symptoms ranged from 0 to 4 (mean, 1.22). For alcohol abuse symptoms ranged from 0 to 4 (mean, 0.57), alcohol dependence ranged from 0 to 6 (mean, 1.12), marijuana abuse ranged from 0 to 3 symptoms (mean, 0.37), dependence 0 to 0 to 6 symptoms (mean, 0.76).

Depression, anxiety, and phobia symptoms were significantly correlated in the data (*rs* = 0.16 – 0.39). Therefore, they were combined to represent total internalizing disorder symptoms. Alcohol abuse and dependence (*r* = .66), and marijuana abuse and dependence (*r* = 0.71) were also combined to reduce the number of analyses conducted.

NEO-PI-R

NEO-PI-R. The NEO-PI-R is a self-report questionnaire developed by Costa and McCrae (1992) to assess general personality dimensions based on the Five Factor Model of personality. It consists of 240 items, which are rated on a 5-point scale, anchored by 1 (strongly disagree) and 5 (strongly agree). This personality inventory provides a score for all five domains (Neuroticism, Extraversion, Openness to Experience, Conscientiousness, and Agreeableness) based on 48 questions per domain, and assesses six facets within each domain using 8 items per facet. Many studies have been conducted using the NEO-PI-R, and it has consistently shown good reliability and validity (McCrae & Costa, 1989). Internal consistency for the five broad domains has ranged from .86 for Openness to .92 for Conscientiousness and .56 - .81 for the facets.

Performance and Verbal IQ. The Wechsler Adult Intelligence Scale-Revised WAIS-R (Wechsler, 1981) was used during the laboratory protocol to assess Performance and Verbal IQ. The block design subtest was used to assess Performance IQ and the vocabulary subtest was used for Verbal IQ. Reliability for both scales is high (block design $\alpha = 0.88$; vocabulary $\alpha = .94$) and they rank among the highest g loadings in their respective IQ categories.

Conditional Associative Learning Test. The Conditional Associative Learning Test (CAT) is a non-spatial conditional associative task that measures the ability to organize and utilize information contained in working memory (Petrides, 1985). For this study seven 1 inch X 1 inch (2.54 cm X 2.54 cm) black squares were printed on a laminated 3 inches X 11 inches (7.62 cm X 27.94 cm) card and placed before the participant. Seven small lights were fixed, in a random

arrangement, onto a 10 inches X 8 inches (25.4 cm X 20.32 cm) metal box that was placed anterior to the card. Participants were asked to learn the manner in which the squares and the lights were associated. The experimenter illuminated the lights in a fixed random order, and the participant's task was to point to the square that he or she believed was associated with he particular illuminated light. Participants learned the associations by trial and error on the basis of feedback from the experimenter. The task ended when 17 consecutive correct responses were achieved or when 210 trials were exhausted. Performance was indexed by the number of errors committed.

Chapter 3: Results

Descriptives

The means and standard deviations for study measures are provided in Table 1. Average use variables for the prospective study were calculated from the mean use between 6^{th} – 10^{th} grade and the mailed survey (alcohol, $M = 2.27$, SD = 1.14; cigarettes, $M = 2.10$, $SD = 1.30$; and marijuana, $M = 1.34$, $SD = 0.845$). Likewise means were calculated for use from the retrospective study (alcohol, $M = 3.08$, $SD = 4.03$; cigarettes, $M = 1.93$, $SD = 3.03$; and marijuana, $M = 0.92$, $SD = 2.87$).

Agreement on Ever Used

The key research question posed was: How closely do retrospective reports of substance use map on to prospective reports? To address this, the reliability of retrospective versus prospective reports about ever having used a drug by a given age, and average use by a given age were examined. Determining agreement for ever/ never used was accomplished by calculating kappa and phi coefficients to index agreement between retrospective and prospective reports of (see Table 2). Kappa is the proportion of agreement corrected for over and above chance between pairs measured on the same scale. It is independent of sample totals, corrects for chance, and coefficients range from negative values for less than chance agreement, to $k = 0$ for chance, to $k = 1$, which represents total agreement (Cohen, 1960; Spitzer, Cohen, Fleiss & Endicott 1967). Kappa coefficients for reports of cigarette use ranged from 0.029 at 6^{th} grade to 0.674 at age 20 (assessed during the mailed survey). Figure 2.1 illustrates that agreement for reports of cigarette use remained poor until the mailed survey reports at age 20 (kappa = .674) or only 1.7 years after prospective data collection (see Figure 3.1). Agreement for alcohol reports increased from low to moderate between 6^{th} and 10^{th} grades (kappa = 0.182 to kappa = 0.397), and improved considerably during the mailed survey (kappa = 0.840) (see figure 2.1). Regarding time since initial assessment kappa coefficients for alcohol use are moderate from at least 6 years past prospective follow-up. Kappa coefficients for reports of marijuana ranged from kappa = 0.215 in 6^{th} grade to 10^{th} grade (kappa = 0.831). Agreement for marijuana reports was highest overall but produced adequate correlations for 8^{th} grade reports (kappa = .463), or within 7.66 years of initial reports (see Figure 3.1).

This is comparable with the calculation of phi coefficients. Phi coefficients for reports of cigarette use ranged from 0.099 at 6^{th} grade to 0.674 at age the mailed survey. Figure 2.2

illustrates that agreement for reports of cigarette use, though higher than with kappa coefficients, remained poor until the mailed survey reports at age 20 (phi = .674) or 1.7 years after the prospective follow-up (see Figure 3.2). Agreement for alcohol reports increased from low to moderate between 6th and 9th grades (phi = 0.264 to 0.429), and improved considerably during the mailed survey (phi = 0.843) (see figure 2.2). Phi coefficients for reports of marijuana use were low for 6th grade reports (phi = 0.258) but become adequate by the 8th grade (phi = 0.5) and increased to 0.831 at the mailed survey.

Agreement on Average Amount Used

To address the question of agreement regarding the amount used within a given year correlations were computed between measures of retrospective use and prospective use for each substance and each year. The coefficients are presented in Table 3. Correlations for agreement between retrospective and prospective reports of alcohol ranged from $r = 0.15$ ($p < .01$) for 6th grade reports to 0.645 ($p < .01$) at age 20. Agreement for average cigarette use ranged from 0.249 for reports of 6th grade average use, to 0.831 ($p < .01$) for agreement between assessment at age 20 and the retrospective report. For reports of alcohol and cigarette use, as grade level or age increased, agreement between retrospective and prospective reports increased. That is to say, as time between prospective report for a given year and retrospective report decreased, agreement between the reports improved (see Figure 3.3). Agreement on reports of average use of marijuana increased slightly between 6th and 7th grade reports of use. As illustrated in the graphs in figure 3.3, agreement for average use becomes weaker as the time between prospective assessment and the LHC increases and is generally good from 8th grade on with the all correlations above $r = 0.392$. Moreover, from 9th grade all correlations for average use are above $r = 0.5$ (9th grade for alcohol $r = 0.521$, cigarettes ($r = 0.666$) and marijuana ($r = 0.546$). Agreement for average use is highest in the year closest to the retrospective reports for alcohol ($r = 0.645$), cigarettes ($r = 0.831$), and marijuana ($r = 0.663$).

Moderator Analyses

Finally, three sets of hierarchical linear regression analyses were conducted to examine the relation between reports of average use during the prospective study and average use on the retrospective study, and how they varied as a function of certain moderator variables. The moderators were the five domains of the NEO-PI-R, Psychopathy, Internalizing and Antisocial Personality Disorder symptoms, an average of substance abuse symptoms, age of onset for

substance abuse, WISC-R verbal and performance IQ scores, neuropsychological functioning, ethnicity, and gender. For each of the dependent variables – prospective average alcohol, cigarette and marijuana use – hierarchical linear regression analyses were conducted in which prospective variables for average use were regressed onto the corresponding retrospective variable, a potential moderator and a product term carrying the interaction. A significant coefficient for the product term indicates the presence of an interaction. Non-categorical moderator variables and the retrospective variables were centered for these analyses. Each moderator was examined by itself. The first analyses evaluated the relation between retrospective reports of alcohol on prospective reports and how this relation varied as a function of the moderator variables. The second set of analyses examined this relation for reports of cigarette use on the retrospective and prospective reports. Similarly, the third set of analyses examined the relation between retrospective and prospective reports of marijuana use. In the case of a significant interaction of the product term and predictor simple slope analyses were conducted. Specifically, the interactions were probed to determine the trend of significant interactions at high and low levels of the moderator. High and low levels were determined as one standard deviation above the mean for high, and one standard deviation below the mean for low.

To check for nonlinear relations regression analyses were run for alcohol, cigarettes, and marijuana. Retrospective reports were used as the predictor variables in the above analyses. However, in these analyses average prospective alcohol, cigarettes, and marijuana were used as the predictors. To detect a curvilinear relation between retrospective and prospective reports average retrospective alcohol, cigarettes, and marijuana variables were squared and used as the criterion variable, and entered at the second step. These results are explained in the following section and indicated in Tables 4, 5 and 6.

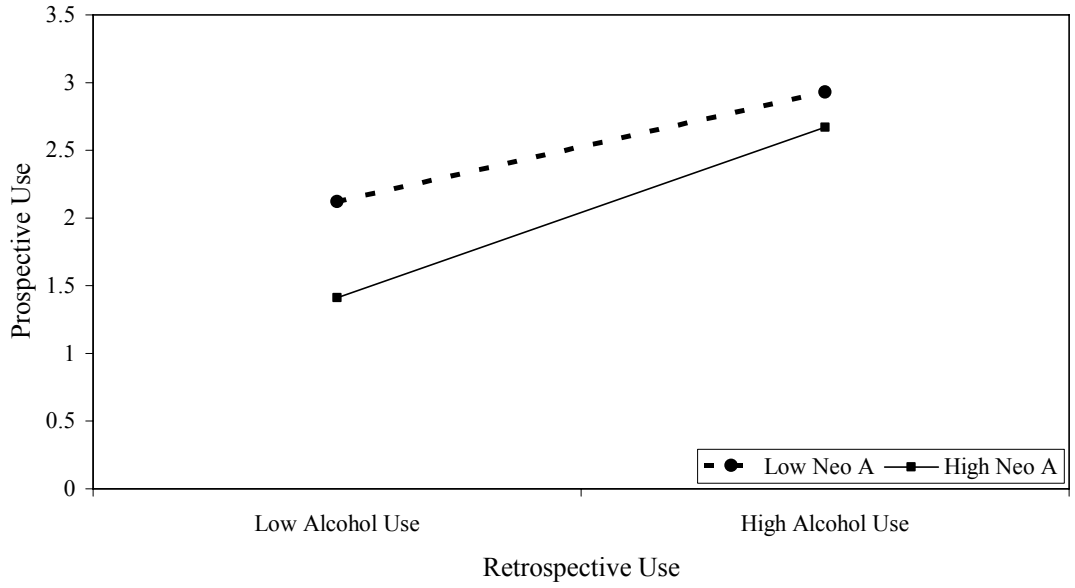
Alcohol

For alcohol use, 5 out of a possible 15 interactions were significant indicating that the degree of agreement between retrospective and prospective reports depended on participant scores on the moderator**.** These results are presented in Table 4. For the remaining 10 analyses, there was no interaction, all ts < 1.723. There were interactions for Agreeableness (B = .002, p < .05), ASPD (B = -.030, p < .01), substance abuse/ dependence symptoms (B = -.070, p < .01), VIQ (B = -.003, p < .01), and ethnicity (B = -.063, p < .05).

Simple slope analysis was used to explore the nature of these interactions (see Table 7).

Although significant at both high and low levels of Agreeableness, agreement between retrospective and prospective reports of alcohol use was higher at high levels of A ($B = .158$, $p < .01$) than at low levels of A ($B = .101$, $p < .01$).

Figure 4.1 **: NEOA & Prospective Alcohol Use**



For ASP symptoms, agreement between retrospective and prospective reports of alcohol use was worse for high levels ($B = .100$, $p < .01$), than low levels ($B = .162$, $p < .01$). For those who had more substance abuse/ dependence symptoms agreement was lower ($B = .071$, $p < .01$), than for those with lower levels of substance abuse/dependence symptoms ($B = .182$, $p < .01$).

Figure 4.2: **ASPD Symptoms & Prospective Alcohol Use**

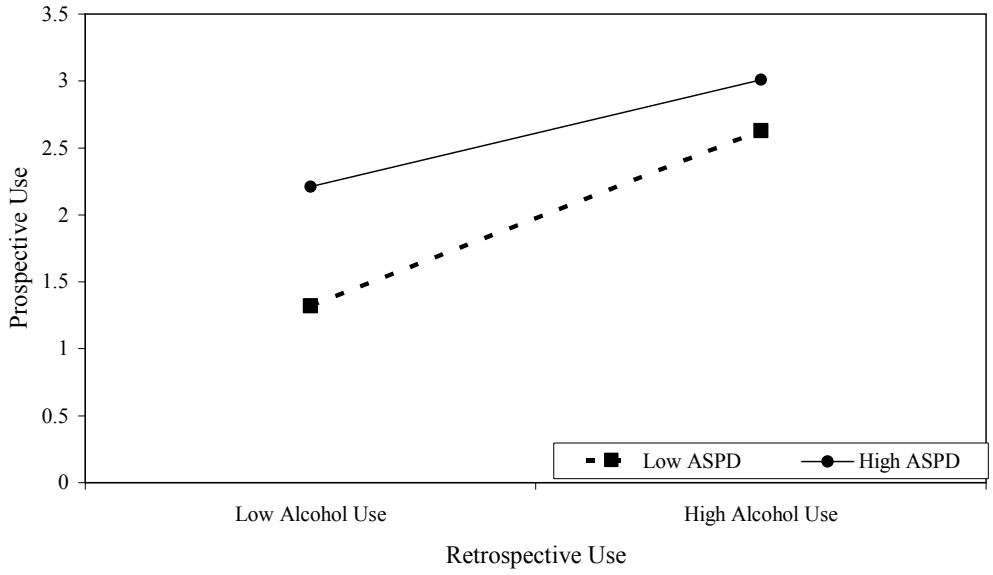
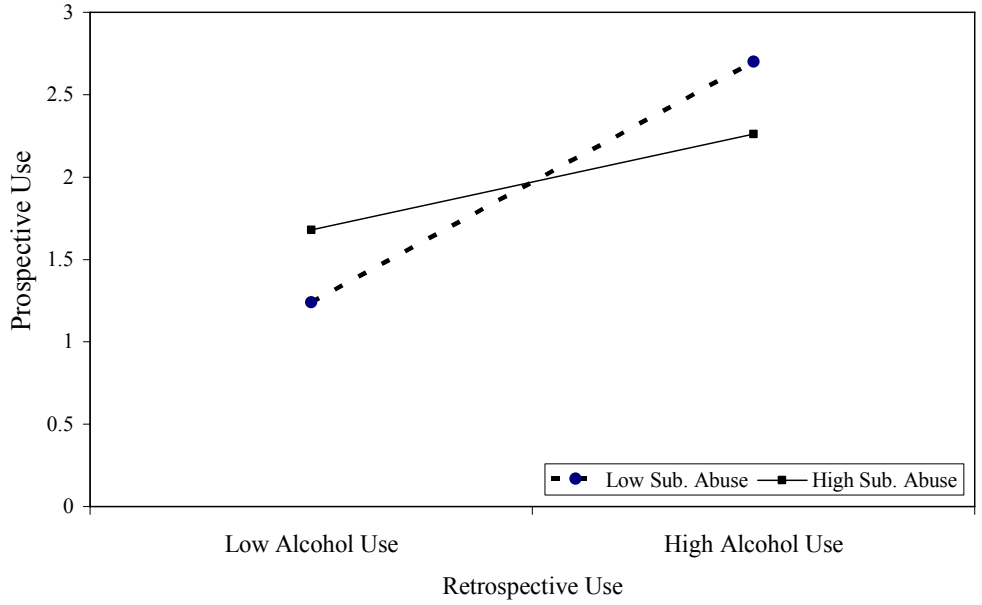
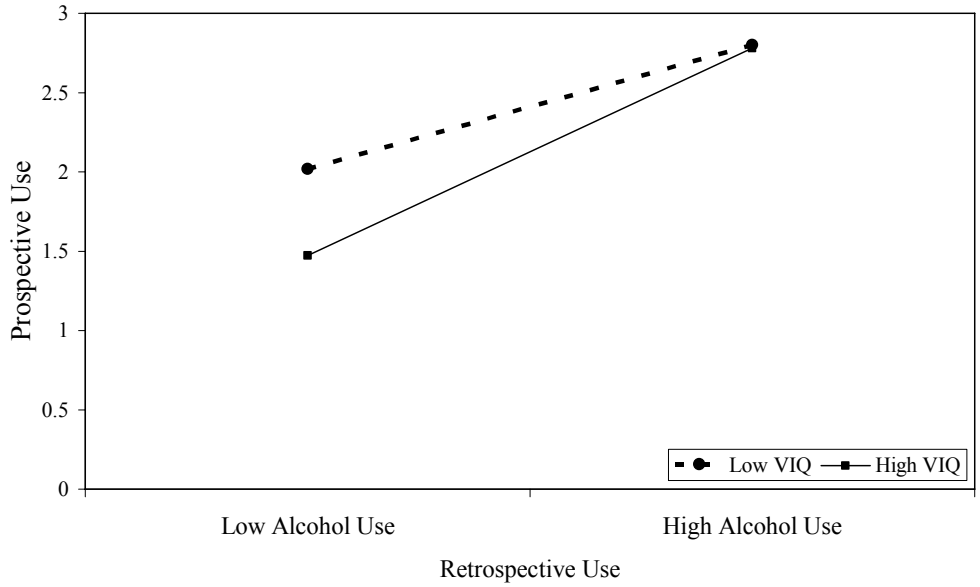


Figure 4.3: **Substance Abuse Symptoms & Prospective Alcohol Use**



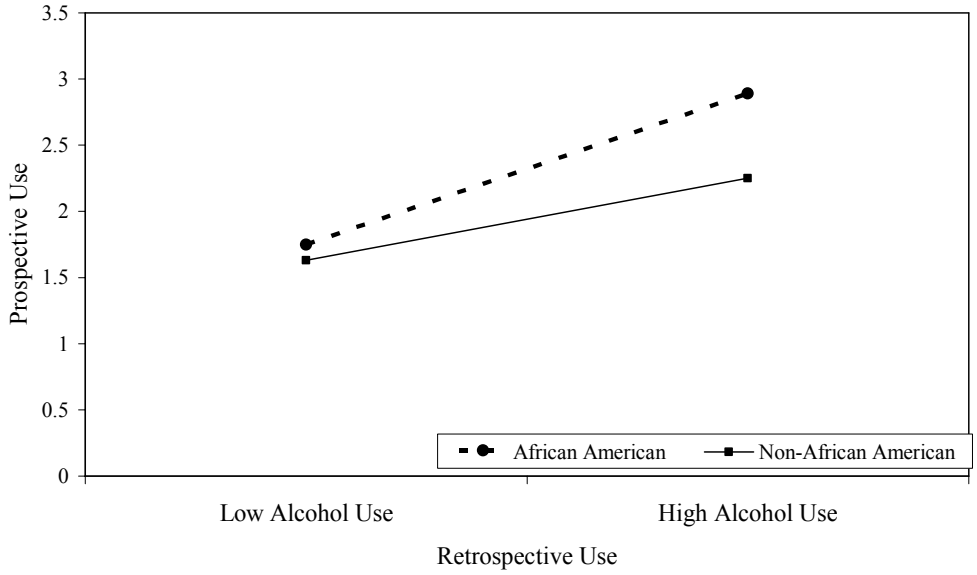
Individuals with lower VIQ scores had lower agreement between their retrospective and prospective reports of alcohol use ($B = .097$, $p < .01$), whereas those with high VIQ scores had better agreement ($B = .162$, $p < .01$).

Figure 4.4: **VIQ & Prospective Alcohol Use**



Finally, simple slope analysis for the moderator ethnicity revealed that African Americans had greater agreement between retrospective and prospective reports of alcohol use ($B = .140$, $p < .01$) compared to non-African American participants ($B = .077$, $p = .001$).

Figure 4.5: **Ethnicity & Prospective Alcohol Use**



The regression lines and slopes, illustrated in figures 4.1 – 6.7, depict the strength of the relation between retrospective and prospective reports at different levels of the moderator; steeper lines indicate stronger relations i.e. steeper slopes indicate a stronger relation moderate slopes represent weaker relations.

Cigarettes

For reports of cigarette use, 7 out of a possible 15 interactions were significant indicating that the degree of agreement between retrospective and prospective reports depended on participant scores on the moderator**.** These results are presented in Table 5. For the remaining 8 analyses, there was no interaction, all *t*s < 1.247. There were interactions for Agreeableness (*B* = .004, $p < .01$), Conscientiousness (*B* = .003, $p < .01$), ASPD (*B* = -.074, $p < .01$), substance abuse/ dependence symptoms (*B* = -.084, $p < .01$), internalizing symptoms (*B* = -.041, $p < .05$), age of onset for smoking (*B* = -.021, $p < .01$), and ethnicity (*B* = -.110, $p < .05$).

Table 7 shows the *Bs* and *p* values for the simple slope analysis of significant interactions. As with reports of alcohol use, higher scores on Agreeableness predicted higher agreement between retrospective and prospective reports of cigarette use (*B* = .347, $p < .01$), whereas individuals with low scores had less agreement (*B* = .197, $p < .01$). Similarly, individuals with higher levels of Conscientiousness had greater agreement between retrospective and prospective reports (*B* = .325, $p < .01$), than those low in Conscientiousness (*B* = .214, $p < .01$). For ASP symptoms individuals with higher scores yielded less agreement between retrospective and prospective reports (*B* = .187, $p < .01$), and low ASP scores indicated greater agreement (*B* = .340, $p < .01$). Individuals with lower internalizing symptoms had greater agreement between retrospective and prospective reports of cigarette use (*B* = .273, $p < .01$), compared to those with higher levels of internalizing symptoms (*B* = .222, $p < .01$). Again, higher substance abuse/ dependence yielded less agreement between retrospective and prospective reports of cigarette use (*B* = .187, $p < .01$), whereas low substance abuse/ dependence led to higher agreement (*B* = 0.320 $p < .01$). Individuals who reported smoking at a later age, reported smoking more and had higher agreement between reports (*B* = .184, $p < .01$), than those who began smoking earlier (*B* = .084, $p < .01$). The simple slope analysis for ethnicity revealed that African Americans had greater agreement between retrospective and prospective reports of cigarette use (*B* = .247, $p < .01$) compared to non-African American participants (*B* = .137, $p < .01$). The interactions are illustrated in Figures 5.1 – 5.7.

Figure 5.1: **NEOA & Prospective Cigarette Use**

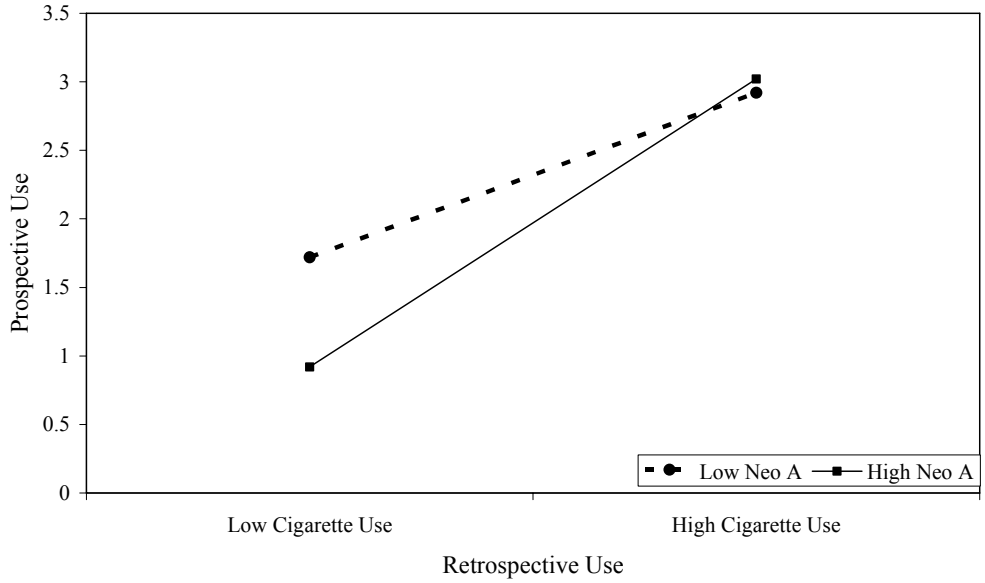


Figure 5.2: **NEOC & Prospective Cigarette Use**

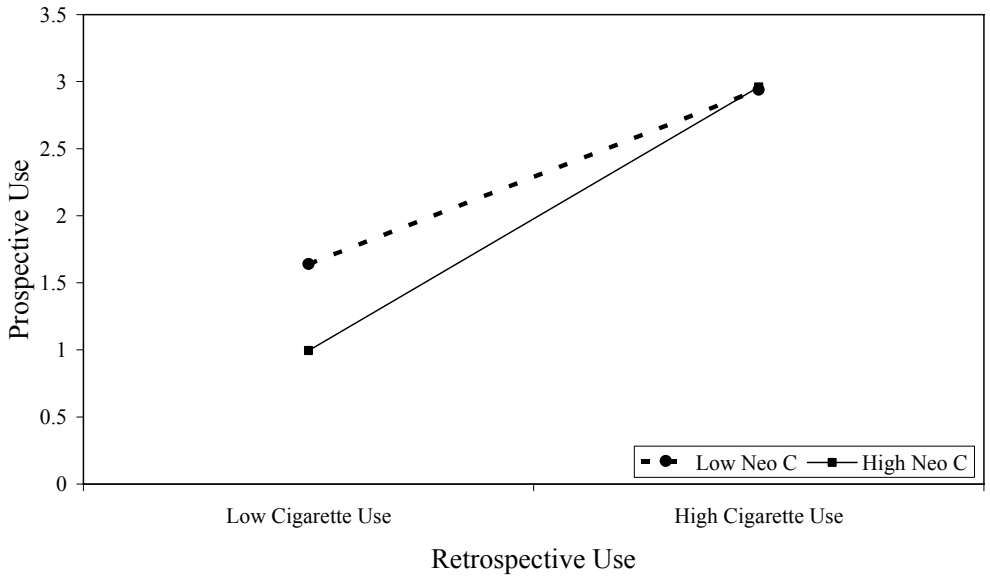


Figure 5.3: **ASPD Symptoms & Prospective Cigarette Use**

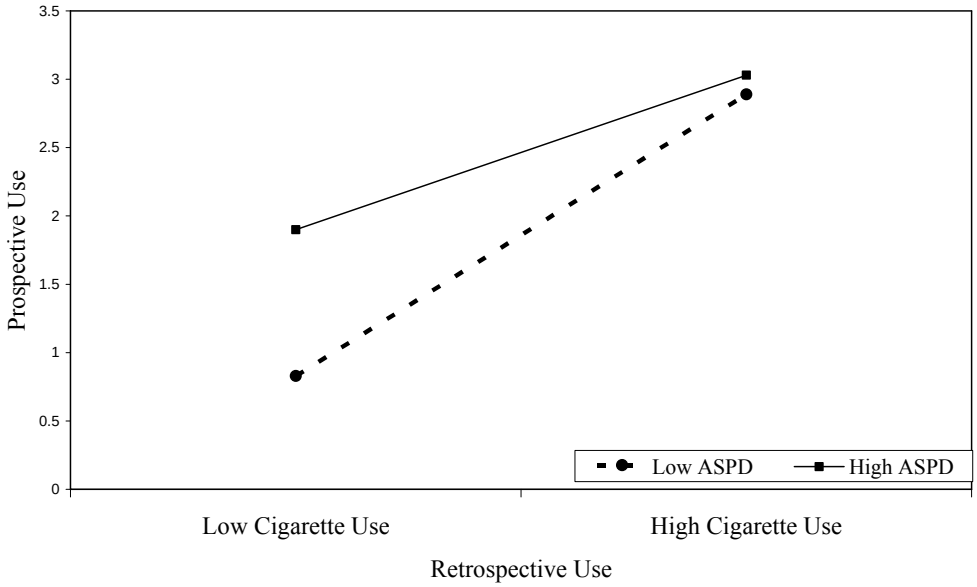


Figure 5.4: **Internalizing Symptoms & Prospective Cigarette Use**

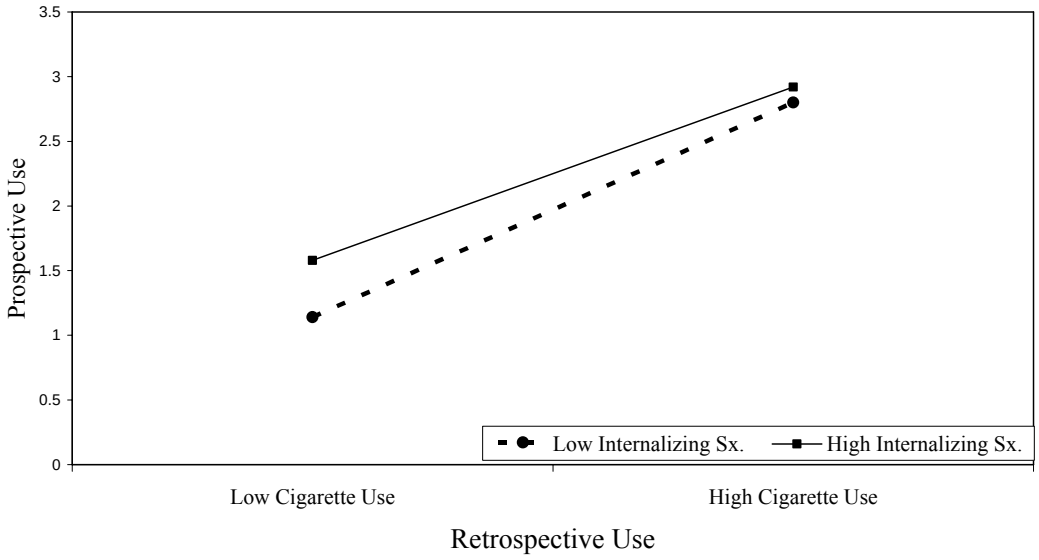


Figure 5.5: **Substance Abuse Symptoms & Prospective Cigarette Use**

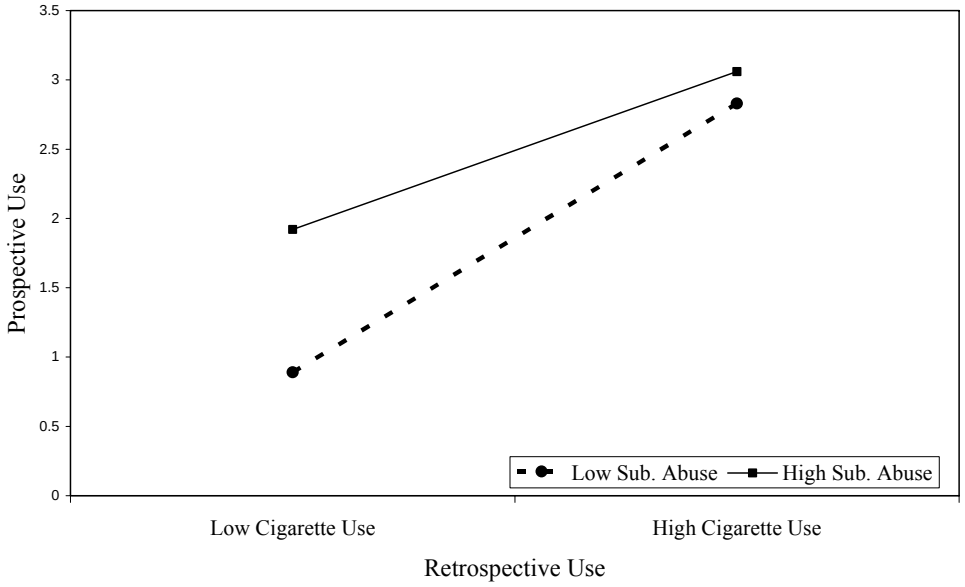


Figure 5.6: **Age of Onset & Prospective Cigarette Use**

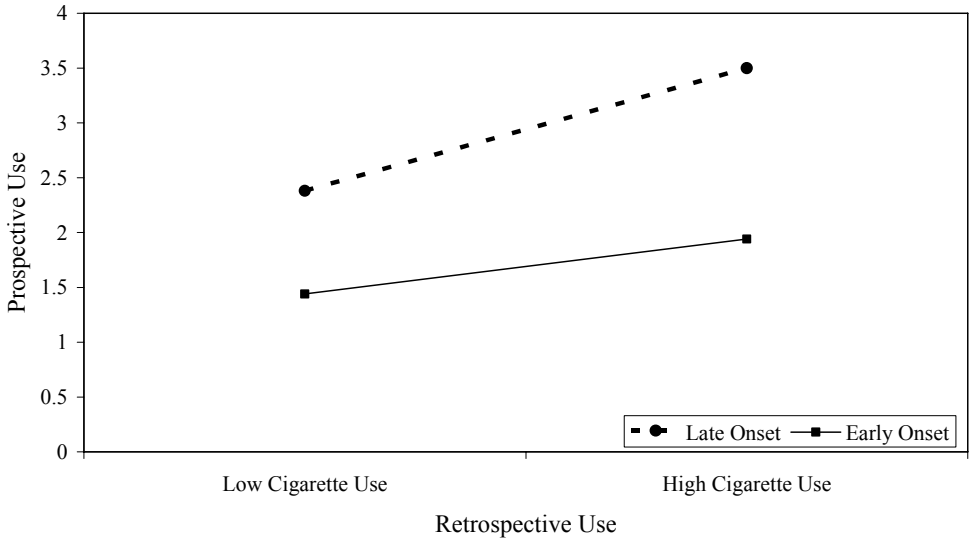
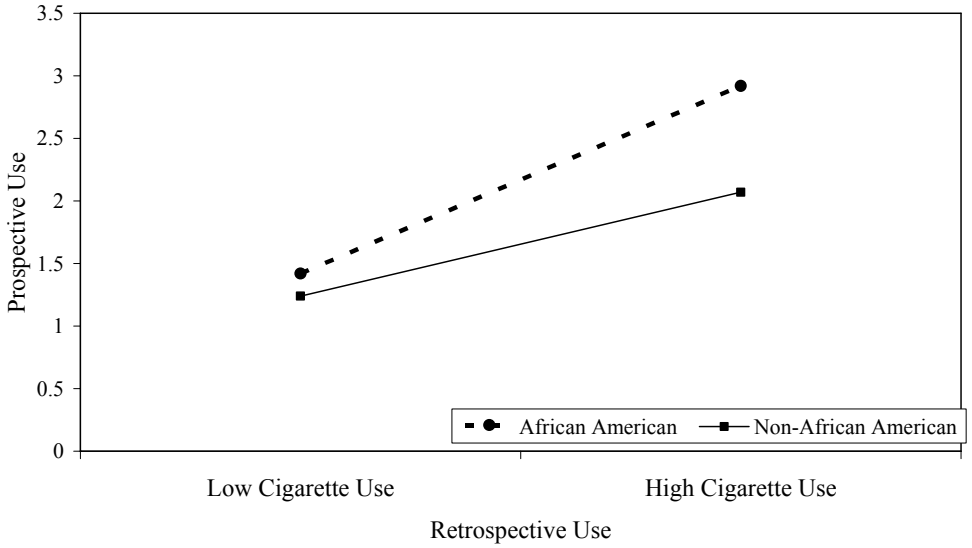


Figure 5.7 : **Ethnicity & Prospective Cigarette Use**



Marijuana

For reports of marijuana use 7 out of a possible 15 interactions were significant. For the remaining 8 moderators there was no interaction, and all *t*s < 1.393. The results are indicated in Table 6. There were significant interactions for Openness ($B = .001$, $p < .05$), Agreeableness ($B = .004$, $p < .01$), psychopathy ($B = -0.119$, $p < .01$), symptoms of ASP ($B = -0.044$, $p < .01$), substance abuse/ dependence symptoms ($B = -0.075$, $p < .01$), neuropsychological functioning (category errors) ($B = .002$, $p < .01$), and gender ($B = .110$, $p < .01$).

Individuals with higher NEO Openness had greater agreement between retrospective and prospective reports of marijuana use ($B = .164$, $p < .01$), and lower Openness scores indicated a less agreement ($B = .104$, $p < .01$). Higher levels of Agreeableness indicated a stronger relation between retrospective and prospective reports ($B = .234$, $p < .01$). Conversely, low Agreeableness was indicative of less agreement between reports ($B = .098$, $p < .01$). Individuals with low rates of psychopathy symptoms had significantly greater agreement between retrospective and prospective reports of marijuana use ($B = .370$, $p < .01$), whereas the relation was not significant for those with high rates of psychopathy ($B = -.079$, $p > .05$). Fewer ASP symptoms produced significantly greater agreement between retrospective and prospective reports of marijuana use ($B = .198$, $p < .01$), whereas the relation was reversed for those with higher ASP symptoms ($B = .107$, $p < .01$).

Figure 6.1: **NEOO & Prospective Marijuana Use**

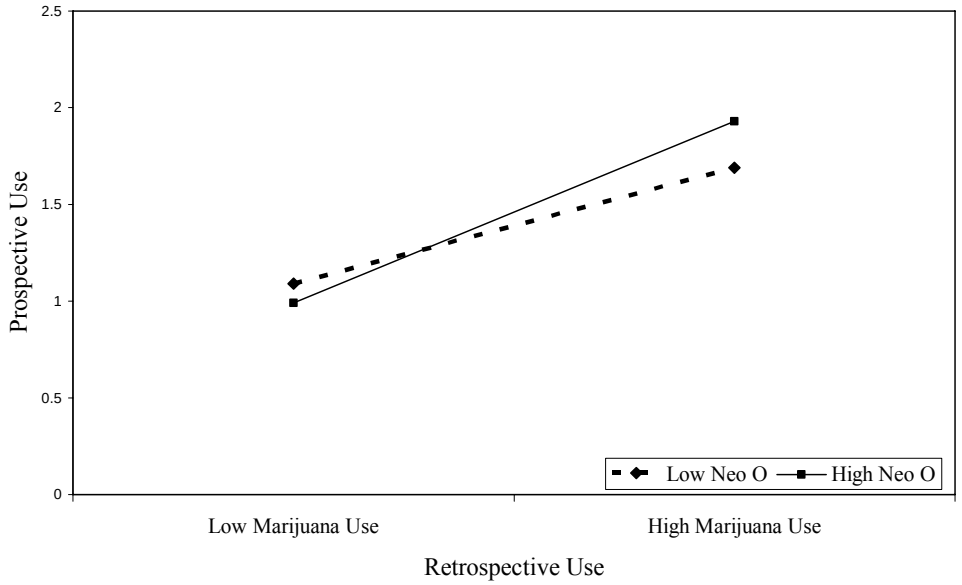


Figure 6.2: **NEOA & Prospective Marijuana Use**

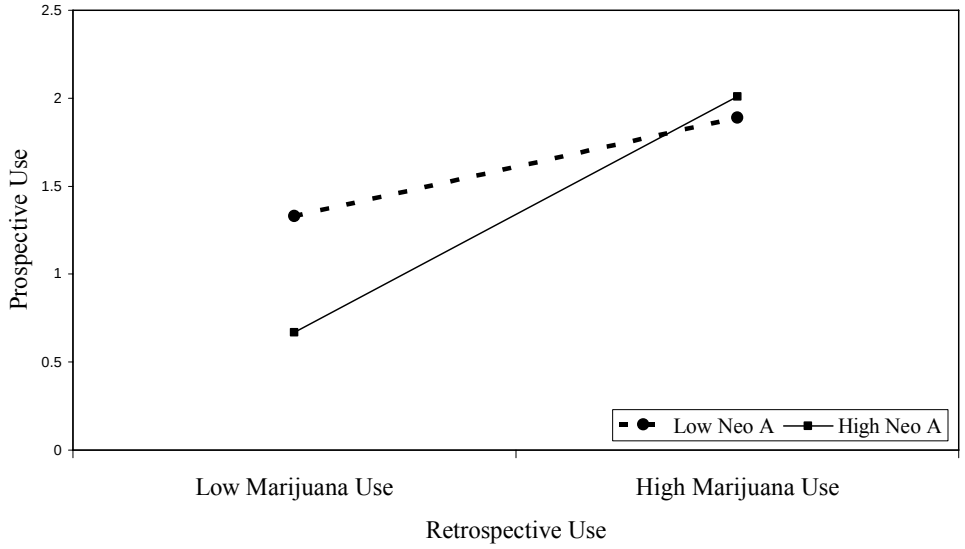


Figure 6.3: **LSRP & Prospective Marijuana Use**

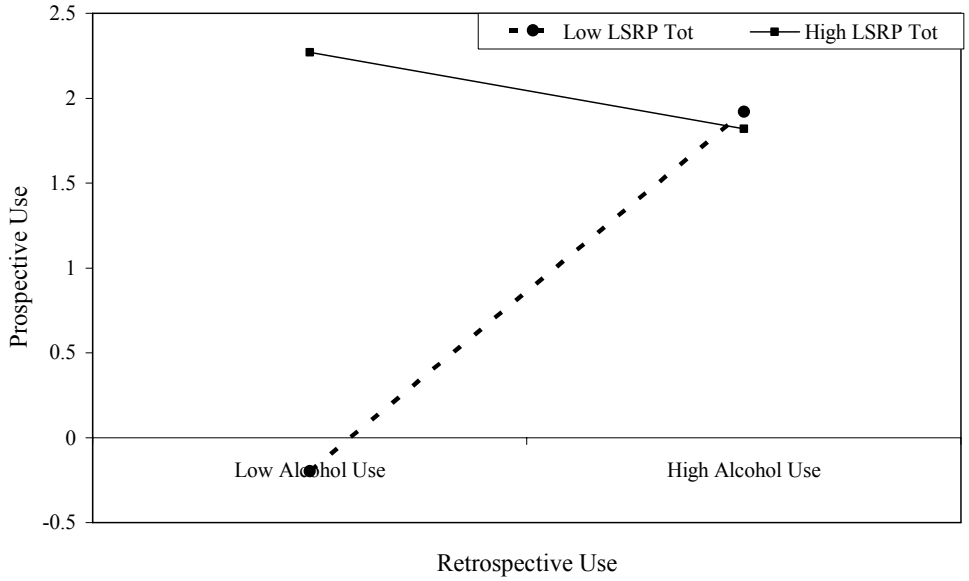
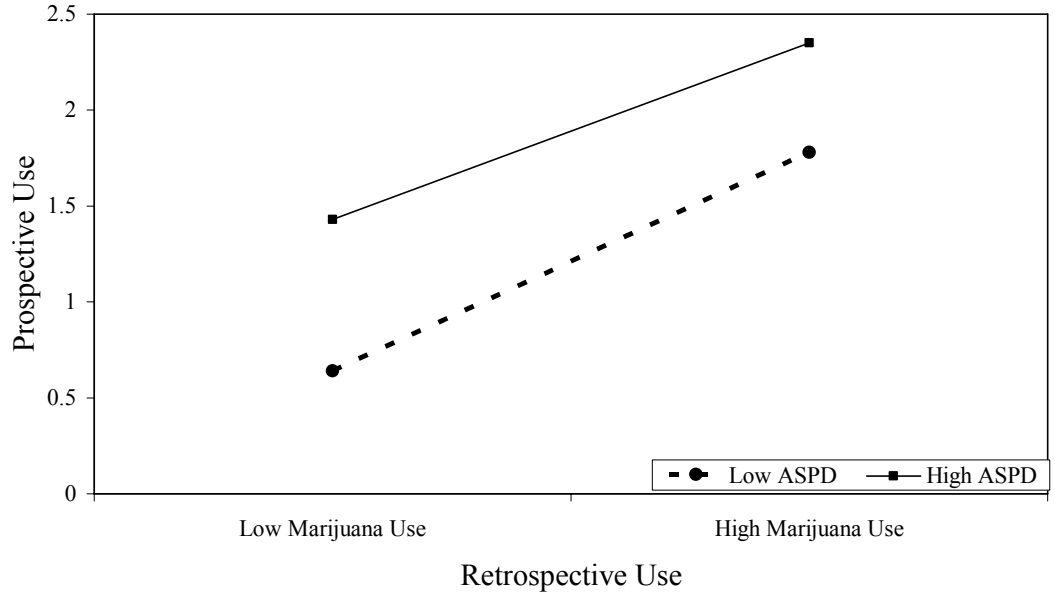


Figure 6.4: **ASPD Symptoms & Prospective Marijuana Use**



For individuals with low substance abuse/ dependence symptoms the relation between retrospective and prospective reports was greater (B = .204, p < .01) than for those with higher symptoms (B = .085, p < .01). Contrary to expectations, lower neuropsychological

functioning (more errors on the CAT) indicated a stronger relation between retrospective and prospective reports of marijuana use ($B = .085$, $p < .01$) than for individuals with fewer category errors ($B = .228$, $p < .01$).

Figure 6.5: **Substance Abuse/Dependence Symptoms & Prospective Marijuana Use**

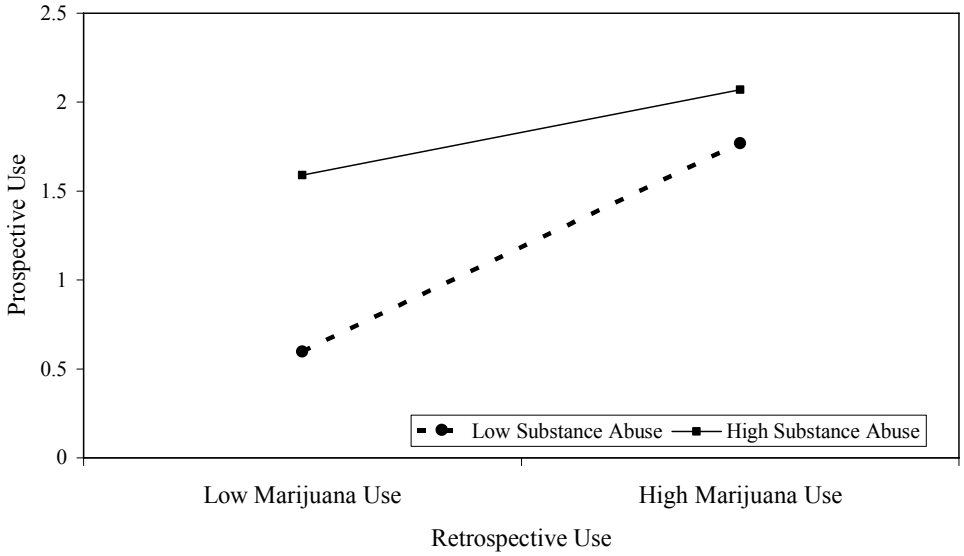
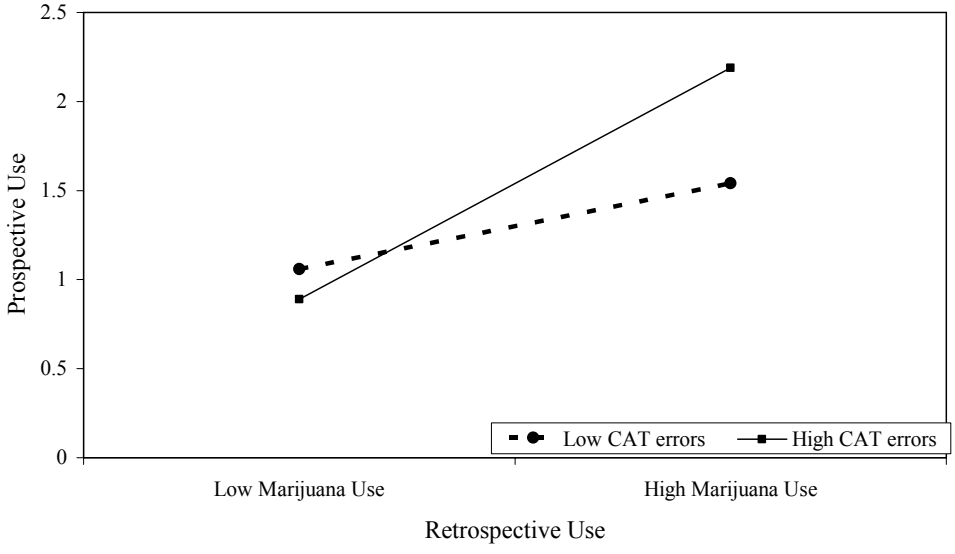


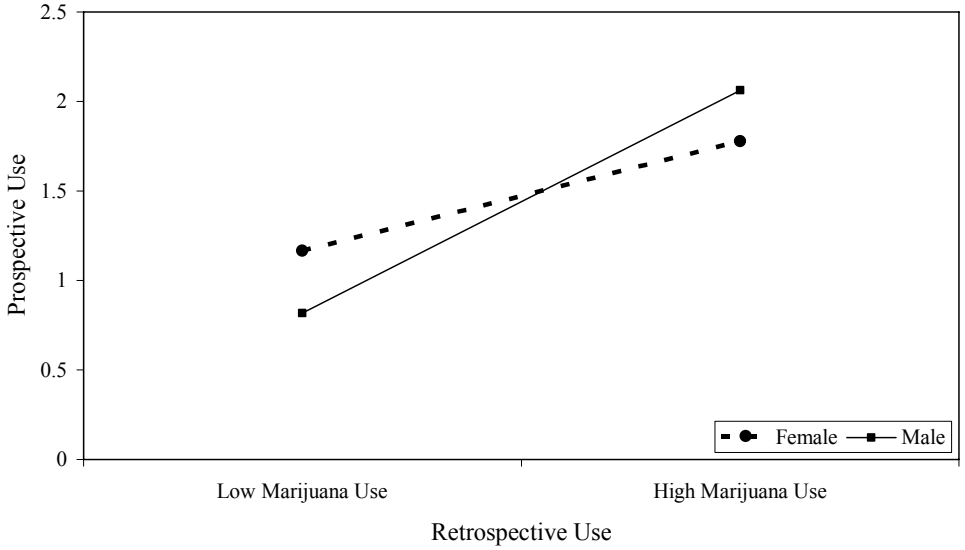
Figure 6.6: **Category Errors & Prospective Marijuana Use**



Finally, the relation between retrospective and prospective reports of marijuana use were weaker for women ($B = .107$, $p < .01$) than for men ($\beta = .217$, $p < .01$). The results are

presented in Table 7.

Figure 6.7: **Gender & Prospective Marijuana Use**

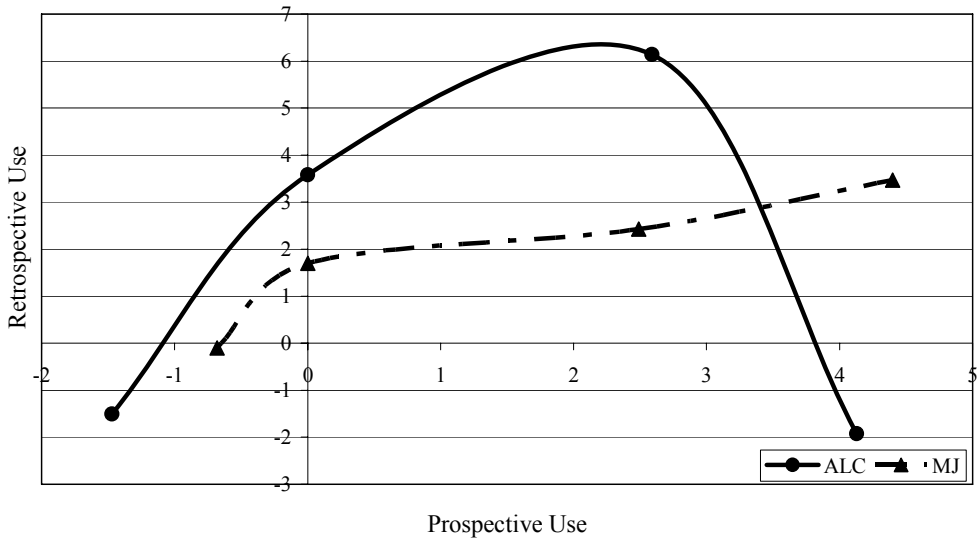


Curvilinear Relations

Analysis of curvilinear relations produced significant results for reports of alcohol and marijuana use, which are presented in Tables 4, 5, and 6, grouped by substance. Agreement between retrospective and prospective reports of average alcohol diminishes at a score of 2.59 ($B = 1.978$, $p < .01$). As illustrated below in Figure 7, as prospective alcohol usage increases retrospective usage increases to a maximum point of 2.59 then decreases somewhat sharply. The drop-off on the right hand side of the curve would seem to suggest that there is no overall relation between retrospective and prospective measures; however, there are actually few people ($N = 43$) with scores greater than 2.59 on the prospective measure.

The bend in the curve, illustrating the fall off point for marijuana, occurs at 2.49 ($B = 2.323$, $p < .01$). Results of the analysis for a curvilinear relation between retrospective and prospective reports of cigarette use were non-significant.

Figure 7 : **Curvilinear Relations for Prospective Alcohol & Marijuana Use**



Chapter 4: Discussion

Agreement on Ever Used

Results from this study indicated that as the time gap between prospective and retrospective assessments decreased agreement between reports of use increased. That is to say, reports gathered utilizing the LHC were more likely to be valid if data collection occurred closer to the prospective follow-up in question. In terms of agreement on ever/never used, validity depended not only on time since initial assessment, but substance assessed. Agreement also differed depending on whether kappa or phi coefficients were calculated. Kappa coefficients for cigarettes were the least favorable, yielding acceptable correlations only for the mailed survey reports. In fact, kappa coefficients for 6^{th} – 10^{th} grade reports were all less than 0.15. When kappa coefficients were correlated for alcohol, agreement was acceptable as far back as the 10^{th} grade, that is, for approximately six years since initial assessment. Finally agreement for marijuana reports was highest overall, yielding acceptable correlations for reports back to 8^{th} grade or approximately 8 years since initial assessment.

A similar pattern followed when agreement was calculated using phi coefficients. To calculate the product moment correlation for dichotomous cases we can use the phi coefficient. When marginal totals are equal for kappa and phi the phi coefficient can be interpreted as the proportion of agreement after allowance for chance, i.e. close to kappa (Cohen, 1960). Cigarette reports yielded acceptable agreement coefficients less than two years after assessment (i.e. for the mailed survey only). Alcohol reports were acceptable from the 9^{th} grade or 7 years since initial assessment. Again, marijuana reports had the highest coefficients for agreement overall and reached acceptable rates from the 8^{th} grade or as far back as 8 years since initial follow-up assessment.

That agreement was considerably better for the mailed survey is no surprise because it occurred less than two years prior to LHC data collection. Notwithstanding, it is likely that agreement was highest for marijuana use because of the novelty of the drug compared to alcohol and cigarettes, and perhaps it's lower rates of use relative to the other substances (M = 1.43 times compared to 2.27 and 2.10 for alcohol and cigarettes respectively). On the other hand, cigarette use produced lower agreement possibly because this was a less salient experience in terms of the perceived significance of drug and the frequency of use. As such, participants may have had more difficulty remembering whether they smoked one time in a particular year, or how many

times they smoked cigarettes on average as time elapsed between prospective follow-up and LHC collection increased.

Agreement on Average Use

In terms of average use, adequate agreement was reached earlier than for agreement on ever used, although there were still differences as a function of substance. Agreement on average use of alcohol yielded highest coefficients with the longest time gap – from 7th grade reports or roughly 10 years since initial assessment. While cigarettes and marijuana reports had acceptable agreement back to the 8th grade or approximately 8 years since follow-up.

The results suggest that LHC reports performed better for average use than for whether participants ever used a substance. Consequently, it may be that individuals can provide more reliable accurate information on the severity of their use than on whether they used.

As far as reporting whether one ever used a substance, accuracy may depend on the length of time over which one is expected to recall, and the type of drug. This appears to be particularly relevant if earlier use was limited or sporadic. For instance, in the case of marijuana reports of ever having used yielded highest agreement for the longest time gap, whereas agreement on cigarette use was poor until the mailed survey. One might surmise that frequency of use makes it harder to tell whether or how often one used in the past. For instance, it may be much more difficult to remember how many cigarettes one smoked during adolescence, if this was a frequent occurrence, while marijuana use may have been a more salient experience.

Moderators

As far as the moderators are concerned, the following affect agreement on reports of alcohol use: Agreeableness, ASPD, substance abuse/ dependence symptoms, verbal IQ and ethnicity. Cigarette reports were influenced by Agreeableness, Conscientiousness, ASPD, internalizing symptoms, substance abuse/dependence, age of onset for smoking, and ethnicity. Agreement on reports of marijuana use was influenced by Openness, Agreeableness, Psychopathy, ASPD, substance abuse/ dependence, neuropsychological functioning, and gender – with stronger validity for male respondents.

The moderating effects of Agreeableness, ASPD and substance abuse symptoms are robust across all three substances. Individuals who were more agreeable had significantly higher agreement between retrospective and prospective reports, whereas those with more symptoms of ASPD and substance abuse had significantly lower agreement. Not surprisingly, Agreeableness

has a universal impact on validity, perhaps due to the interactive nature of the interview process. Participants who were more agreeable were perhaps more willing to engage in dialog and provide interviewers with reliable information necessary complete the calendar. The interview method used for the LHC has generally been regarded as favorable by research participants, possibly because they feel a greater sense of involvement in the study (Freedman et al., 1988).

On the contrary, individuals with higher levels of ASPD often "lack empathy, tend to be callous, cynical, and contemptuous of the feelings, rights, and sufferings of others" (American Psychiatric Association, 2000, p 703). These individuals might tend to view interpersonal dynamic of the LHC interview as irritating, beneath them, and perhaps not worth the effort. Thus, it comes as no surprise that higher ASPD symptoms led to lower agreement on both reports. Similarly, those who endorsed more symptoms of substance abuse and dependence would have greater likelihood of inconsistencies between reports perhaps because their substance abuse was more frequent and therefore, less salient. They might also be less inclined to volunteer accurate information due to the extent of their substance abuse.

Significant interactions occurred between ethnicity and two out of the three substances measured – alcohol and cigarettes. Compared to other ethnic groups African Americans had higher agreement on reports of alcohol and cigarettes, but there was no significant interaction between ethnicity and marijuana reports. One hypothesis is that African American youth had higher agreement compared to individuals of other ethnic groups because they had fewer experiences and therefore, less difficulty remembering incidents of substance abuse. The literature on adolescent substance abuse supports the view that ethnic minority groups, particularly African Americans, have substantially lower rates of substance use than other groups with the greatest contrast existing between African Americans and whites (Gillmore et al, 1990; Ellickson, et al, 1999; Griffin et al, 2000). The disparity becomes recognizable as early as pre-adolescence when youth rarely engage in substance use or in social activity usually associated with that risk (Gillmore et al, 1990). The low incidence of alcohol and substance use among minority ethnic groups is also apparent in younger groups. Differences in the rates of initiation of tobacco and alcohol use tend to be highest among whites and lowest among Asian Americans (Gillmore et al., 1990). Acceptability of substance use, perceived parental disapproval and the threat of being caught and punished (Gilmore et al., 1990), religious involvement or religiosity (Headen et al, 1990; Ellickson et al, 1999), and influences in the social environment (Ellickson et

al, 1999; Epstein, et al 2002) have been offered as explanations for these differences.

Less powerful moderators, that is, those that exerted moderational effects on only one substance were VIQ for alcohol reports; Conscientiousness, internalizing symptoms, and smoking age of onset for reports on cigarette reports; and Openness, psychopathy, neuropsychological functioning and gender for marijuana reports. Although it may be risky to interpret these less robust findings, the directions of the effects make intuitive sense. First, the LHC interview's highly interpersonal format entails individuals verbally recalling events and feeling comfortable with a viewing a grid. Although reading competency is not necessary to complete the LHC, it is possible that individuals who are more adept and expressing and conceptualizing verbal concepts would provide more accurate information. Similarly accuracy on reporting frequency of cigarette smoking might lend itself to individuals who paid more attention to details as in the case of individuals who are high in Conscientiousness. Internalizing symptoms was an average of depression and anxiety symptoms, which are known to compromise the ability to attend, remember, and manipulate information in memory. The LHC helps people to recall the timing of events visually and mentally (Freedman et al., 1988), which might be more difficult if one were suffering from symptoms of depression or anxiety. Finally, being willing to provide sensitive information such as incidence of marijuana use is presumably more likely among individuals who are more open, cooperative and capable of remembering. Moreover, there are very likely confounding factors between heavy marijuana use and neuropsychological functioning.

To summarize, there is a moderate degree of agreement between retrospective and prospective reports of substance use. These relations have been shown to be moderated by various personality and psychopathology variables, particularly Agreeableness, symptoms of antisocial personality disorder, and symptoms of substance abuse. Agreement between retrospective and prospective reports appears adequate for reports of alcohol and marijuana use for at least six years subsequent to initial reports of use. However, reports of cigarette use seem to have less validity beyond a year of initial reporting. Overall the results of this study point to the increasing validity of the Life History Calendar as a method of assessment for retrospective self-reporting of substance use and supports the prospect of its usage in future research.

Limitations

One limitation in the current study is that age and time since assessment were confounding factors in that as participants aged they were likely to use more. Therefore, they had a greater pool of experiences from which to draw reference, thus increasing the likelihood for recollection errors. Additionally, correlations for reports of whether one ever used a substance are not as good as those of average use. It is possible that for retrospective reports ordering people in terms of severity is the best way to get a clear resolution of the patterns of use through the life course. Furthermore, one hypothesis for the low correlations is that they don't take the absolute level of agreement into account.

Where inconsistencies in agreement are concerned it is assumed that reports of use were more accurate during the prospective reports since retrospective reports entailed remembering events that occurred in the distant past. However, validity of prospective reports was not verified with outside sources of information (e.g. official records, parental, teacher and peer reports). Nevertheless, self-reports have been found to be more reliable for various reasons. First, much of adolescent delinquent behavior, which includes substance abuse, occurs under the purview of the authorities, and parental controls (Moffitt, 1993). Therefore, the most reliable indicators of adolescent substance use would be from adolescents themselves. Moreover, previous research suggests that in longitudinal studies participants quickly come to trust researchers' assurance of confidentiality and are more likely to provide accurate, reliable data on their involvement in delinquent activities (Moffitt et al., 2001).

In terms of gathering data on substance use among adolescents in the short term, the LHC appears to provide reliable and valid information particularly for questions referencing severity of use. Using the LHC young adult respondents were able to provide data on the frequency of their substance use during middle and high school that had acceptably high correlations with original information as far back as eight years. It provides a cost effective method for gathering time-ordered data and capturing the relationship between the behaviors of interest and incidents that occur on an individual level. In the absence of longitudinal data, repeated cross-sectional designs might be beneficial for gathering developmental data. However, they do not provide the clearest method for understanding the nature of the relation between extrinsic variables and individual differences. Retrospective data, which captures the incidence and timing of life events, would provide information on the life histories of study participants. Such historical data would

contribute valuable information about participants on an individual level, thus limiting spurious relationships between participants and the variables of interest.

There are other available methodologies for getting better resolution of the dynamic relationship between individuals and their environments. For example, intensive, short-term longitudinal studies allow researchers to gather information and minimize the risk of sample attrition. Experience sampling or diary studies aim to provide more detailed pictures. Participants might be asked to log the activities of interest in journal or log form, or to check in at specified intervals with some sort of electronic communication device such as a pager or personal data assistant (PDA) device. Although respondents could document their experiences in a continuous and detailed approach, the results would be subject to their interpretation of events and researchers run the risk of not having key events occur or failing to document them, particularly if participants fail to see the significance of an event or purposely withhold information. Additionally, the cost associated with these types of studies can be prohibitive (Murray, Griffin, Rose & Bellavia, 2003). Moreover, protocols that involve equipment for participants such as pagers or computerized devices incur significantly greater expense and hassle with acquisition, maintenance and replacement. Finally, these types of studies tend to be brief and it is questionable how well some participants would attend to data collection. This would be of particular concern if the sample included individuals with severe psychopathology, people with highly stressful lives (e.g. working poor), or those with cognitive deficits.

Future Directions

The LHC provides relatively simple research tool for collecting retrospective data on the sequential order and timing of life events, which in turn facilitates event-history analysis (Caspi et al., 1995). Future work examining its reliability in terms of examining trajectories would extend the utility of longitudinal data.

Additionally, more work is needed to examine how well the LHC performs for different age groups and different content domains, such as subjective or objective data. Existing studies that have tested validity of the LHC have used primarily adolescents and young adults (Caspi et al., 1995; Caspi & Amell, 1994, Freedman et al. 1988). In the current study the sample does not lend itself to that sort of analysis because participants were young adults during retrospective data collection. Similarly, an important area of research would be whether reliability depends on

the source of the information or the domains of inquiry (e.g. combat or assault trauma vs. history of residence) (Brewin, Andrews & Gotlib, 1993).

As indicated in the moderation analyses, psychopathology may affect validity of reports. Caspi et al. (1995), recommend use of the LHC as an assessment tool and therapeutic guide. Work that explores whether providing information on traumatic events, incidence of mental health symptoms and even subjective or experiential data would extend the utility of research on psychopathology. Overall the LHC has promise for improving the quality of longitudinal data. Studies that assess the validity of this technique in a variety of domains would contribute to its usefulness in longitudinal research.

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Table 1

Descriptives

Retrospective Measures	Means	SD
Alcohol	3.08	4.03
Cigarettes	1.93	3.03
Marijuana	0.92	2.87
Prospective Measures	**Means**	**SD**
Alcohol	2.27	1.14
Cigarettes	2.10	1.30
Marijuana	1.43	.845
Moderator Variables	**Means**	**SD**
NEO-PI-R Domains		
Neuroticism	87.85	22.32
Extraversion	118.57	19.58
Openness	117.05	20.07
Agreeableness	116.20	18.06
Conscientiousness	114.98	21.12

Table 1 continued

Descriptives

LSRP Total	1.88	.397
ASP Total	.590	1.04
Internalizing Symptoms	0.00†	.623
Avg. of Substance Abuse	0.00†	.792
Performance IQ	32.15	10.77
Verbal IQ	41.40	12.74
CAT Errors	58.76	45.65
Age of onset – Alcohol	14.79	3.24
Age of onset – Cigarettes	14.39	3.18
Age of onset – Marijuana	16.13	2.25

† Variable is an average score.

Table 2

Agreement between ever/ never used on Prospective & LHC

Substance	6th	7th	8th	9th	10th	Survey
Kappa						
Alcohol	.182	.208	.265	.359	.397	.840
Cigarettes	.029	.061	.140	.144	.145	.674
Marijuana	.215	.247	.463	.438	.513	.831
Phi						
Alcohol	.264	.298	.336	.429	.426	.843
Cigarettes	.099	.164	.251	.259	.254	.674
Marijuana	.258	.323	.500	.467	.529	.831

Table 3

Bivariate correlations for average use on prospective and LHC

Substance	6th	7th	8th	9th	10th	Survey
Alcohol	.146**	.486**	.392**	.521**	.542**	.645**
Cigarettes	.249**	.268**	.457**	.666**	.596**	.831**
Marijuana	-.010	.078	.465**	.546**	.496**	.663**

* $p < .05$. ** $p < .01$.

Table 4

Predicting Prospective Reports of Alcohol Use with Retrospective Reports & Potential Moderators

VARIABLE	*B*	*SE*	*β*	SIG	R^2	*Df*
NEO N						
LHC Alcohol Use	0.126	0.012	0.438	0.000		
Neo N	0.008	0.002	0.149	0.000		
Neo N X LHC Alcohol	0.000	0.001	-0.012	0.778	0.217	470
NEO E						
LHC Alcohol Use	0.126	0.012	0.440	0.000		
Neo E	0.000	0.002	-0.006	0.893		
Neo E X LHC Alcohol	0.001	0.001	0.037	0.371	0.196	470
NEO O						
LHC Alcohol Use	0.121	0.012	0.422	0.000		
Neo O	0.000	0.002	0.004	0.918		
Neo O X LHC Alcohol	0.001	0.001	0.074	0.086	0.200	470
NEO A						
LHC Alcohol Use	0.129	0.012	0.450	0.000		
Neo A	-0.013	0.003	-0.213	0.000		
Neo A X LHC Alcohol	0.002	0.001	0.122	0.005	0.257	470
NEO C						
LHC Alcohol Use	0.126	0.012	0.439	0.000		
Neo C	-0.010	0.002	-0.186	0.000		
Neo C X LHC Alcohol	0.001	0.001	0.064	0.119	0.234	470
LSRP Total						
LHC Alcohol Use	0.126	0.013	0.425	0.000		
LSRP Total	0.440	0.120	0.154	0.000		
LSRP Total X LHC Alcohol	-0.039	0.033	-0.052	0.233	0.215	468
ASP Total						
LHC Alcohol Use	0.131	0.012	0.465	0.000		
ASP	0.305	0.044	0.279	0.000		
ASP X LHC Alcohol Use	-0.030	0.007	-0.177	0.000	0.281**	476
Internalizing Symptoms						
LHC Alcohol Use	0.125	0.012	0.444	0.000		
Internalizing Symptoms	0.153	0.075	0.084	0.041		
Internalizing X LHC Alcohol	0.004	0.017	0.011	0.792	0.203	476

Table 4 continued

Predicting Prospective Reports of Alcohol Use with Retrospective Reports & Potential Moderators

VARIABLE	*B*	*SE*	*β*	SIG	R^2	*df*
Substance abuse/ dependence						
LHC Alcohol Use	0.126	0.015	0.448	0.000		
Substance abuse/ dependence	0.496	0.060	0.346	0.000		
Sub abuse/dep X LHC Alcohol	-0.070	0.013	-0.261	0.000	0.337	476
PIQ						
LHC Alcohol Use	0.128	0.012	0.452	0.000		
PIQ	-0.002	0.004	-0.016	0.697		
PIQ X LHC Alcohol	0.001	0.001	0.039	0.365	0.198	476
VIQ						
LHC Alcohol Use	0.130	0.011	0.460	0.000		
VIQ	-0.011	0.004	-0.126	0.002		
VIQ X LHC Alcohol	0.003	0.001	0.131	0.001	0.230	476
CAT Errors						
LHC Alcohol Use	0.132	0.012	0.457	0.000		
CAT errors	0.002	0.001	0.082	0.055		
CAT errors X LHC Alcohol	0.000	0.000	0.038	0.369	0.212	444
Age of Onset (Alcohol)						
LHC Alcohol Use	0.084	0.013	0.517	0.000		
Age of Onset	-0.128	0.014	-0.390	0.000		
Age of Onset X LHC Alcohol	0.005	0.004	0.057	0.215	0.303	413
Ethnicity						
LHC Alcohol Use	0.140	0.013	0.497	0.000		
Ethnicity	-0.380	0.127	-0.122	0.003		
Ethnicity X LHC Alcohol	-0.063	0.026	-0.114	0.017	0.221	469
Gender						
LHC Alcohol Use	0.115	0.015	0.408	0.000		
Gender	-0.140	0.095	-0.061	0.142		
Gender X LHC Alcohol	0.018	0.024	0.039	0.460	0.001	472

Table 4 continued

Predicting Prospective Reports of Alcohol Use with Retrospective Reports & Potential Moderators

VARIABLE	*B*	*SE*	*β*	SIG	R^2	*df*
Curvilinear Relation Pros Alcohol Use	1.978	0.176	0.558	0.000		
Prospective Alcohol Squared	-0.382	0.095	-0.198	0.000	0.222	477

Note: NEO O - Openness; NEO A - Agreeableness; NEO C - Conscientiousness; LSRPTot - Psychopathy; ASPTotal - Antisocial Personality Disorder Symptoms; CAT Errors - Neuropsychological functioning.

Table 5
Predicting Prospective Reports of Cigarette Use with Retrospective Reports & Potential Moderators

VARIABLE	*B*	*SE*	*β*	SIG	R^2	*df*
NEO N						
LHC Cigarette Use	0.263	0.019	0.590	0.000		
Neo N	0.007	0.002	0.121	0.000		
Neo N X LHC Cigarettes	-0.001	0.001	-0.078	0.778	0.350	470
NEO E						
LHC Cigarette Use	0.262	0.018	0.589	0.000		
Neo E	-0.003	0.003	-0.048	0.200		
Neo E X LHC Cigarettes	0.001	0.001	0.050	0.213	0.336	470
NEO O						
LHC Cigarette Use	0.254	0.017	0.572	0.000		
Neo O	-0.003	0.002	-0.047	0.213		
Neo O X LHC Cigarettes	0.001	0.001	0.040	0.294	0.335	470
NEO A						
LHC Cigarette Use	0.272	0.018	0.611	0.000		
Neo A	-0.010	0.003	-0.135	0.000		
Neo A X LHC Cigarettes	0.004	0.001	0.160	0.000	0.374	470
NEO C						
LHC Cigarette Use	0.269	0.018	0.605	0.000		
Neo C	-0.007	0.002	-0.118	0.002		
Neo C X LHC Cigarettes	0.003	0.001	0.133	0.001	0.362	470
LSRP Total						
LHC Cigarette Use	0.256	0.018	0.576	0.000		
LSRP Total	0.372	0.125	0.113	0.003		
LSRP Total X LHC Cigarettes	-0.045	0.049	-0.038	0.359	0.351	468
ASP Total						
LHC Cigarette Use	0.264	0.018	0.614	0.000		
ASP	0.293	0.047	0.234	0.000		
ASP X LHC Cigarettes	-0.074	0.013	-0.239	0.000	0.390	476
Internalizing Symptoms						
LHC Cigarette Use	0.248	0.017	0.577	0.000		
Internalizing Symptoms	0.226	0.080	0.108	0.005		
Internalizing X LHC Cigarettes	-0.041	0.018	-0.094	0.022	0.329	476

Table 5 continued
Predicting Prospective Reports of Cigarette Use with Retrospective Reports & Potential Moderators

VARIABLE	*B*	*SE*	*β*	SIG	R^2	*df*
Substance Abuse/ Dependence						
LHC Cigarette Use	0.254	0.021	0.591	0.000		
Substance abuse/ dependence	0.397	0.063	0.242	0.000		
Sub Abuse/Dep X LHC Cigarettes	-0.084	0.022	-0.182	0.000	0.380	476
PIQ						
LHC Cigarette Use	0.245	0.018	0.571	0.000		
PIQ	-0.012	0.005	-0.097	0.001		
PIQ X LHC Cigarettes	0.003	0.002	0.063	0.125	0.326	476
VIQ						
LHC Cigarette Use	0.231	0.018	0.539	0.000		
VIQ	-0.017	0.004	-0.163	0.000		
VIQ X LHC Cigarettes	0.000	0.001	0.009	0.834	0.338	476
CAT Errors						
LHC Cigarette Use	0.261	0.017	0.576	0.000		
CAT errors	0.003	0.001	0.106	0.006		
CAT errors X LHC Cigarettes	0.001	0.000	0.074	0.052	0.354	444
Age of Onset (Cigarettes)						
LHC Cigarette Use	0.212	0.024	0.545	0.000		
Age of Onset	-0.111	0.019	-0.266	0.000		
Age of Onset X LHC Cigarettes	-0.017	0.006	0.160	0.007	0.344	337
Ethnicity						
LHC Cigarette Use	0.247	0.017	0.576	0.000		
Ethnicity	-0.156	0.139	-0.145	0.000		
Ethnicity X LHC Cigarettes	-0.110	0.052	-0.088	0.034	0.337	469
Gender						
LHC Cigarette Use	0.229	0.022	0.534	0.000		
Gender	-0.090	0.099	-0.035	0.364		
Gender X LHC Cigarettes	0.022	0.033	0.034	0.502	0.315	472
Curvilinear Relation						
Pros. Cigarette Use	1.215	0.144	0.521	0.000		
Pros. Cigarette Use Squared	0.047	0.061	0.047	0.444	0.313	477

Note: NEO O - Openness; NEO A - Agreeableness; NEO C - Conscientiousness; LSRP Tot - Psychopathy; ASPTotal - Antisocial Personality Disorder Symptoms; CAT Errors - Neuropsychological functioning.

Table 6
Predicting Prospective Reports of Marijuana Use with Retrospective Reports & Potential Moderators

VARIABLE	*B*	*SE*	*β*	SIG	R^2	*df*
NEO N						
LHC Marijuana Use	0.134	0.013	0.443	0.000		
Neo N	0.005	0.002	0.141	0.001		
Neo N X LHC Marijuana	0.000	0.001	-0.006	0.887	0.225	468
NEO E						
LHC Marijuana Use	0.138	0.013	0.459	0.000		
Neo E	-0.003	0.002	-0.072	0.081		
Neo E X LHC Marijuana	0.000	0.001	0.033	0.441	0.211	468
NEO O						
LHC Marijuana Use	0.134	0.012	0.445	0.000		
NEO O	0.002	0.002	0.041	0.321		
Neo O X LHC Marijuana	0.001	0.001	0.095	0.021	0.216	468
NEO A						
LHC Marijuana Use	0.166	0.015	0.550	0.000		
NEO A	-0.007	0.002	-0.156	0.000		
Neo A X LHC Marijuana	0.004	0.001	0.228	0.000	0.27	468
NEO C						
LHC Marijuana Use	0.134	0.012	0.445	0.000		
Neo C	-0.008	0.002	-0.191	0.000		
Neo C X LHC Marijuana	0.001	0.001	0.057	0.164	0.247	468
LSRP Total						
LHC Marijuana Use	0.145	0.013	0.487	0.000		
LSRP Total	0.314	0.087	0.147	0.000		
LSRP Total X LHC Marijuana	-0.119	0.035	-0.147	0.001	0.250	466
ASP Total						
LHC Marijuana Use	0.152	0.015	0.515	0.000		
ASP Total	0.256	0.034	0.314	0.000		
ASP X LHC Marijuana	-0.044	0.008	-0.260	0.000	0.312	473
Internalizing Symptoms						
LHC Marijuana Use	0.134	0.012	0.453	0.000		
Internalizing Symptoms	0.076	0.056	0.056	0.172		
Internalizing X LHC Marijuana	0.001	0.016	0.002	0.966	0.211	473

Table 6 continued
Predicting Prospective Reports of Marijuana Use with Retrospective Reports & Potential Moderators

VARIABLE	*B*	*SE*	*β*	SIG	R^2	*df*
Substance Abuse/ Dependence						
LHC Marijuana Use	0.145	0.017	0.491	0.000		
Substance abuse/ dependence	0.408	0.044	0.381	0.000		
Sub abuse/dep X LHC Marijuana	-0.075	0.015	-0.275	0.000	0.362	476
PIQ						
LHC Marijuana Use	0.134	0.012	0.452	0.000		
PIQ	-0.006	0.003	-0.082	0.046		
PIQ X LHC Marijuana	0.001	0.001	-0.007	0.862	0.214	473
VIQ						
LHC Marijuana Use	0.130	0.012	0.441	0.000		
VIQ	-0.010	0.003	-0.149	0.000		
VIQ X LHC Marijuana	0.000	0.001	-0.002	0.958	0.230	473
CAT Errors						
LHC Marijuana Use	0.156	0.013	0.487	0.000		
CAT errors	0.003	0.001	0.141	0.001		
CAT errors X LHC Marijuana	0.002	0.000	0.173	0.000	0.275	441
Age of Onset (Marijuana)						
LHC Marijuana Use	0.068	0.021	0.256	0.000		
Age of Onset	-0.191	0.022	-0.468	0.000		
Age of Onset X LHC Marijuana	0.007	0.007	-0.080	0.302	0.315	302
Ethnicity						
LHC Marijuana Use	0.136	0.013	0.465	0.000		
Ethnicity	-0.115	0.095	-0.050	0.227		
Ethnicity X LHC Marijuana	-0.034	0.041	-0.035	0.416	0.210	468
Gender						
LHC Marijuana Use	0.107	0.014	0.361	0.000		
Gender	-0.013	0.069	-0.019	0.650		
Gender X LHC Marijuana	0.110	0.028	0.183	0.000	0.233	471

Table 6 continued
Predicting Prospective Reports of Marijuana Use with Retrospective Reports & Potential Moderators

VARIABLE	*B*	*SE*	*β*	SIG	R^2	*df*
Curvilinear Relation						
Pros. Marijuana Use	2.323	0.212	0.686	0.000		
Pros. Marijuana Squared	-0.466	0.098	-0.299	0.000	0.244	474

Note: NEO O - Openness; NEO A - Agreeableness; NEO C - Conscientiousness; LSRP Tot - Psychopathy; ASPTotal - Antisocial Personality Disorder Symptoms; CAT Errors - Neuropsychological functioning.

Table 7

Summaries of Interactions Between Retrospective Reports of Alcohol, Cigarette, & Marijuana Use and Moderator Variables

Interaction Term	*βs (High)*	*Sig.*	*βs (Low)*	*Sig.*
Alcohol				
Neo A	0.158	0.000	0.101	0.000
ASP Total	0.100	0.000	0.162	0.000
Substance Abuse	0.071	0.000	0.182	0.000
VIQ	0.162	0.000	0.097	0.000
Ethnicity	0.140[a]	0.000	0.077[b]	0.001
Cigarettes				
Neo A	0.347	0.000	0.197	0.000
Neo C	0.325	0.000	0.214	0.000
ASP Total	0.187	0.000	0.340	0.000
Internalizing Symptoms	0.222	0.000	0.273	0.000
Substance Abuse	0.187	0.000	0.320	0.000
Age of Onset	0.184	0.000	0.084	0.006
Ethnicity	0.247[a]	0.000	0.137[b]	0.005
Marijuana				
Neo O	0.164	0.000	0.104	0.000
Neo A	0.234	0.000	0.098	0.000
LSRP Total	-0.079	0.207	0.370	0.000
ASP Total	0.107	0.000	0.198	0.112
Substance Abuse	0.085	0.000	0.204	0.000
CAT Errors	0.228	0.000	0.085	0.000
Gender	0.107[c]	0.000	0.217[d]	0.000

Note: a- African American, b - non-African American, c - Female, d - Male, NEO O - Openness, NEO A - Agreeableness, NEO C - Conscientiousness, LSRPTot - Psychopathy, ASPTot - Antisocial Personality Symptoms, CAT Errors - Neuropsychological functioning.

VITA

OCTOBER 2005

PERSONAL INFORMATION

Name: Leslie-Ann C. Robertson Toney

Date of Birth: July 9, 1976

Place of Birth: Brooklyn, New York

EDUCATION

1993-1995	San Fernando Secondary School, Trinidad West Indies
	Advanced Level Certificate of Education, Cambridge Examinations Syndicate
1995-1999	Howard University, Washington, DC
	B.S. in Psychology, B.A. in Spanish

SCHOLASTIC HONORS & AWARDS

2004 – Present	National Institutes on Drug Abuse Minority Supplement Grant DA05312
2002 – 2004	Lyman T. Johnson Graduate Student Fellowship 2002 – 2004
1999	Who's Who in American Colleges & Universities
1997 – 1998	Robert E. McNair Post Baccalaureate Achievement Scholar
1998 – 1999	Golden Key National Honor Society
1998 – 1999	Howard University Academic Scholarship
1996 – 1999	Howard University College of Arts & Sciences Dean's List

CLINICAL EXPERIENCE

2005 – present	Jesse G. Harris Psychological Services Center Clinic Coordinator	Lexington, KY
2004 – 2005	University of Kentucky Counseling Center Practicum Therapist	Lexington, KY
2003 – present	Jesse G. Harris Psychological Services Center Clinical Trainee	Lexington, KY
2000 – 2002	Alexandria Mental Health Center	Alexandria, VA

	Case Management Unit – Therapist	
1999-2000	The Maudsley Hospital	London, England
	Volunteer Activities Coordinator	
1998-1999	Howard University Hospital	Washington, DC
	Translator/ Interpreter – HUH CARES (HIV/AIDS Support) Program.	

RESEARCH & TEACHING EXPERIENCE

2004 – present	Research Assistant for Dr. Donald Lynam, University of Kentucky, Department of Psychology – sensation seeking and substance abuse.
2003 – 2004	Teaching Assistant – Department of Psychology – Experimental labs.
2003 - 2004	Research Assistant – Spirituality and Religiosity Research Group.
2002 – 2004	Graduate research - outcomes for children in out-of-home placement.
1999 – 2000	Project Assistant for Caroline Hunt and Dr. Sandy Caincross, London School of Hygiene and Tropical Medicine. Spanish & Portuguese translation, data entry, and reports for WHO/UNICEF report – *Global Water Supply & Sanitation Assessment 2000*.

PROFESSIONAL AFFILIATIONS

2002 – present	American Psychological Association – Graduate Student Affiliate
2003 – present	Division 45 - Society for Study of Ethnic Minority Issues Student Member
2005 – present	Kentucky Psychological Association – Graduate Student Affiliate
2004 – 2005	Council of Directors of Clinical Programs – Graduate Student Liaison
2003 – 2005	Black Graduate Student Association – Vice president (2004-2005)

ASSESSMENT EXPERIENCE

Wechsler Adult Intelligence Scale III (WAIS III)
Wechsler Intelligence Scale for Children – IV (WISC IV)
Woodcock Johnson Psycho-Educational Battery (WJ-III)
Minnesota Multiphasic Personality Inventory -2 (MMPI-2)
NEO Personality Inventory – Revised (NEO-PI-R)
Structured Clinical Interview for DSM – IV Axis Disorders (SCID-I/P)