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Self-Reported Age of Onset and Telescoping for Cigarettes, Alcohol, and Marijuana Across Eight Years of the National Longitudinal Survey of Youth

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Abstract

Smoking, drinking, and illicit drug use are leading causes of morbidity and mortality, both during adolescence as well as later in life. Although for some adolescents, substance use may last for only a brief period of experimentation, use of these substances in adolescence may have negative consequences. The determination of how well national and local policy and intervention efforts address teen substance use depends largely on the collection of valid and accurate data. Assessments of substance use rely heavily on retrospective self-report measures. The reliability and validity of self-reported substance use measures, however, may be limited by various sources of measurement error. This study utilizes four waves of data from the National Longitudinal Survey of Youth spanning eight years. Our wave-to-wave analyses examined the accuracy of self-reported age of onset for cigarette, alcohol and marijuana users. Findings indicate that approximately one-fourth of cigarette users, one-fifth of alcohol users and one-third of marijuana users reported their age of onset exactly the same across waves. Of those who reported the age of onset inaccurately, the error tended to be in the direction of reporting their age of onset as older at a latter wave relative to what was reported previously, known as forward telescoping. Results from multiple linear regression analyses showed that the single most consistent variable associated with telescoping was the number of years since the substance was first reported. Time since first report was the single consistent and strongly associated with telescoping in each wave-to-wave comparison for all three substances under study. Implications for policy and research are discussed.

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Background

Despite considerable progress in the past decade in deterring alcohol, tobacco, and marijuana use among young people, use of these substances remains sufficiently widespread to be of concern. According to national results from the 2008 Monitoring the Future survey, nearly half of young people in the US have tried cigarettes by the 12th grade, and 20% of 12th graders are current smokers (Johnson et al., 2009). Alcohol is widely used among young people as well--about three-fourths of students have consumed alcohol by the end of high school, and 18% of 8th graders reported having been drunk at least once. Marijuana is the most widely used illicit drug, with about 22% of 8th, 10th, and 12th graders combined reporting use in the past year (Johnson et al., 2009).

Smoking, drinking, and illicit drug use are leading causes of morbidity and mortality, both during adolescence as well as later in life. Although for some adolescents, substance use may last for only a brief period of experimentation, use of these substances in adolescence may have negative consequences, including health and emotional problems, possible addiction and chronic use, lower social competence, and problems with school or work (Palmer & Liddle, 1996; Botvin & Wills, 1985).

The determination of how well national and local policy and intervention efforts address teen substance use depends largely on the collection of valid and accurate data (Golub, Johnson, & Labouvie, 2000). Assessments of substance use rely heavily on retrospective self-report measures; for example, self-reported age of first use is a critical risk factor measure in many epidemiological studies of etiology and consequences of substance use (Johnson & Mott, 2001; Golub, Johnson, & Labouvie, 2000). The reliability and validity of self-reported substance use measures, however, may be limited by various sources of measurement error (Percy et al., 2005). One such source of error is inconsistency (whether intentional or unintentional) in individuals' reports of age of first use with increasing age. Friedman (1993) discusses this as the distance or the time elapsed between the event and the present time, which is also known as relative time. Hinrichs (1970) theorized that items in memory have a strength that declines with the passage of time through recall decay.

Within length of time theory a type of response error includes telescoping. Two types of telescoping have been identified. Forward Telescoping refers to the tendency to underestimate the elapsed time since an event occurred such as the age of a first drink (Wright, Gaskell, O'Muircheartaigh, 1997) and Backward Telescoping concerns overestimating the time since an event occurred (Wright, et al., 1997). Backward telescoping tends to take place more when one is reporting on more recent events whereas forward telescoping has been found with more remote events (Janssen, Chessa, & Murre, 2005; Janssen, Chessa & Murre, 2006).

Johnson and Mott (2001), using NLSY (National Longitudinal Survey of Youth) data, found that ages of onset were consistent for only 55% of respondents when a one year allowance was made. Further, Prause, Dooley, Ham-Rowbottom and Emptage (2007) reported that over a one-year test retest period, the self-reported age of onset for alcohol use reflected forward telescoping with the age of onset increasing 1.67 years. Shillington, Reed, and Clapp (2010) reported that about 25% of youth report their age of onset for cigarette use exactly the same over two-year interview periods, 17% of alcohol users report it exactly the same (Shillington, Clapp, Reed, and Woodruff, in press), and the highest stability for age of onset was found for marijuana at about 40% (Shillington, Clapp, Reed, in press). Shillington and Clapp (2000) reported an inverse relationship between chronological age and telescoping for alcohol and marijuana in that older adolescents recalled their original age of onset as younger than the age previously reported. Further, Shillington and Clapp (2000)

found the reported age of onset remained more accurate for marijuana use than for cigarette and alcohol use.

Explanations for telescoping may be intentional distortions (e.g., exaggerating at baseline), cognitive errors, developmental or maturational factors, forgetting, or carelessness (Fendrich & Rosenbaum, 2003; Johnson & Mott, 2001). Telescoping may also result from adolescents' redefinition over time in what constitutes "first use" (Golub, Labouvie, & Johnson, 2000). Because use of some substances (e.g., marijuana) may be more salient and easier to recall compared to other substances (e.g., cigarettes), telescoping effects could vary by the substance (Harris et al., 2008).

Studies on telescoping among adolescents have often been based on small samples, short re-interview time periods, cross-sectional samples, or single substances. The present study addresses some of these shortcomings of the literature and will further examine the effects of telescoping in reports of age of first use among adolescents. We have used a large national panel sample of over 5,500 adolescents who were interviewed at 3 waves--1994, 1996, and 1998. Age of first use of tobacco, alcohol, and marijuana was considered to assess the differential effects of telescoping by substance.

Methods

Sample

We conducted secondary analyses of data collected by the National Longitudinal Survey of Youth (NLSY). The original sample for the NLSY consisted of 5,828 females and 5,578 males (African Americans and Hispanics were over sampled), aged 14–21 years, who were interviewed by trained interviewers. The NLSY is conducted in the U.S. and uses a multistage stratified random sampling technique. This cohort study resulted in participants being interviewed annually since 1979 with a retention rate of 90.5% at twelve-year follow-up (Baker et al., 1993). In 1986 the study protocol was expanded to include the children of the original female respondents. These children, however, were born to young mothers and therefore are not a nationally representative sample of children.

Two instruments were utilized once children reached the age of 10 or 15. Ten-year old children were asked to complete a self-report instrument entitled the Child Self Administered Supplement (CSAS). This instrument queried areas such as child-parent relationships, attitudes, religiosity, deviance, and substance use. The interviews of the children have been conducted every two years beginning in 1988. In 1994 a new survey instrument was added to the protocol for those aged 15 and older. The new survey was entitled the Young Adult Survey (YAS). The YAS asked about cigarette, alcohol and other substance use, sexual activity, delinquent activities and relationships. However, those aged 10–14 still completed the CSAS. The sample for this study consists of youth aged 10 and older beginning with those interviewed in 1992, 1994, 1996 and 1998. The first waves of data collection were not utilized for this study because the number of users was too small.

Measures

Dependent Variable—For this study the dependent variable was the comparison of self-reported age of onset for cigarettes, alcohol and marijuana use separately. This variable was a continuous variable that calculated the difference between the reported age of onset at Time 1 to that reported at the next wave of data collection. This calculation could result in a "0" which would indicate that the age of onset was the same at both times. This continuous variable has both negative and positive values. For example, a value of "+2" would indicate that a youth reported their age of onset two years older at Time 2 compared to Time 1, also

known as forward telescoping. A negative value would be for those reporting a younger age of onset, or backward telescoping, from Time 2 compared to Time 1. In prior research the age of onset was treated as accurate if the teen reported their age of onset within one year older or younger than their originally reported age of onset (Shillington, Reed, Clapp, 2010; Shillington Clapp, Reed, in press; Shillington Clapp, Reed, Woodruff, in press; Shillington and Clapp, 2000). However, for the purposes of this paper, where the goal is to identify associated variables with telescoping, the age of onset had to be an exact match wave to wave. Thus if the age of onset was reported a year older or younger at the second wave, then respondents were considered to be telescoping. A single continuous variable for telescoping was created for each wave-to-wave comparison 1992–94, 1994–96, 1996–98.

Substance Use Variables—A count variable was created to record the number of drugs the teen reported using at each particular wave of data collection. In addition to the number of drugs used, participants were also queried regarding their frequency of recent use during the past thirty days. This variable was coded as “0” no current use or “1” for current use during the past thirty days.

A variable to measure the number of years that elapsed between the reported age of onset for a particular substance and the youth’s current age was created. This variable, the number of years since reported age of onset, was continuous and was created for each substance and wave of data under study. Therefore, the number of years since reported onset for marijuana (cigarettes, alcohol) was created for all three years of data collection included. For example, if an adolescent was 16 in 1998 and his/her reported age of onset for alcohol use was 12, then they would be coded as “4” or four years since their reported onset of alcohol use.

Demographic Variables—The dataset consisted of all youth who were age 10 or older by the last wave of data collection in 1998. Ethnicity was originally coded as 1= Hispanic, 2 = African American and 3 = Non-Hispanic/Non-African American in the NLSY dataset. Ethnicity was dummy coded for the multiple linear regression analyses. The number of years since reported age of onset and a respondent’s chronological age are highly correlated with correlation coefficients ranging from .34–.41 for cigarettes, .34–.39 for alcohol, and .40–.53 for marijuana. The minimum age was always 10 years but the upper age range increased with each interview, as did the mean age. In 1998 the age range was 10–28 years and the mean age was 16.06 years. When age related analyses were conducted, only the chronological age at the time of the survey was used for the analyses. Thus if the telescoping was being analyzed for cigarette users in 1996, then the youth’s chronological age at 1996 was used.

Statistical methods

Wave to wave comparison analyses (e.g., 1994 to 1996) were conducted using SPSS version 15.0. Bivariate analyses included one-way analysis of variance and Pearson’s Correlations. Separate hierarchical multiple regression analyses were conducted to examine the association of the demographic and substance use variables with the youth’s telescoping for alcohol, cigarette and marijuana use for each wave-to-wave comparison (92–94, 94–96, 96–98). Demographic variables included were ethnicity, which was dummy coded (original study categories were Non-Black Non-Hispanic, Hispanic, Black), and sex. Due to chronological age often not being significantly associated with telescoping in the bivariate analyses and concern for co-linearity issues, it was not included in our multivariate analyses. Substance use variables included frequency of use, number of substances used and number of years since the onset of use. The number of substances used was a summative variable that added all the positive responses to the lifetime use questions for all substances queried during the survey. The number of years since onset was calculated by subtracting the age of

onset given in the survey from the respondent's chronological age. The demographic variables were entered on the first block and the substance use variables were entered on the second block. We examined changes in model R-square between the entry of the first and second blocks to determine whether the addition of the substance use variables accounted for unique variance over and beyond the demographic variables. Multicollinearity was examined using VIF collinearity statistics for models and was found to be low.

Results

A total of 5,549 participants were age 10 years or older as of the 1998 survey with 50.9% male. This is an ethnically diverse sample with 22.0% Hispanic, 35.2% Black and 42.8% Non-Hispanic, Non-Black. The mean age was 12.06 in 1994 and increased to 16.06 in 1998 (SD 3.88).

The descriptive data are presented in Table 1. As seen, the percentage of youth aged ten and older who reported lifetime use of cigarettes was 24.6% in 1994 and increased to over 31% in the next two surveys. Alcohol lifetime use was reported by about one third of all adolescents ranging from 33.5% in 1994 to 37.7% in 1996. It was found that about 10% reported marijuana use in 1994 and it increased to over 19% by 1998.

The age of onset for alcohol use and cigarette use were similar by wave. The mean age of onset for cigarette use was 12.3 in 1994, increased to 13.0 in 1996 and was highest in 1998 at 13.3. Alcohol use was similar with the mean age of onset found to be 12.8 in 1994 and increasing to 13.9 years in 1998. The mean age of onset for marijuana stayed stable at just under fourteen and a half years for all three waves of data collection. Results indicated that this sample of adolescents reporting on average between 2.1 and 2.5 substances at each wave of data collection.

Tables 2–4 report the ANOVA results testing the association between telescoping at each wave-to-wave comparison. These tests were conducted for cigarettes, alcohol and then marijuana. For cigarette users (Table 2), those who were backward telescopers had significantly more years between when they reported their age of onset and their current chronological age. This was true for each of the three wave-to-wave comparisons. Backward telescopers had over six years since their reported age of onset, five years for those who reported their age onset exactly the same, and three years for forward telescopers.

The same analyses are reported for alcohol users in Table 3. The same pattern emerges with backward telescopers having the highest mean years since their reported age of onset. For all three tests, backward telescopers had nearly seven years since their reported age of onset. Those reporting the exact same age of onset had reported their age of onset 4–5 years prior. Forward telescopers had a mean number of years since their age of onset closer to three years. As with cigarette use it was found that backward telescopers were older than the other two groups while forward telescopers had the lowest mean age (not reported in a table).

Lastly, ANOVA tests were conducted for the three wave-to-wave comparisons for marijuana users and reported in Table 4. As with the other two substances, the mean number of years since the reported age of onset was significantly higher for backward telescopers and lowest for forward telescopers in each of the three analyses.

Multivariate Results

A separate linear regression model was created for each of the wave-to-wave comparisons for the telescoping of the three substances under study, which resulted in nine regression

models. Demographic variables were entered in the first block and the substance use variables were entered in the second block.

Cigarette Use Models—Results for the three multiple regression models for stability of self-reported age of onset, or telescoping, for cigarette use are reported in Table 5. Ethnicity was found to remain in the 1996–98 model, with Black youth having a Standardized Beta of −.108. When examining the mean differences of reported age of onset from the prior wave of data collection, Blacks (.79) compared to the other two groups, had a lower mean difference compared to the other two groups with Non-Black, Non-Hispanic having a mean of .80 and Hispanics a mean of .94. For this model, Blacks were closer to 0 and thus more accurate in their self-reported age of onset compared to the other two ethnic groups. It was found that total number of drugs ever used remained statistically significantly associated with the dependent variable in the 1994–96 model. Results indicated that for that two-wave comparison the higher number of drugs reported was associated with forward telescoping.

The number of years since the reported aged of onset was significantly associated with changes in reported age of onset in all three multiple regression models. All associations were found to be negative in direction, indicating that the longer time since reported age of onset, the more likely the youth will be a backward telescoper. The Standardized Betas for this association was similar in all three models ranging from −.52 to − .61.

Alcohol Use Models—Results for the three alcohol use models for 1992–94, 1994–96 and 1996–98 are presented in Table 6. As can be seen, in all three models, the number of years since the youth reported their age of onset for alcohol use was the one consistently significant variable with the stability of age of onset reports. The standardized betas ranged from −0.22 to −0.66. In each model a negative association was found which indicates that the longer it has been since the reported age of onset the more likely backward telescoping will occur.

Gender remained significant in the 1996–98 model. When examining the age of first use means for males and females, it was found that females were more consistent (as evidenced by smaller wave-to wave differences in reports) reporting their age of onset the same across the two waves and males more likely to be forward telescopers compared to females (−.096). The R^2 values for the three substance use related models (Model 2) ranged from .079 – 0.41.

Marijuana Use Models—The last set of analyses, found in Table 7, were to examine the association of the demographic and substance use variables with telescoping wave-to-wave. Sex was the only demographic variable that remained statistically significantly associated with the dependent variable, with females being found to be backward telescopers. As with the prior models discussed, the number of years since the youth first reported their age of onset was associated with telescoping. The fewer years since age of onset was reported the more likely the teen forward telescopes or inversely, the longer the time since first report, the more likely they were to backwards telescope with the Standardized Betas ranging from −.49 to −.70.

Discussion

Alcohol and drug epidemiological work is heavily reliant upon self-reports of behaviors. The decision of when to offer alcohol and drug prevention services to adolescents is, to a great degree, determined by when the population is identified to be at risk for onset of use. As a result, errors in reporting age of onset for alcohol, cigarettes and marijuana have received some attention (Johnson and Mott, 2001; Golub et al., 2000a; Golub et al., 2000b).

Despite the importance of age of onset, it may be that age of onset is a less salient variable for users than use/no use is. Prior research has indicated that reports of age of onset have more error than do reports of use across time (Baily, 1992; Shillington and Clapp, 2000; Shillington et al., in press). When conducting longitudinal research or planning prevention programs it is important that the errors in self-reported age of onset be well understood.

Our findings indicate that the length of time since the youth reports first using one of these three substances is a strong and consistent variable associated with telescoping. For all three substances and for all year-to-year comparisons, the shorter the duration between the interview and age of onset the more likely youth forward telescope. As reported in prior research (Shillington and Clapp, 2000; Shillington, Reed, et al in press; Shillington, Clapp, et al., in press; Shillington, Woodruff, et al., in press) the majority of youth tend to forward telescope in general. However, these analyses expand this to include an understanding of the impact of time since onset. Thus youth who forward telescope tend to be newer users of any of the substances studied here. Therefore, it may not be that the majority of youth are forward telescopers per se, but rather it is that the bulk of respondents are newer in their use. So that if we followed the youth longer in time since their onset, more would transition to backward telescopers.

Prior research studying the stability of self-reported age of onset has focused on forward telescoping (Golub, Labouvie, and Johnson, 2000; Johnson & Schultz, 2005). Other research has not utilized longitudinal panel data for such analyses (Golub, Johnson, Labouvie, 2000; Johnson et al., 1997). This study utilized methods established by Shillington and Clapp, 2000 and included both backward and forward telescoping to examine errors in age onset self-reports.

Tourangeau (2003) summarizes that survey mismeasurement results from underlying cognitive processes of the respondent. His summary includes: lack of understanding questions, inability to remember relevant information, flawed judgment, trouble “mapping their internal judgments onto one of the response options, or edit their answers in a misleading way…” (Tourangeau, 2003, p. 5).

Tourangeau and Yan (2007) recently published findings from a review of research from survey methodologists examining report errors on sensitive topics. Their findings point to evidence that misreporting on sensitive topics is a motivated process in which the reporter aims to reduce embarrassment to themselves in the presence of an interviewer or to avoid repercussions from third parties. This is related to another explanation given for forward telescoping: the editing of answers in a misleading way perhaps motivated by a social desirability bias. This points to youth who continue to report their age of onset as older at later waves of data collection. It is plausible that adolescents perceive that researchers will socially disapprove of illicit drug use and thereby alter their reports accordingly. As our results suggest as the interval between first reported use and survey increase, reports of use become more consistent or tend toward backward telescoping. This might represent a “correction” among respondents toward their actual age of first use. This is possibly a function of lower social consequences related with drug use (that is, use becomes more normative for older teens). The results of this study provide support for this view as those with the fewest years since onset tended to be forward telescopers across all substances. In other words, newer users generally give an older age of onset for their substance use.

Our findings are different than those found by Janssen, Chessa and Murre (2006) who found respondents tended to displace recent events backward in time while displacing more distant events forward in time. Their study examined the recall of events reported in the news. However, the saliency of such information is likely different than that of personal episodic

experiences concerning alcohol, tobacco and other drug use. There may be different cognitive mechanisms for information that is external to one's personal behaviors compared to that of personal experiences.

Strengths and Limitations

The present study has several strengths including a large and carefully constructed sample, panel design, and carefully collected data. The data are especially well suited to examine telescoping. As such, the present study was able to examine report stability among an ethnically diverse sample of youth for the three most common drugs of abuse for adolescents.

While the large, longitudinal data set was a strength of the present study, it was also a limitation in that the NLSY was not specifically designed to study issues around report stability. As noted in the introduction of the paper, there are potential cognitive predictors of recall instability that were not measured in the NLSY. Overall, the present study was unable to examine the motivations of respondents as they relate to their self-reports. Although our results clearly suggest that the time spanning first report of use and interview is associated (along with other variables) with telescoping it is uncertain whether this association is driven by memory error, motivations, or some combination of these and other factors. Future studies are needed to further examine the complexities of reporting behavior over time.

One great limitation with this study and those that have examined the stability of age of onset is the lack of a gold standard. This study looked at the stability of age of onset from a prior wave to the latter wave across multiple waves. It is not possible to establish which wave of data collection may have the accurate age of onset. The larger issue here is that the self-reports of this variable change across time, regardless of which two -year period we examine. Also, these changes in self-reported age of onset seem to have a pattern in reporting error. Those who are newest in their use (lowest number of years since onset) are forward telescopers. Yet, around five years from onset, the age of onset seems to become accurate again. Greater years from onset for each substance and each two-year comparison, reflects more backward telescoping. Future research would be needed that can use follow youth longitudinally from a young age with the use of self-reports and biomarkers for substance use. When a teen reports inconsistent use or age of onset at a latter wave, then it would be important to establish reasons for the changes.

Researchers and prevention professionals that use age of first use of a particular substance as a means of designing prevention programming or developing explanatory etiological models of adolescent drug use should proceed with caution and recognize such measures are not precise. This might be particularly true for those using Gateway Theory and other developmental models of substance use.

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Table 1

Descriptive and substance use data for NLSY adolescents age ten and older. N = 5549

Variable	N-Size	Percent
Male	2823	50.9
Ethnicity		
Hispanic	1222	22.0
Black	1951	35.2
Non-Hispanic, Non-Black	2376	42.8
Ever Use Cigarettes		
1994	633	24.6
1996	976	31.9
1998	1074	31.5
Ever Use Alcohol		
1994	826	33.6
1996	1176	37.7
1998	1255	36.7
Ever Use Marijuana		
1994	273	10.6
1996	572	18.9
1998	655	19.5
	Mean	**SD**
Chronological Age 1994	12.06	3.88
Total Number of Substances Reported		
1994	2.10	1.43
1996	2.53	2.07
1998	2.51	2.11
Age Onset		
Cigarettes 1994	12.34	2.71
Cigarettes 1996	13.00	2.79
Cigarettes 1998	13.26	3.47
Alcohol 1994	12.83	2.75
Alcohol 1996	13.14	2.88
Alcohol 1998	13.92	2.52
Marijuana 1994	14.31	2.37
Marijuana 1996	14.41	2.17
Marijuana 1998	14.39	2.02

Table 2

Analysis of variance results for cigarette age of onset by the mean number of years since reported age of onset of use.

	Mean Years Since Reported Onset	SD	Percent of those reporting use at both waves
Cigarette Use 1992–94			
Backward Telescoping	6.29***	1.77	18.3
Age Onset Matches	5.02	2.25	24.2
Forward Telescoping	3.35	1.99	57.5
Cigarette Use 1994–96			
Backward Telescoping	6.94***	2.22	17.3
Age Onset Matches	5.06	1.86	26.2
Forward Telescoping	3.70	1.98	56.5
Cigarette Use 1996–98			
Backward Telescoping	6.85***	1.97	19.8
Age Onset Matches	5.19	1.78	27.8
Forward Telescoping	3.58	1.81	52.4

ANOVA Results

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Table 3

Analysis of variance results for alcohol age of onset by the mean number of years since reported age of onset of use.

	Mean Years Since Reported Onset	SD	Percent of those reporting use at both waves
Alcohol Use 1992–94			
Backward Telescoping	6.72***	2.19	19.2
Age Onset Matches	4.36	1.64	20.2
Forward Telescoping	2.91	1.60	60.6
Alcohol Use 1994–96			
Backward Telescoping	6.79***	2.38	21.8
Age Onset Matches	5.19	2.06	25.4
Forward Telescoping	3.56	1.87	52.8
Alcohol Use 1996–98			
Backward Telescoping	6.96***	2.17	17.7
Age Onset Matches	4.96	1.77	22.2
Forward Telescoping	3.44	1.68	60.1

ANOVA Results

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Table 4

Analysis of variance results for marijuana age of onset by the mean number of years since reported age of onset of use.

	Mean Years Since Reported Onset	SD	Percent of those reporting use at both waves
Marijuana Use 1992–94			
Backward Telescoping	7.11***	2.09	22.5
Age Onset Matches	3.87	1.09	40.0
Forward Telescoping	3.73	1.91	37.5
Marijuana Use 1994–96			
Backward Telescoping	6.24***	2.38	21.8
Age Onset Matches	4.84	1.94	35.1
Forward Telescoping	3.39	1.66	43.1
Marijuana Use 1996–98			
Backward Telescoping	6.40***	1.89	22.4
Age Onset Matches	4.40	1.27	34.8
Forward Telescoping	3.31	1.56	42.8

ANOVA Results

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Table 5

Multiple Linear Regression Results Predicting Cigarette Use Telescoping from Demographics and Cigarette Use Variables.

	Variables Significant in Linear Regression	Standardized Beta	R^2 Model 1 Demographics	R^2 Model 2 Substance Use
Cigarette Use Telescoping 1992–1994			0.001	.287***
	# Years since Reported Cigarette Onset	−0.542**		
Cigarette Use Telescoping 1994–1996			.005	.252**
	Total Number of Drugs Ever Used	.114*		
	# Years since Reported Cigarette Onset	−.520***		
Cigarette Use Telescoping 1996–1998			.001	.362**
	African American	−.088*		
	# Years since Reported Cigarette Onset	−.609***		

Variables entered: 1st block Ethnicity Dummy Coded, Sex. 2nd Block Total Number of Drugs Used at year of report, Years since Reported Age of Onset for Cigarette Use at year of report, Frequency of Use, Recency of Use.

Non-significant variables not reported.

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Table 6

Multiple Linear Regression Results Predicting Alcohol Use Telescoping from Demographics and Alcohol Use Variables.

	Variables Significant in Linear Regression	Standardized Beta	R^2 Model 1 Demographics	R^2 Model 2 Substance Use
Alcohol Use Telescoping 1992–1994			0.029	.079 *
	# Years since Reported Alcohol Onset	−0.223 **		
Alcohol Use Telescoping 1994–1996			.002	.285 ***
	# Years since Reported Alcohol Onset	−.535 ***		
Alcohol Use Telescoping 1996–1998			.011	.413 ***
	Sex	−.096 *		
	# Years since Reported Alcohol Onset	−.657 ***		

Variables entered: 1st block Ethnicity Dummy Coded, Sex. 2nd Block Total Number of Drugs Used at year of report, Years since Reported Age of Onset for Alcohol Use at year of report, Frequency of Use, Recency of Use.

Non-significant variables not reported.

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Table 7

Multiple Linear Regression Results Predicting Marijuana Use Telescoping from Demographics and Marijuana Use Variables.

	Variables Significant in Linear Regression	Standardized Beta	R^2 Model 1 Demographics	R^2 Model 2 Substance Use
Marijuana Use Telescoping 1992–1994			.192	.664***
	Sex	−.288*		
	# Years since Reported Marijuana Onset	−.678***		
Marijuana Use Telescoping 1994–1996			.068	.307***
	# Years since Reported Marijuana Onset	−.493***		
Marijuana Use Telescoping 1996–1998			.007	.461***
	Sex	−.10*		
	# Years since Reported Marijuana Onset	−.703***		

Variables entered: 1st block Ethnicity Dummy Coded, Sex. 2nd Block Total Number of Drugs Used at year of report, Years since Reported Age of Onset for Marijuana Use at year of report, Frequency of Use, Recency of Use.

Non-significant variables not reported.

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$