Childhood Trauma Enhances the Association Between Age of Cigarette Smoking Initiation and College Drug Use Frequency

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Childhood Trauma Enhances the Association Between Age of Cigarette Smoking Initiation and College Drug Use Frequency
Tara Cossel, Alicia Klanecky, and Dennis E. McChargue

Introduction

Previous research has reported that across the nation 29% of college students engage in cigarette smoking while four out of five students who have reported smoking in the past 30 days have also binge drank alcohol or used an illicit substance. In turn, 79% of students who described using an illicit substance in the past month have engaged alcoholics as well; because the number of college students abusing substances continues to increase, the prevalence of both cigarette and illicit substance use denotes a major health concern.

Developed to explain the rate and onset of specific use patterns, the “gateway” hypothesis posits that individuals who use illicit drugs (cigarettes or alcohol) are more likely to progress to illicit drug use later in life. While current smoking status and the amount of cigarettes smoked per day have been predictive of the progression to illicit substances (i.e., marijuana, cocaine, crack, and heroin) across age strata, some inconsistencies exist maintaining cigarettes may not produce marijuana use. Further, research has reported that with earlier age of onset of illicit drug use, individuals are more likely to transition to illicit use; in the differentiation between alcohol or cigarettes as well as the progression to specific illicit drugs has not been fully assessed.

A distinct but not mutually exclusive body of literature has reported that individuals who experience trauma are two times more likely to have current alcohol dependence and eight times more likely to be drug dependent compared to those without trauma exposure. With the majority of studies suggesting substance use is associated with an attempt to alleviate symptoms of trauma, most research indicates trauma exposure precedes substance use. However, the onset pattern of substance use, particularly the “gateway” hypothesis, has yet to be explored in individuals with previous trauma exposure.

The current study sought to assess the “gateway” hypothesis by examining the relationship between age of first cigarette and subsequent use of illicit substances in college. Additionally, a second aim of the current study was to explore the “gateway” hypothesis in individuals with previous trauma exposure.

It was hypothesized that age of first cigarette would predict current use patterns of illicit substances among college students. Further, this hypothesis was explored in individuals who self-reported varying levels of early trauma exposure.

Methods

Participants
N = 160 (Female = 68%)
Age: M = 19.76 (SD = 2.23); Range: 18 – 37 (95%, 2.22)
Ethnicity: Caucasian = 138 (86.8%), African American = 8 (5.3%)
Hispanic = 4 (2.5%), Asian American = 5 (3.1%)

Measures
Early trauma exposure was measured utilizing the Early Trauma Inventory - Self Report - Short Form (ETISRF; Bremner, Vermetten, & Mazure, 2000) which includes 29-items incorporating 4 scales examining general traumas, physical punishment, emotional abuse, and sexual events before the age of 18. The questionnaire has assured good internal consistency (Cronbach’s alpha = .75) as well as predictive and convergent validity with other measures (i.e. CTQ – SF) in obtaining specific types of early trauma exposure (Hyman, Garcia, Kemp, Mazure, & Sinha, 2005).

Descriptions of the onset pattern of substance use were obtained with the Canadian Survey, a 78-item questionnaire measuring substance use, consequences of use, and other risky behaviors (i.e. gambling). Participants answered questions such as “How old were you when you had your first cigarette?” and “How often have you used any of the following drugs in the last 12 months?” with choices ranging from never to daily.

Procedure
The current study utilized Experimenter to recruit college students interested in participating in research to earn extra credit in various undergraduate psychology classes. After receiving informal consent from each participant, research assistants distributed a battery of questionnaires examining items such as substance use, risky behaviors, family characteristics, and affect. Each session took approximately 90 minutes.

Results

A series of separate hierarchical regression analyses were performed to assess the predictive value of age of first cigarette in college students’ current use of cannabis, cocaine, ecstasy, and other people’s prescriptions after controlling for age and gender.

Findings indicated that after accounting for age and gender in step one, each full model including age of first cigarette predicted current use of cannabis (ΔR² = .047, F(1, 51) = 5.416, p = .021), ecstasy (ΔR² = .146, F(1, 70) = 8.872, p = .001), and oxycontin (ΔR² = .112, F(1, 49) = 5.725, p = .020), and other prescriptions (ΔR² = .180, F(1, 49) = 6.534, p = .003) with the exception of oxycontin (p > .05). Further, age of first cigarette was a significant contributor to each model (See Table 1).

Additionally, a hierarchical regression analysis was implemented to test the interaction between age of first cigarette and level of trauma exposure after accounting for age and gender (See Table 2). Results indicated the full model significantly predicted total monthly drug use including age of first cigarette, total trauma score, and the interaction term as significant contributors to the model (R² = .434, F(5, 45) = 6.915, p < .001). Age of first cigarette predicted total drug use among individuals who reported higher levels of early trauma; however, this finding was not replicated in those reporting lower levels of early trauma (See Figure 1).

Discussion

Controlling for age and gender, age of first cigarette predicted college use patterns of cannabis, cocaine, ecstasy, and other people’s prescriptions. Specifically, those with earlier exposure to nicotine were more likely to use illicit drugs in college than individuals with late nicotine exposure. These results lend support to the “gateway” hypothesis that lead first use at an earlier age is predictive of the progression to illicit drug use later in life.

Interestingly, the significant interaction between trauma exposure and age of first cigarette indicated that the “gateway” hypothesis was supported in individuals with high levels of early trauma exposure such that age of first cigarette was predictive of total monthly drug use. In contrast, the “gateway” hypothesis detailed an onset pattern of substance use based on age of first cigarette was not descriptive for those reporting low levels of early trauma.

Gateway theories suggest that early exposure to certain drugs may “sensitize” the dopamine system and make other drugs disproportionately rewarding when individuals are exposed to such drugs at a later date. Nicotine is one such “gateway” drug. However, research to date has been inconsistent in whether early nicotine exposure produces a sensitizing effect to further drug use. Indeed, our data suggest that nicotine becomes a “gateway” drug only among a certain vulnerable population, particularly those who have experienced a traumatic event before the age of 18. We speculate that trauma alters the reward brain system that enhances nicotine’s sensitizing effects.

Limitations of the current study include a predominantly Caucasian sample as this may weaken generalizability to more diverse populations. In addition, the sample was relatively healthy. Further replication with a larger community sample size may be warranted.

References
Bremner, J. D., Vermetten, E., & Mazure, C. M. (2000). Development and preliminary psychometric properties of an instrument for the measurement of childhood trauma: The Early Trauma Inventory. Depressive and Anxiety, 12, 1 – 12.

Table 1

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<th>Variable</th>
<th>b</th>
<th>β</th>
<th>p</th>
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<td>-.06</td>
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<td>Cocaine</td>
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<td>Ecstasy</td>
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<td>Oxycontin*</td>
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<td>Other Prescription</td>
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Note: * = Full model not significant (p = .06)

Figure 1
Depiction of Interaction Based on High and Low Trauma Reports

Table 2

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Note: Cig x Trauma = Interaction between age of first cigarette and trauma exposure total

Also available at: http://works.bepress.com/tarakc/6 (as MS PowerPoint .ppt file)