Role transitions and substance use among Hispanic emerging adults: A longitudinal study using coarsened exact matching

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HIGHLIGHTS

- A novel matching method was used with longitudinal data among Hispanics.
- High school substance use behavior was included in this study.
- Transitions in romance and work were associated with substance use.
- Transitions occurring in consecutive years had similar influences on substance use.

ARTICLE INFO

ABSTRACT

Introduction: Emerging adulthood (ages 18 to 25) is characterized by changes in relationships, education, work, and viewpoints on life. The prevalence of substance use also peaks during this period. Among emerging adults, Hispanics have a unique substance use profile, and have been described as a priority population for substance use prevention. Cross-sectional studies among Hispanics have shown that specific role transitions (e.g., starting or ending romantic relationships) were associated with substance use. Negative affect from uncertainty/stress that accompanies role transitions in emerging adulthood may lead to substance use as a maladaptive coping mechanism. Longitudinal studies are needed to gain a more complete understanding of these associations.
Methods: Participants completed surveys for Project RED, a longitudinal study of substance use among Hispanics in Southern California. This study used Coarsened Exact Matching to overcome the methodological limitations of previous studies. Participants were matched on pretreatment variables including age, gender, substance use behavior in high school, and depressive symptoms. Past-month cigarette use, binge drinking, marijuana use, and hard drug use were the outcomes of interest. After matching, each outcome was regressed on each individual role transition in year one of emerging adulthood with this process repeated in year two of emerging adulthood.
Results: Role transitions in romance and work were positively associated with multiple categories of substance use.
Conclusions: Prevention programs should teach emerging adults ways to cope with the stress from role transitions. Individual role transitions may be used to screen for subgroups of emerging adults at high risk for substance use.

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1. Introduction

Emerging adulthood (ages 18 to 25) is characterized by changes in relationships, education, work, and viewpoints on life (Arnett, 2011). The prevalence of substance use also peaks during this developmental stage (Substance Abuse and Mental Health Services Administration, 2013). Circumstances unique to emerging adulthood may play a prominent part in substance use (Sussman & Arnett, 2014). Arnett (2005)

hypothesized, "substance use in emerging adulthood will rise after specific instability events, i.e., in the weeks following a transition in residence, love, school, or work." Negative affect from uncertainty/stress that accompanies role transitions in emerging adulthood may lead to substance use as a maladaptive coping mechanism (Khantzian, 1997; Sinha, 2008).

Substance use varies by racial/ethnic group, (Substance Abuse and Mental Health Services Administration, 2013) with Hispanic emerging adults described as a priority population for substance use prevention (Stone, Becker, Huber, & Catalano, 2012). Hispanics are unique as their obligations grow toward scholastics and work, as well as toward their immediate and extended families in emerging adulthood (Arnett,

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2003). Cross-sectional studies have shown that specific role transitions (e.g., starting or ending romantic relationships) were associated with tobacco use (Allem, Soto, Baezconde-Garbanati, & Unger, 2013; Allem, Forster, Neiberger, & Unger, 2015), marijuana use and binge drinking (Allem, Lisha, Soto, Baezconde-Garbanati, & Unger, 2013), as well as hard drug (e.g., cocaine, methamphetamines, ecstasy, hallucinogens, or inhalants) use among Hispanic emerging adults (Allem, Soto, Baezconde-Garbanati, & Unger, 2015). These cross-sectional studies are a part of the growing literature on role transitions and substance use among emerging adults (Fleming, White, Oesterle, Haggerty, & Catalano, 2010; Staff et al., 2010; Huh, Huang, Liao, Pentz, & Chou, 2013; Cohen, Kasen, Chen, Hartmak, & Gordon, 2003). However, to gain a more complete understanding of these associations, longitudinal studies are needed that include measures of substance use behaviors in high school.

This study applied Coarsened Exact Matching (CEM) to longitudinal data from Hispanic emerging adults. CEM helped overcome the methodological limitations of prior research (e.g., results sensitive to model specification), and longitudinal data allowed for measures of substance use behaviors in high school to be included in analyses to eliminate the alternative hypothesis that those who use substances in high school are more likely to experience (or not experience) certain transitions in emerging adulthood. This study focused on the transitions that have been hypothesized to be associated with substance use e.g., transitions in residence, love, school, and work (Arnett, 2005). Findings have the potential to inform intervention and prevention programs for Hispanic emerging adults. Programs may need to teach emerging adults positive ways to cope with the stress from role transitions. Individual role transitions may be useful in screening for subgroups of emerging adults at high risk for substance use in the future.

2. Methods

Participants completed surveys for Project RED, a longitudinal study of acculturation and substance use among Hispanics in Southern California (Unger, Ritt-Olson, Wagner, Soto, & Baezconde-Garbanati, 2009). Originally, participants joined the study as adolescents, while attending one of seven high schools in the Los Angeles area. Schools were invited to participate if 70% or more of their student body comprised Hispanics, as indicated by data from the California Board of Education. The present study used data from 11th grade, the last year of high school when data were gathered (average age was 16, 44% were male), as well as the time when substance use becomes prominent among adolescents (Kessler et al., 2005). For the high school survey, data collectors distributed surveys to all students who had provided parental consent and student assent. The university's Institutional Review Board approved all procedures.

Participants from the original high school cohort, who self-identified as Hispanic, were contacted to participate in the survey in emerging adulthood. Research assistants sent letters to participants' last known addresses, and invited them to call a toll-free phone number or visit a website to participate in the study. All emerging adults provided verbal consent over the phone, or read the consent script online, and clicked a button to indicate consent, and participated in the survey. If participants could not be contacted with the information they had provided in high school, staff searched for them online using social networking sites, and publicly available search engines. There were 2151 Hispanic 11th graders in project RED of whom 1416 (66%) filled out surveys in year one of emerging adulthood in the present study. In year two 1406 participants completed surveys. Data gathered from 2011 to 2013 served as year one in emerging adulthood (average was age 22, 41% were male), and data gathered from 2013 to 2014 served as year two in emerging adulthood (average age was 23, 41% were male) in the present study. In emerging adulthood, each participant was invited to participate in the survey in a 12-month time span from when they were previously surveyed. Those lost to follow-up from high school to emerging

adulthood were more likely to be male, report binge drinking, marijuana use, and hard drug use in high school (p < .05), but did not differ on age or smoking status in high school.

2.1. Measures

Data collected from 11th grade were used to create measures of substance use that occurred prior to emerging adulthood. Past-month cigarette use, binge drinking (five or more drinks of alcohol in a row, within a couple of hours), marijuana use, and hard drug use (e.g., cocaine, methamphetamines, ecstasy, hallucinogens, or inhalants) were measured. Each item was coded "Yes" = 1 and "No" = 0 where a 1 indicated any use of the substance in the past-month.

Role transitions were measured at each time point in emerging adulthood. Items were prefaced with "Has this happened to you in the last year?" and coded "Yes" = 1 or "No" = 0. The items were, "Started a romantic relationship," "Broke up with boyfriend or girlfriend," "Got a new job," and "Started college or new school or classes." Transition in residence was measured by the question "How often have you moved in the last 12 months?" Responses were coded 1 if the participant moved, or 0 if the participant did not move in the past 12 months.

Negative affect could also confound the relationship between role transitions and substance use. The Boston short-form CES-D (developed by Kohout et al. (1993) and validated among Hispanics by Grzywacz and colleagues (2006)), was used to measure depressive symptoms in emerging adulthood. This measure contains 10 items from the CES-D (Radloff, 1977), assessing specific depressive symptoms. Response options were "Less than 1 day or never" coded as 1, "1–2 days" coded as 2, "3–4 days" coded as 3, and "5–7 days" coded as 4. For each of the ten items, participants who reported either a 0 or 1 were then recoded to 0 and those who reported a 2, 3 or 4, were recoded to 1 to approximate the yes/no response sequence described by Kohout and colleagues (1993). Responses to the ten items were then summed (Cronbach's alpha = .84). Age and gender were also measured.

Data from each year in emerging adulthood were used to create measures of substance use, which served as the outcomes of interest. Past-month cigarette use, binge drinking (e.g., five or more drinks of alcohol in a row, that is, within a couple of hours), marijuana use, and hard drug use (e.g., cocaine, methamphetamines, ecstasy, hallucinogens, or inhalants) were the outcomes of interest. Each outcome was coded "Yes" = 1 and "No" = 0 where a 1 indicated any use of the substance in the past month.

2.2. Analytical approach

A common approach to improving inference in observational research is to employ matching methods (Stuart, 2010; Ho, Imai, King, & Stuart, 2007). Matching is a nonparametric, non-model based approach that, when used appropriately, can make parametric models work better rather than substitute for them (Imai, King, & Stuart, 2008). The overall idea of matching is to uncover the potential experiment within observational data. In other words, the matching process systematically removes observations in order to establish treatment and control groups akin to those found in an experiment. If each treated unit (primary explanatory variable coded 1) exactly matches a control unit (primary explanatory variable coded 0) with respect to the control variables, then the treated and control groups are identical, the control variables are no longer confounders, and the functional form of the model is not a concern. If treated and control groups are better balanced (e.g., covariates are similar across treated and control units) due to a reduction in data, model dependence is reduced. If reducing data is a function of the primary explanatory variable and the control variables, but not the outcome variable of interest, no bias is introduced. In other words, reducing data as a result of matching does not bias inferences because the procedure does not predetermine the outcome of interest (King, Keohane, & Verba, 1994).