



# Ecodevelopmental predictors of early initiation of alcohol, tobacco, and drug use among Hispanic adolescents<sup>☆</sup>

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## ABSTRACT

The purpose of this cross-sectional study was to test the transactional relationships of risk and protective factors that influence initiation of alcohol, tobacco, and drug use among Hispanic youth. Ecodevelopmental theory was used to identify factors at multiple ecological levels with a focus on four school-level characteristics (i.e. school socioeconomic status, school climate, school acculturation, and school ethnic composition). A sample of 741 Hispanic adolescents ( $M$  age = 13.9,  $SD$  = .67) and their caregivers were recruited from 18 participating middle schools in Miami-Dade County, FL. Structural equation modeling was used to test the hypothesized codevelopmental model of early substance use, accounting for school clustering effects. Results provided strong support for the model ( $CFI$  = .95;  $RMSEA$  = .03). School SES was indirectly related to the likelihood of starting substance use through perceived peer use norms ( $\beta$  = .03,  $p$  < .02). Similarly, school climate had an indirect effect on substance use initiation through family functioning and perceptions of peer use norms ( $\beta$  = -.03,  $p$  < .01). Neither school ethnic composition nor school acculturation had indirect effects on initiation of substance use. Results highlight the importance of the interplay of risk and protective factors at multiple ecological levels that impact early substance use initiation. Further, findings underscore the key role of school level characteristics on the initiation of substance use and present opportunities for intervention.

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## 1. Introduction

According to the most recent population estimates (U. S. Census Bureau, 2011), the Hispanic community is the largest ethnic minority group in the United States (U.S.), accounting for 16% of the total population, and it is projected to reach 30% by 2050. Further, 23% of youth under the age of 18 are of Hispanic origin (U.S. Census Bureau, 2013). Epidemiological studies suggest that Hispanic teens are at a high risk for early initiation of drinking, smoking, and drug use (Centers for Disease Control and Prevention, 2010; Johnston, O'Malley, Bachman, & Schulenberg, 2014). For example, Hispanic and African-American teens are more likely to get drunk and try marijuana before age 13 (Centers for Disease Control and Prevention, 2010) compared to non-Hispanic White teens. Similarly, the prevalence of smoking a whole cigarette before age 13 among Hispanic teens (11.8%) is higher than the prevalence among

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non-Hispanic White (9.8%) and African American (8.8%) youth (Centers for Disease Control and Prevention, 2014). By the 8th grade, Hispanic teens report higher prevalence rates of binge drinking (8%) in the past two weeks compared to non-Hispanic White (4%) and African-American (5%) youth, as well as higher rates of overall drug use than teens of other racial/ethnic backgrounds (Johnston et al., 2014).

The high rate of early initiation of substance use among Hispanic teens represents a major public health concern given the immediate and long-term negative repercussions associated with it. For example, early substance use initiation (before age 15) has been identified as a strong risk factor for developing substance use dependence later in life (Grant & Dawson, 1998; Hingson, Heeren, & Winter, 2006). In addition, substance use is a risk factor for a host of negative consequences including academic problems, interpersonal problems with teachers, friends, and family (e.g. Windle et al., 2008). Specific to Hispanics, smoking is associated with heart disease and stroke, the two major causes of death among this population (Centers for Disease Control and Prevention, 2014). Thus, initiation of substance use among Hispanic youth merits targeted attention as it may affect the successful transition of Hispanic adolescents to young adulthood and, over time, contribute to the ethnic/racial, socioeconomic and health disparities observed in the population at large. Identifying key risk and protective factors within the multiple levels of the developmental context of Hispanic adolescents may provide opportunities for effective prevention efforts. The increased developmental salience of the school context for early adolescents presents a critical target to examine the direct and indirect effects of school characteristics on initiation of substance use among early adolescent Hispanic youth.

Substance use initiation among Hispanic teens is multiply determined by the interplay of risk and protective factors. The variety and complexity of these factors operate at different levels of the environment. For instance, some function at the level of the family or peers, while others operate at the school, community, or societal levels. To this end, ecodevelopmental theory offers opportunities to test models that integrate risk and protective factors to better understand the multiple determinants of risky behaviors among young adolescents (e.g. Pantin, Schwartz, Sullivan, Prado, & Szapocznik, 2004), including substance use initiation. For example, ecodevelopmental theory has been tested empirically by Prado et al. (2010) to examine HIV risk behaviors among Hispanic youth. This study found that the parent–adolescent acculturation gap and the parent's U.S. acculturation orientation had indirect effects on these behaviors through risk and protective factors related to family functioning, academic functioning, and peers. For Hispanic families in particular, acculturation has an impact on family processes and youth outcomes. Through the school context, adolescents are more greatly immersed in the U.S. culture compared to parents and therefore teens may become more acculturated. This may create conflict due to differing cultural values between youth and parents, which can lead to substance use (Martinez, 2006; Schwartz, Pantin, Sullivan, Prado, & Szapocznik, 2006). Further, parents may also rely on their more acculturated adolescent as a source of information, cultural navigation and language interpretation which can invert the parental hierarchy and create a loss of parental authority (Unger, Ritt-Olson, Wagner, Soto, & Baezconde-Garbanati, 2009) leading to weakened protective factors and increased risk factors.

Ecodevelopmental theory (Pantin et al., 2004; Prado et al., 2010; Schwartz, Coatsworth, Pantin, & Szapocznik, 2003; Szapocznik & Coatsworth, 1999) integrates three key elements (social–ecological theory, social interactions, and developmental theory) to help understand the factors associated with adolescent risk and protection. Social–ecological theory (Bronfenbrenner, 1979) proposes that the multiple factors influencing adolescent development can be organized within four social contexts: macrosystem, exosystem, mesosystem, and microsystem. In applying this framework, ecodevelopmental theory posits that the social interactions within and across the contexts of the social ecology result in the observed risk and protective effects, and integrate a developmental perspective by highlighting the changing and evolving nature of both the adolescent and the social context throughout the lifespan. That is, both the adolescent and the social context are evolving throughout the life span and have a reciprocal effect on each other.

The present cross-sectional study used secondary data analysis to examine two (social–ecological theory and social interactions) of the three components of ecodevelopmental theory; the third was not examined because testing longitudinal relationships among constructs was beyond the scope of this manuscript. Specifically, it tested the risk and protective factors at each of the four social–ecological levels, described below in detail, as well as the interplay of social interactions within and across levels, with a focus on school-level factors. This cross-sectional study extends the literature by using the ecodevelopmental framework to test the 'trickle down' effects of key risk and protective factors that impact substance use initiation (i.e., smoking, drinking, and drug use) in early adolescence among Hispanic youth with special attention on characteristics of the school environment. Understanding these relationships may highlight opportunities for intervention that can be implemented at different levels, including the school context, to more effectively prevent the initiation of substance use among this at risk population.

Fig. 1 depicts the relationships that were tested within and across multiple levels of the social ecology. The macrosystem includes the overarching philosophical and societal values that characterize a particular culture or community (Schwartz et al., 2003), such as the community created by a school setting. For immigrant Hispanic families, factors such as immigration policies and type of reception upon coming to the U.S. are salient macrosystemic characteristics with cascading effects that influence where parents establish a home and, as a result, the schools that their children can attend. Given that attending school in the U.S. is compulsory, the school context plays a significant role in the lives of children of immigrants, particularly because school systems assume critical responsibilities in the education and development of youth, as well as the integration of individuals into the fabric of society. Consequently, studying the direct and indirect effects of school characteristics on early initiation of substance use is necessary. The present study examined four characteristics of the school macrosystem: school socioeconomic status (SES), school climate, school ethnic composition, and school acculturation. While these four school factors do not fully encompass the school macrosystem, they may have important direct and indirect effects on the likelihood that Hispanic teens will start using substances in early adolescence.

School SES has been found to impact risky behaviors among adolescents including Hispanic youth. For example, the effects of school poverty include a higher level of disciplinary problems, chaotic learning environments characterized by less-qualified teachers/administrators, and lower academic achievement (Escarse, 2003) which are risk factors for substance use

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