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Promotive and Risk Factors Associated with
Adolescent Alcohol and Cigarette Initiation: A Longitudinal Analysis

A Dissertation submitted in partial satisfaction of the requirements for the degree of
Doctorate in Psychological Sciences by Gerald Martin Gutierrez Eisman

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2020

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Abstract

Promotive and risk factors associated with
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by Gerald Martin Gutierrez Eisman for the partial satisfaction of the requirements for
the degree of Doctorate in Psychological Sciences University of California,

Merced 2021

Dr. Jan Wallander, Chair

Adolescent substance initiation is associated with adverse health and may place youth on a negative life trajectory. Designing effective prevention programs may be the key to decreasing early adolescent substance initiation in the U.S. Alcohol and cigarette initiation are of particular concern because use of these substances is normative. The present study aimed to identify factors associated with adolescent alcohol and cigarette initiation by evaluating three conceptual models: a risk model (objective social status, subjective social status, and perceived discrimination), promotive model (family cohesion, parental monitoring, parental nurturance, and peer support), and protective model (potential risk and promotive factors). Data were from 4,824 participants in the Healthy Passages study, a population-based prospective longitudinal survey of diverse U.S. adolescents in fifth, seventh, and tenth grade. Self- and parent-report items and scales were used to measure alcohol and cigarette initiation and hypothesized risk and promotive factors. A series of multinomial logistic regression tests were conducted for each conceptual model separately by racial/ethnic group, Black, Latinx, and White. All analysis controlled for child's age, gender, and parental cigarette and alcohol use, perceived peer alcohol and cigarette use. The promotive factors of family cohesion, parental nurturance, parental monitoring, and peer support were associated with decreased initiation of both alcohol and cigarette use, which varied slightly by racial/ethnic group. Notably, parental nurturance and family cohesion were consistently positively associated with decreased alcohol and cigarette initiation among all racial/ethnic groups. Among the variables examined, there were no significant risk factors detected in this 5-year prospective longitudinal study and thus there was no support for a protective model. Promotive factors, especially family cohesion and parental nurturance, remained consistent in being associated with reduced alcohol and cigarette initiation. Thus, prevention programs aimed at early adolescence may be most fruitful by focusing on enhancing these promotive factors.

Introduction

Adolescent substance use is a significant public health concern because it increases the odds of many social and health problems (Shillington et al., 2012; Unger et al., 2007). Despite decreases in prevalence rates over the past several decades, the Youth Risk Behavior Survey (YRBS) reported that the prevalence of alcohol and cigarette smoking among high school students has remained stable since 2015. The national prevalence of cigarette smoking and alcohol use varies by racial/ethnic groups. Specifically, cigarette smoking among youth in 10th grade was 8%. However, White youth reported the highest prevalence compared with Black and Latinx youth (11% vs. 4% and 7%, respectively). The national prevalence of alcohol use among youth in 10th grade was 30% (CDC, 2017).

Beyond these prevalence differences, several health disparities exist among racial/ethnic groups. For instance, Black and Latinx adolescents are at increased risk for early substance initiation as they are more likely to engage in substance use by the age of 13 (CDC, 2017). Early initiation may place adolescents on negative trajectories that contribute to health disparities in adults. In comparison to White youth, minority youth experience higher rates of alcohol related problems at lower levels of alcohol consumption (Gilbert & Zemore et al., 2016). These findings may point to the importance of identifying both common and unique risk and promotive factors associated with substance use in youth from different racial/ethnic groups.

Improving effectiveness of prevention efforts may be the key to decreasing adolescent substance use in the US. For this reason, it is imperative to disentangle the complex relationships among promotive, protective, and risk factors associated with adolescent substance use (McPherson et al., 2013). Ecological systems theory (Bronfenbrenner, 1994) illuminates how individuals are influenced by several layers of factors, including proximal and distal influencers. Accordingly, it is crucial to analyze factors associated with adolescent substance use that may be present in several domains of adolescents' lives, including parents and peers. Parents and peers are the most influential socialization agents throughout adolescence and, thus, having their support may promote a decrease in the initiation of alcohol and cigarette. Moreover, these proximal factors (i.e., positive associated with parents and peers) may protect against distal risk factors, such as socioeconomic status and perceived discrimination.

Risk Factors

Over the past several decades there has been a plethora of studies on adolescent substance use. As a result, several risk factors have been firmly established, such as substance use by peers and parents (Patrick & Schulenberg, 2014; Schinke et al., 2016; Stone et al., 2012; Vega et al., 1993). However, there is still a debate over the role of socioeconomic status (SES) because studies on US adolescents have reported mixed results. Some find a positive relationship (Griesler & Kandel, 1998; Humensky, 2010; Small et al., 2014); for instance, in one study having larger amounts of allowance, typical of higher SES, was associated with higher prevalence of adolescent cigarette smoking (Unger et al., 2007). On the other hand, some have reported a negative association between SES and adolescent substance use (Bachman et al., 2010; Finkelstein et al., 2006; Lowry et al., 1996; Soteriades et al., 2003; White et al., 2004). Among the reasons cited is that adolescents in low SES may be exposed to social attitudes in which health

is not valued and, as a result, may not worry about their future health, contributing to increased substance use (Soteriades et al., 2003).

SES can be conceptualized in several ways. Whereas objective social status (OSS) captures current resources, such as parent education or family income, subjective social status (SSS) captures an individual's perception about their position in relation to others in the social hierarchy. Although it may be that SSS is associated with OSS, it is also plausible that SSS has unique influences on health (Braveman et al., 2005; Scarinci et al., 2002; Wen, 2017), including substance use. It has also been argued that SSS may be a better predictor of health because an individual's perceived social position may be more influential rather than objective status (Singh-Manoux et al., 2005).

Therefore, it may be informative to investigate if differing aspects of SES have varying relationships with adolescent alcohol and cigarette use (Wen, 2017). A review on SES and adolescent health behaviors found financial resources to be the most salient determinant for cigarette use but not for alcohol use (Hansen & Chen, 2007b). Different OSS indicators, such as parental education and income, may not be measuring the exact same construct and should not be used interchangeably (Braveman et al., 2005; Scarinci et al., 2002). Moreover, previous research has found that some OSS measures are not appropriate for diverse adolescents (Epperson et al., 2014).

Different social status indicators may represent differing effects on diverse adolescents. To further illustrate, one study found that although some determinants of cigarette use were similar among White, Black, and Latinx youth, other determinants had weaker or reverse effects among Black and Latinx compared to white youth (Pampel, 2008). For example, parental education was associated with increased cigarette use among Latinx youth and decreased cigarette use among White youth but had little association among Black youth. This reverse gradient has been documented for several health aspects and related behaviors, including overweight status, self-rated health, and risk behaviors (Kuhle & Veugelers, 2008; Vincens, Emmelin, & Stafström, 2018; Epperson, Gonzales, & Song, under review). Examining if racial/ethnic differences exist in these relationships will be informative for identifying in a more refined way which youth are at increased risk and pointing to different strategies for prevention in different groups.

Whereas most studies on the role of SES in adolescent alcohol and cigarette use have mostly considered objective aspects of SES, such as parental education and income, little is known about the role of SSS for health risk behaviors in youth. It may be that both lower objective (parent education) and subjective (perceived social status) SES places youth at increased risk of engaging in substance use (Finkelstein et al., 2006). In a meta-analysis, SSS predicted unique variance in health behaviors after adjusting for OSS (Zell & Strickhouser, 2018). Similarly, one study has suggested that SSS may be more important to adolescent health than OSS (Huynh & Chiang, 2018). Identifying the association of SSS and adolescent substance use may illuminate pathways that set adolescents on lifelong negative health trajectories, and therefore, in need of more services to promote wellness.

Perceived racial/ethnic discrimination is the perception of being treated differently due to membership of a specific racial or ethnic group. Exposure to discrimination may be particularly harmful during adolescence because this is a sensitive developmental period where several social, physical, and cognitive changes occur, including the

development of coping skills and sense of self (Benner et al. 2018; Flores et al., 2010). As a result, experiencing discrimination during adolescence is associated with several poor health outcomes, including substance use (Flores et al., 2010; Martin et al., 2019; Umana-Taylor & Updegraff, 2007; Williams, Neighbors, & Jackson, 2003). As proposed by the self-medication hypothesis, adolescents may experiment with substance use to cope with the stress associated with exposure to perceived racial/ethnic discrimination (Flores et al., 2010; Unger et al., 2016). Consequently, perceiving discrimination early in life may influence health trajectories through continued substance use and possible dependence. Engagement in health risk behaviors, including substance use, may identify mechanisms by which discrimination increases disease risk over time.

Perceived discrimination is a psychological stressor (Williams & Mohamad, 2009) and, therefore, influenced by resources to cope with such stressor. As a result, it is important to identify promotive factors that are also present in the environment. Social capital, derived from social resources, may provide coping mechanisms that assist in dealing with stress, such as perceived discrimination and low SES. Social resources may have positive influences on substance use as well as protect against engagement in health risk behaviors, such as substance use, when exposed to increased risk.

Promotive factors

As with risk factors, promotive factors may vary among youth. As a result, it is imperative that research not only identify factors that increase risk for negative outcomes but also promotive factors which may potentially increase adolescents' resiliency and wellness. Ecological systems theory identifies family and friends to be some of the most influential socialization agents and, as a result, may identify a potential source of resiliency. For instance, social relationships may provide social support and coping resources that may be protective by helping youth cope with stress that is associated with risk exposure. Thus, it may prove fruitful to investigate the role of social resources in adolescent's alcohol and cigarette initiation.

In investigating social resources, it is important to note that human capital, which emphasizes physical presence of individuals, does not equate to social capital because social capital emphasizes strong relationship (Coleman, 1988). Furthermore, social capital includes social mechanisms that are created through bonds among individuals (Dufur et al., 2019). For youth this may include strong connections with parents and peers that provide resources for resilience. Therefore, it is imperative to identifying specific mechanisms through which social resources influences health behaviors (DeClarcq, 2014; McPherson et al., 2013), such as substance use.

Furthermore, social resources may be promotive in several instances. For example, previous cross-sectional studies find support for the protective effects of family social resources against substance use (Perez et al., 2018; Wen, 2017). Among family factors that have been examined, parental monitoring and positive parent-child relations have been associated with lower prevalence of adolescent substance use (McPherson et al., 2013). Hence, it is important to identify which aspect of social resources serve to protect youth against substance use, including family cohesion, parental involvement, parental nurturance, and peer support.

Methodological Issues

A limitation with most previous studies has been the use of cross-sectional approaches when studying risk factors associated with adolescent substance use

(McPherson et al., 2013; Soteriades, 2003; Tobler et al., 2013; Unger et al., 2013). Only a few studies have used longitudinal methods, but these studies have had other limitations. For instance, some use a composite variable comprised of several substances rather than identifying potentially unique and common influences on different substances, such as cigarettes and alcohol (McPherson et al., 2013). Other studies have focused on one specific population, such as Latinx youth (Basanez et al., 2013; Scarinci et al., 2002), providing less than a complete picture of how these influences compare across racial/ethnic groups. Importantly, such research may point to specific prevention strategies that should be aimed at certain groups of adolescents (McPherson et al., 2013; Zhen-Duan & Taylor, 2014).

Most previous studies of this type rely on national cross-sectional data, such as YRBS and Monitoring the Future, which focus on adolescents from middle school and high school. As a result, less is known about pre-adolescence. Because health behaviors establish early in life (Schuster et al., 2012) it is imperative to analyze risk factors before youth begin to engage in health risk behaviors. Identifying if mechanisms that prevent and contribute to racial/ethnic health disparities are present during pre-adolescence can be impactful as prevention efforts can target at risk youth early and maximize their outcome.

Research Aims

This study aims to identify and compare potential risk and promotive factors associated with alcohol and cigarette initiation among Black, Latinx, and White adolescents. Specifically, this study will assess if social resources promote a decrease in cigarette and alcohol initiation among adolescents. Furthermore, this study will aim to identify if SES and perceived racial/ethnic discrimination are associated with alcohol and cigarette initiation among adolescents. This study will advance work on adolescent substance use by (a) implementing a 5-year prospective longitudinal approach, (b) investigating the interplay among potential promotive and risk factors associated with cigarette and alcohol use, and (c) focusing on the early stages of adolescence, from pre-adolescence through mid-adolescence, starting before most adolescents have begun engaging in substance use. As depicted in the hypothesized models (Figure 1), this study will address the following questions:

1. Do social resources in the family and peer domains promote decreased potential of alcohol and cigarette initiation?
2. Are objective social status (OSS), subjective social status (SSS), and perceived racial/ethnic discrimination risk factors for adolescent alcohol and cigarette initiation?
3. Do promotive factors moderate risk exposure associated with alcohol and cigarette initiation?
4. Do these associations differ among Black, Latinx, and White youth?

Methods

We used data from Healthy Passages™, a multisite cohort study of health and health behaviors in youth. Longitudinal data were collected between 2004 and 2010 at three time points (each requiring 2 years of data collection) when youth were in 5th, 7th, and 10th grade (Schuster et al., 2012; Windle et al., 2004). This study was approved by Institutional Review Boards at each site and the Center for Disease Control and Prevention.

Participants

Participants were recruited from public schools with ≥ 25 students enrolled in regular classrooms in schools in and around metropolitan areas of Birmingham, Alabama, Houston, Texas, and Los Angeles County, California. A two-stage probability sampling procedure was used to select schools and students with school selection probabilities designed to attain similar proportions of Black, Latinx, and non-Latinx White participants. Design and nonresponse weights were implemented to ensure that results represented the population of students in the public schools of each area.

Study information was disseminated to the parents of all 5th grade students in the 118 sampled schools. A total of 6,663 parents (or caregivers) returned permissions to be contacted, of whom 5,147 completed parent and child interviews because not all eligible families could be fully pursued in a limited time frame. Exclusion criteria for the study included not attending a regular academic classroom or not being able to complete interviews in English or Spanish. The 6% of adolescents who did not identify as Black, Latinx, and White were not included in the current analysis, which resulted in 4,824 in the analysis sample with the unweighted distributions of 37% Black, 37% Latinx, and 26% White, and 51% females. Additional demographics are provided in Table 1. The retention rate after two years, at the 7th grade assessment (Time 2), was 93%, and 89% after another three years at the 10th grade assessment (Time 3), resulting in 4,293 in the longitudinal sample, which had a distribution that was very similar to that in 5th grade across race/ethnicity and gender. The current study focuses on initiation and, thus, only youth who had not initiated alcohol or cigarette at time 1 or time 2 were included $n = 3,242$ and $3,568$, respectively.

Procedures

Two trained interviewers completed the full Healthy Passages assessment protocol with the parent and adolescent either at their home or a research site. Assessments were administered with parent and adolescent individually in a private space using a computer-assisted personal interview method. The same procedures were repeated at each assessment. A Spanish version could be chosen by either at each assessment, except for adolescents at 10th grade (applied partly or fully at 5th grade: 8% of adolescents, 23% of parents; 7th grade: 4% of adolescents, 30% of parents; 10th grade: 30% of parents).

Measures

Promotive factors were measured at 5th grade in the family and peers.

Family cohesion was assessed with the 10 item Family Cohesion subscale from the Family Adaptability and Cohesion Evaluation Scales–III (Olson, 1985). Sample items include, “Family members feel very close to each other” and “Family members consult other family members on their decisions”. Parents provided answers on 5-point scale (1 = almost never, 5 = almost always), such that possible scores ranged from 10-50.

Parental nurturance was measured with adolescent responses to the Maternal and Paternal subscales from the Barnes Parental Nurturance Scale, with 7 items and 6 items, respectively (Barnes & Windle, 1987). To adjust for single-parent families, only one of the parent's score, maternal or paternal, was used to represent this concept. In the case that both parents were indicated as supportive, the parent with the highest score was chosen to represent parental nurturance. Adolescents provided answers on a 4-point scale (1 = almost never, 4 = almost always), such that possible scores ranged from 7-28.

Parent monitoring was measured with 5 items commonly used to assess these constructs which were adapted for this study (Epperson et al., 2019; Jacobson & Crockett, 2000). The items asked adolescents questions such as "How often are you home alone without an adult or babysitter?" and "How many of your friends do {your parents} know?". Youth provided answers on a 4-point scale (1 = do not know much, 4 = know a lot), such that possible scores ranged from 5 to 20. However, due to low prevalence the variable was truncated to range from 5-16.

Peer support was assessed with the Loneliness Scale (Asher, Hymel, & Renshaw, 1984). Four of the five items were reverse coded such that higher scores indicating more peer support. Youth were asked questions such as, "You don't have anyone to play with at school" and "You have nobody to talk to at school. Youth provided answers on a 5-point scale (1 = always true about you, 5 = not true at all about you), such that scores ranged from 5 to 25. However, due to low prevalence of high scores the variable was truncated to range from 5-16.

Risk factors were measured at 5th grade based on parent or adolescent reports.

Objective social status was based on parent/s reported highest education completed. Highest level of education completed was reported from among 7 choices, which were then collapsed to 4 categories (less than high school, high school graduate, some college or two-year degree, and four-year college degree or more). Subjective social status was measured with the MacArthur Scale of Subjective Social Status (Adler et al., 2000), which asked the parent to indicate their social standing in their community on a 10-rung ladder. The top of the ladder indicated the highest standing while the bottom indicated the lowest standing. Responses were dichotomized into low vs. high (1-5 and 6-10, respectively) due to low prevalence of scores at lower and higher extremes of scale.

Perceived racial/ethnic discrimination was measured by asking the adolescent two commonly used questions (Whitbeck et al., 2001): "Have you been treated badly because of your race or ethnicity?" and "Have you been treated badly because of the color of your skin?". Adolescents were given 1 point for each question they answered yes to, yielding a range from 0-2.

Race/ethnicity was based on parents' response (supplemented by child's response as needed) at Time 1 when asked first whether the child belonged to any of several Latinx groups, followed by seven race categories. Using Census-style classification, the adolescent was classified as Latinx if indicated, regardless of race category. Adolescents not categorized as Latinx were classified as Black, White, or other (including multi-racial adolescents), but the latter category was not included in the analysis sample.

Alcohol initiation was measured at 10th grade with a question commonly employed for this purpose (CDC, 2004; Sieving et al., 2001). To assess initiation of alcohol use, the adolescent was asked, "Since your last interview, have you had more than a few sips of beer, wine, sweetened alcohol drinks, or liquor?". Adolescents were coded "Yes" (1) if they answered yes to this question at 10th grade and no to this question at 5th and 7th grade assessments.

Cigarette initiation was measured at 10th grade by asking the adolescents, "Have you ever tried cigarette smoking, even one or two puffs?" Response options were no (0), or yes (1). At the time these data were collected, e-cigarettes were not commonly available. Adolescents were coded "Yes" (1) if they answered yes to this question at 10th grade and no to this question at 5th and 7th grade assessments. Control variables were all measured at 5th grade: Child's age, gender, and parental cigarette use, parental alcohol use based on parental report, and perceived peer alcohol and cigarette use based on adolescent report.

Statistical Analyses

All analyses were conducted through IBM SPSS Statistics 27 Complex Sampling module to account for effects of study design, including weighted data to adjust for nonresponse, sampling of schools with unequal probability to improve the ability to estimate racial/ethnic disparities, clustering within schools, and stratification by site. Then, a series of multinomial logistic regression tests were conducted for each conceptual model separately by racial/ethnic group (see Fig. 1). Model 1 was estimated with the promotive factors at 5th grade, including family cohesion, parental monitoring, parental nurturance, and perceived peer support, plus one dependent variable at 10th grade, either alcohol or cigarette initiation in separate analyses. Model 2, each model was estimated with the risk factors at 5th grade, including OSS, SSS, and perceived discrimination, plus one dependent variable at 10th grade, either alcohol or cigarette initiation. Finally, model 3 tested for moderation and thus included any risk factors, promotive factors, and interactions between risk and promotive factors that were identified as significant in models 1 and 2, thereby testing for potential protective effects. All models were adjusted for the six control variables (child's age, gender, parental cigarette use, parental alcohol use, and perceived peer alcohol and cigarette use). Because logistic regression with scale variables conducted in the complex sampling framework produces a separate regression coefficient for each scale value, only overall significance of predictor variables are reported in results and tables.

Results

Descriptive Information

Descriptive statistics are reported in Table 1 by race/ethnic group.

Alcohol Initiation Models

Detailed results for hypothesized promotive and risk factors associated with alcohol initiation are reported in Table 2 separately for each racial/ethnic groups. Race/ethnicity was not associated with alcohol initiation (see Table 1). Results from testing the promotive models (model 1) show that peer support at 5th grade was associated with lower likelihood of alcohol initiation at 10th grade among Black youth only. In addition, family cohesion and parental nurturance in 5th grade also reduced the likelihood of initiation in 10th grade among Black, Latinx, and White. No risk factor in 5th grade was associated with alcohol initiation at 10th grade (model 2). Accordingly, no interactions, potentially indicating protective effects, were tested in model 3. Model 3, combining significant promotive and risk variables from models 1 and 2, yielded similar results as the separately analyzed promotive and risk models. However, in this more complex model, parental monitoring among Black youth and peer support among White youth were also associated with lower likelihood of alcohol initiation.

Cigarette Initiation Models

Detailed results of cigarette initiation models are reported in Table 3. Race/ethnicity was not associated with cigarette initiation (see Table 1). Results from testing the promotive model (model 1) identify that family cohesion and parental nurturance at 5th grade were associated with lower cigarette initiation at 10th grade among Black, Latinx, and White adolescents. Additionally, perceived peer support at 5th grade was associated with lower likelihood of cigarette initiation at 10th grade among White youth only. No risk factor in 5th grade was associated with cigarette initiation at 10th grade (model 2). Accordingly, no interactions, between risk and protective factors, potentially indicating protective effects, were tested in model 3. Because model 3 yielded nearly identical results as the promotive and risk models, described above, results are not elaborated in text but details are reported in Table 3.

Discussion

Results indicate that generally promotive factors, especially family cohesion and parental nurturance, remained consistent across alcohol and cigarette initiation and varied only slightly by racial/ethnic group. Moreover, among the variables examined, there were no significant risk factors for initiation detected in this 5-year prospective longitudinal study. These results extend previous work by directly comparing models separately for Black, Latinx, and White adolescents, and isolating any distinct effects. Moreover, the longitudinal design identifies potential promotive factors present in 5th grade that are associated with reduced substance initiation at 10th grade. Study results suggest that it should be beneficial to tailor prevention programs that focus on strengthening promotive factors early in development before unhealthy behaviors, such as alcohol and cigarette initiation, have begun.

This study aims to expand the literature on the promotive effects of social resources, in the family and among peers, on youth substance initiation. Culturally competent coping models, which have tended to focus on discrimination among Black groups, find social support to be protective against problem behaviors (Bogart et al., 2013; DeClarcq, 2014; Wen, 2017). Here we extended this literature to substance initiation. Also, we find that a focus on social resources apply also to Latinx youth as study results found similar patterns of promotive factors as for Black (and White) youth. Although further research replicating these finding is needed, it may be that with regard to substance initiation, similar factors are important for Latinx youth as for other racial/ethnic groups.

Furthermore, study results may help refine programs attempting to establish or improve promotive factors (Bogart et al., 2013; Duke et al., 2009; DeClarcq, 2014; McPherson et al., 2013; Wen, 2017) by identifying those social resources that are associated with reduced risk of initiation. We found support for family cohesion and parental nurturance as important factors across racial/ethnic groups and both cigarette and alcohol initiation. Support was also evident for parental monitoring and peer support, but these appeared less universally promotive. This may suggest that prevention programs focused on these general parental and family factors may be effective across racial/ethnic groups. Increasing these factors in pre- and early adolescence may help promote healthy development by decreasing likelihood that adolescent will initiate alcohol or cigarette use. In fact, in one intervention, which focused on promoting prosocial behaviors among 6-year-old children, children had a lower probability of onset of tobacco use from age 10 to 13 years (VanLier, 2009).

The results of this study are consistent with previous reports that prevention efforts should target youth early in adolescence (Hopfer et al., 2010; van Lier et al., 2009; Werch et al. 2005). In fact, it may be most fruitful to target youth during pre-adolescence, a developmental period before many health risk behaviors begin (Schuster et al., 2012). Prevention efforts that target youth later in adolescence may occur too late as substance initiation, or at least processes leading to initiation, may have already begun (van Lier et al., 2009). To our knowledge, this is the first comprehensive analysis of risk and promotive factors associated with substance initiation among Black, Latinx, and White youth during early adolescence.

This study aimed to identify adolescents at increased risk for substance initiation by taking into consideration several identities that may increase risk. Specifically, this study

attempted to disentangling the complex relationship among SES, perceived discrimination, race/ethnicity, and alcohol and cigarette initiation among adolescents. However, we could not find these hypothesized risk factors to be associated with increased substance initiation. Our focus on early adolescence may account for contrasting differences in findings from previous research. As a matter of fact, Bachman and colleagues (2011) found that low objective SES (i.e. parental education) appeared to be more of a risk factor among White high school students than among Black and Latinx high school students. In particular, our lack of identifying risk factors may be due to them only being assessed at 5th grade. In a previous study, trajectories of perceived discrimination were identified to be significantly associated with substance use among Latinx high school students (Unger et al., 2016), which is later in adolescent development. Taken together, with our non-findings for these factors, these studies may identify the important influence of developmental stage on potential risk factors. It may be that different factors increase the risk of substance initiation at different stages of development.

On the other hand, the lack of significant risk factors may be due to the measures employed in our study. For example, studies that have found an association among perceived discrimination and substance related variables have used a formal discrimination scale (Flores et al. 2009; Martin et al. 2019; Unger et al., 2016). Additionally, some studies measure perceived discrimination at multiple time points and, as a result, may have a more representative measure (Martin et al. 2019; Unger et al., 2016). Consequently, the way we had to measure our risk factors in this secondary analysis may have contributed to null findings for perceived discrimination, SES, and SSS. Future research should attempt to use measures that capture more variability in risk factors, such as full discrimination scale (Unger et al., 2016) and multiple facet measures of the complex construct of social status (Finkelstein et al., 2006; Singh-Manoux et al., 2005; Wen. et al., 2009).

Limitations

Several limitations must be acknowledged. First, although prospective longitudinal data are an improvement on cross-sectional data, casual inferences cannot be attributed. These are still observational results. Second, this study sample is not nationally representative. Results therefore may only apply to youth from metropolitan areas like those examined here. Related to this, the Latinx sample was drawn primarily in Los Angeles and Houston and therefore primarily represent a heritage from Mexico and Central America. Generalizing to other Latinx populations is cautioned.

Given the nature of secondary data analyses, there were limitations regarding some measures. We did not measure adolescents' subjective perception of social status, which would have augmented the measure of parental perception. Furthermore, we measured discrimination with two items and, therefore, we may not have captured the full dimensions of discrimination, which may have contributed to null findings. Similarly, because several variables, including OSS and SSS, had to be truncated due to zero prevalence of some values in some groups, such transformation may have eliminated important variability. Despite these limitations this study identifies potential mechanisms that promote a decreased likelihood of developing important health risk behaviors, namely alcohol and cigarette initiation, in diverse adolescents.

Implications

In attempting to negate risk factors, most elementary school prevention programs focus on teaching resistance skills (Elek et al., 2010; Hansen, 2010). However, this approach has produced less than desirable results and may unintentionally increase early experimentation because substance use is generally rare at this developmental stage (Hansen, 2010). Thus, our results suggest an alternate approach by identifying that early prevention efforts should focus on social resources as promotive factors. This may in fact serve as more developmentally appropriate prevention approach (Elek et al., 2010). Previous studies find that early intervention is most beneficial when focusing on protective influences and prosocial behaviors (Griffin et al., 2009; Kellam et al., 2008; Sussman, 2013; VanLier, 2009). This may be broadened to also include parents in prevention efforts based on our results.

The consistency among promotive factors associated with alcohol and cigarette initiation may suggest that prevention programs focus on promotive factors associated with reduced initiation of substances generally. Moreover, this study found that it may be most fruitful that prevention efforts concentrate on strengthening the most important social influences during this period, such as family cohesion and parental nurturance. These factors were associated with a decrease in the likelihood of initiating substance use, over the next five years into middle adolescence, regardless of the specific substance. Similarly, previous studies have found that family-based prevention efforts were effective when combined with a school-based intervention (Koning et al., 2009; Koning et al., 2013; Spoth et al., 2009; Werch et al., 2008). In fact, it was peer related factors, and not school factors per se, that contributed to the success of these multi-component programs. Thus, future prevention approaches should attempt to engage both parents and peers, either directly or indirectly through school..

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Table 1. Sample Characteristics

	Total sample (<i>n</i> = 4,824)		Black (<i>n</i> = 1,755)	Latinx (<i>n</i> = 1,813)	White (<i>n</i> = 1,256)
<i>Continuous Variables</i>	<i>M (SD)</i>		<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Family cohesion	40 (6)		39 (7)	40 (7)	42 (5)
Parental nurturance	22 (4)		23 (4)	22 (4)	22 (4)
Parental monitoring	10 (2)		10 (2)	10 (2)	10 (2)
Peer support	6 (3)		6 (3)	7 (3)	6 (3)
<i>Categorical Variables</i>	<i>N^a</i>	<i>%^b</i>	<i>%^b</i>	<i>%^b</i>	<i>%^b</i>
Alcohol initiation	1484	45	46	45	43
Cigarette initiation	975	28	28	27	28
Highest parental education					
Less than HS diploma	1108	25	12	54	3
HS graduate	862	20	28	20	9
Some college or 2-year degree	1205	27	41	20	21
Four-year degree or more	1225	28	19	9	67
Subjective social status					
High	2180	42	44	35	53
Low	2633	58	56	65	47
Perceived racial/ethnic discrimination					
0	4102	85	80	85	93
1	437	9	10	10	5
2	285	6	10	5	2

Note. FPL, Federal Poverty Level; HS, High School

^aUnweighted

^bWeighted by complex sampling design

****p* < .001

Table 2. Alcohol Initiation Logistic Regression Results by Race/ethnicity.

	Black	Latinx	White
Model 1 Cox-Snell pseudo R ²	12%	09%	13%
<i>Promotive Factors</i>	<i>p</i>	<i>p</i>	<i>p</i>
Family Cohesion	.001	.001	.001
Parental Nurturance	.001	.001	.001
Parental Monitoring	.059	.625	.001
Peer Support	.029	.048	.327
Model 2 Cox-Snell pseudo R ²	1%	1%	3%
<i>Risk Factors</i>	<i>p</i>	<i>p</i>	<i>p</i>
OSS	.952	.376	.196
SSS	.234	.588	.487
Perceived Discrimination	.445	.778	.251
Model 3 Cox-Snell pseudo R ²	12%	10%	15%
<i>Combined Factors</i>	<i>p</i>	<i>p</i>	<i>p</i>
OSS	.972	.343	.472
SSS	.200	.442	.349
Perceived Discrimination	.441	.512	.109
Family Cohesion	.001	.001	.001
Parental Nurturance	.001	.001	.001
Parental Monitoring	.045	.583	.001
Peer Support	.028	.057	.001

Note. Each model is run separately for each racial/ethnic group. Bold denotes $p < .05$.

OSS = objective social status; SSS = subjective social status.

Table 3. Cigarette Initiation Logistic Regression Results by Race/ethnicity

	Black	Latinx	White
Model 1 Cox-Snell pseudo R ²	10%	09%	14%
<i>Promotive Factors</i>	<i>p</i>	<i>p</i>	<i>p</i>
Family Cohesion	.001	.001	.001
Parental Nurturance	.001	.001	.001
Parental Monitoring	.770	.503	.590
Peer Support	.527	.176	.013
Model 2 Cox-Snell pseudo R ²	5%	3%	5%
<i>Risk Factors</i>	<i>p</i>	<i>p</i>	<i>p</i>
OSS	.297	.065	.070
SSS	.229	.412	.842
Perceived Discrimination	.659	.180	.056
Model 3 Cox-Snell pseudo R ²	11%	11%	17%
<i>Combined Factors</i>	<i>p</i>	<i>p</i>	<i>p</i>
OSS	.492	.054	.086
SSS	.141	.152	.986
Perceived Discrimination	.773	.002	.002
Family Cohesion	.001	.001	.001
Parental Nurturance	.001	.001	.001
Parental Monitoring	.811	.357	.402
Peer Support	.570	.062	.003

Note. Each model is run separately for each racial/ethnic group. Bold denotes $p < .05$.
 OSS = objective social status; SSS = subjective social status.

Figure 1. Hypothesized promotive model (upper panel- model 1), risk model (middle panel- model 2), protective model (lower panel- model 3). Solid lines represent increased likelihood of substance initiation while dashed lines represent a decreased likelihood of substance initiation

