

Psychosocial Stressors and Nicotine/Tobacco, Cannabis Product Use Among Diverse Young Adults

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Abstract

Psychosocial stressors such as everyday discrimination, adverse childhood experiences, and concerns of social hostility are emerging as influential on health behaviors especially among young adults. Understanding the association of these behaviors with substance use among racial/ethnic minority and non-racial/ethnic minority young adults could shed light on disparities in substance use and outcomes among this population subgroup. This study examined associations of tobacco/nicotine and cannabis product use (smoking and vaping) with three psychosocial stressors—everyday discrimination, adverse childhood experiences, and social concern—among racial minority young adults and their white counterparts. Cross-sectional data used in the study was from a longitudinal study of Los Angeles public high school students. Stratified multivariate logistic regression models were used to examine the relationship between these psychosocial stressors and past 6-month substance use. Findings show that among racial/ethnic minority young adults, stressors were associated with increased odds of substance use. These results highlight the unique impact that psychosocial stressors have on racial/ethnic minority young adults. Prevention programs need to incorporate culturally sensitive programs that acknowledge the potential for use of maladaptive behaviors (substance use) to cope with psychosocial stressors.

Keywords: psychosocial stressors, cannabis, nicotine, vaping, young adults

Introduction

Since their introduction to the market, combustible nicotine and cannabis products have been the primary delivery method; however, electronic cigarettes (e-cigarettes or vapes) have caused a recent shift in use patterns (Perikleous et al. 2018; Fadus et al. 2019). E-cigarettes have emerged as the main method of delivery for nicotine, whereas cannabis smoking remains most common (Fataar & Hammond, 2019). Although there are limited studies examining short and long-term health effects of these noncombustible and smokeless products, current evidence links use to adverse mental health outcomes especially among adolescents (Becker et al. 2021). Despite such evidence, noncombustible nicotine and cannabis products continue to proliferate the market often targeting vulnerable youth and adolescent populations.

Several studies have evaluated racial/ethnic differences in substance use. In adolescent e-cigarette users, non-Hispanic white males of higher economic status report more frequent or recent use (Perikleous et al. 2018; Dai et al. 2021). Furthermore, non-Hispanic white users saw a 2.5-fold increase in frequent e-cigarette use from 2014-2019, are more likely to report frequent use, and more frequently use flavored nicotine products (Dai et al. 2021). Non-Hispanic black adolescents' reports of frequent e-

cigarette use remained stable; however, they are more likely to be dual users of e-cigarettes and other tobacco products (Dai et al. 2021). In regard to cannabis product use from 2006-2015, black and Hispanic young adults saw an increase in use whereas white users saw little change (Hasin et al. 2019).

While various risk factors associated with substance use have been previously identified, limited research has evaluated the influence of psychosocial stressors on the use of these substances. Current findings suggest that adverse childhood experiences (ACEs) are associated with nicotine and cannabis use (Shin et al. 2019; Fortier et al. 2022; Boccio et al. 2022). Another psychosocial factor influencing American adolescents is perceived discrimination (Jones et al. 2021). Discrimination has emerged as a substance use risk factor (Jones et al. 2021) and several studies have reported an association between perceived discrimination and e-cigarette use specifically (Jones et al. 2021; Fahey et al. 2021). For example, Fahey et al. (2021) reported that among college students, greater perceived discrimination was associated with increased frequency of vaping (i.e., more time spent vaping per day). Although concern of social hostility has not been extensively studied, it is synonymous with social anxiety which has been previously evaluated for its association with substance use (Lemyre et al. 2019). Social anxiety has

also been found to increase risk for current smokers to maintain smoking behaviors (Watson et al. 2018).

A current gap in the literature is the dearth of studies examining the specific impact of these pertinent psychosocial stressors (ACEs, discrimination, CoSH) on nicotine/tobacco and cannabis use among racial/ethnic minority and non-racial/ethnic minority youth/young adults. Research is needed to examine racial patterning in the impact of these stressors on use of combustible and noncombustible forms of nicotine/tobacco and cannabis products. To fill this gap, this study examined the associations between ACEs, everyday discrimination, and CoSH on the use of nicotine/tobacco and cannabis among a racially diverse sample of young adults. We hypothesize that there will be a direct relationship between ACEs and substance use behaviors, discrimination and use behaviors. We also hypothesize that racial minority young adults will report higher and more intense ACEs and discrimination when compared to their white counterparts.

Methods

Sample and Procedure

This research utilized data drawn from the Happiness and Health Study (H&H), a longitudinal cohort study on substance use patterns and mental health within Los Angeles metropolitan area high school students. 40 public high schools were approached to participate based on their diversity and proximity; only 10 schools agreed to participate. To enroll, students and parents were required to offer active consent. Nearly 3,400 participants were initially enrolled in the study. Data was collected across 8 waves approximately 6 months apart, once during the fall and spring semesters each. After graduating, participants continued survey responses annually for a total of 13 waves as of 2023. Post-graduation surveys were administered online once a year, approximately 12 months apart. This study used data from wave 9 (2021) when questions on the psychosocial stressors of interest were first asked. The longitudinal study was approved by the University of Southern California Institutional Review Board (IRB) and California State University, Stanislaus IRB deemed this secondary analysis of data exempt.

Measures

Substance Use

Participants were asked, "Have you used the following substances in the past 6 months?". A list of various substances, along with examples of common alternative names and products for each, were provided for each substance. Responses were measured on a binary scale of 1=yes or 0=no. The

substances included in analyses include, "Cigarettes," "Any electronic cigarette with nicotine," "Smoking marijuana," and "Electronic device to vape marijuana, THC or hash oil." Responses to each question were used to create the study outcome variables: cigarette smoking, e-cigarette vaping, cannabis smoking, and cannabis vaping, respectively.

Everyday Discrimination

Everyday discrimination was measured using the Everyday Discrimination Scale (EDDS) (Williams et al. 1997). The scale asked respondents how often they felt they were treated differently because of their gender, ethnic or cultural background, social class, or sexual orientation. Responses to the 11-item measure were on a 4-point scale from "Never" (0) to "Frequently" (3). Responses for each participant were summed for a possible total score of 33.

Adverse Childhood Experiences (ACEs). Participants completed the 10-item ACEs measure (Felitti et al. 1998) about experiences of abuse, neglect, and household dysfunction during the first 18 years of their life. Responses to the 10 questions were on a binary scale of no (0) or yes (1). Responses for each participant were summed for a possible total score of 10.

Concern of Social Hostility

Participants responded to a question asking them to rate their degree of concern, worry, and stress towards "increasing hostility and discrimination of people because of their race, ethnicity, sexual orientation/identity, immigrant status, religion, or disability status in society." Responses to questions assessing their feelings of concern, worry, and stress were each on a Likert scale from "Not at all" (0) to "Extremely" (4). Responses from the three items were summed for a possible total score of 12.

Demographics

Participants' sociodemographic characteristics were assessed. Participants indicated their race/ethnicity (Hispanic/Latino, Asian, Black/African American, White, Native Hawaiian/Pacific Islander or American Indian/Alaskan Native, and Other/Cannot Choose One). Responses were used to place participants into non-racial/ethnic minority (White) and racial/ethnic minority (all other groups). Participants also indicated their age (in years), gender (male, female), and socioeconomic status (live comfortably, meet needs with little left, just meet basic expenses, don't meet basic expenses).

Statistical analysis

Statistical analyses were conducted in the Windows edition of SPSS (ver. 28). Univariate

analyses were used to describe the study sample and stratified multivariable logistic regression models examined association of psychosocial stressors with cigarette smoking, e-cigarette vaping, cannabis smoking, and cannabis vaping. All models adjusted for age, gender, and socioeconomic status.

Results

Descriptive Statistics

The study sample included a total of 2,207 young adults (mean age: 21.84, SD=0.40). The majority of participants were female (60.3%, n=1,330), nearly half were of Hispanic/Latino racial identity (46.4%, n=1,023), and approximately one sixth were of white racial identity (16.0%, n=353), as shown in Table 1.

Table 1.
Descriptive characteristics of study sample

Characteristic	n	%
Overall	2207	100%
Mean Age	21.84 (±0.40)	—
Gender		
Male	863	39.1%
Female	1330	60.3%
Ethnicity		
Hispanic/Latino	1023	46.4%
Asian	408	18.5%
Black/African American	105	4.8%
White	353	16.0%
Native Hawaiian/Pacific Islander;		
American Indian/Alaskan Native	107	4.8%
Other	175	7.9%
SES		
Lives Comfortably	865	39.2%
Meets Needs with Little Left	660	29.9%
Just Meets Basic Expenses	525	23.8%
Doesn't Meet Basic Expenses	116	5.3%
Cigarette Use		
(Past 6 Months)		
Yes	236	10.7%
E-cigarette with Nicotine Use		
(Past 6 Months)		
Yes	495	22.4%
Cannabis Smoking		
(Past 6 Months)		
Yes	769	34.8%
Cannabis Vaping		
(Past 6 Months)		
Yes	666	30.2%

Within the sample, 10.7% reported cigarette smoking, 22.4% reported e-cigarette vaping, 34.8% reported cannabis smoking, and 30.2% reported cannabis vaping within the past 6 months. Comparisons between racial groups are provided in Figure 1 and 2.

Association of Psychosocial Stressors with Substance Use Among Racial/Ethnic Minority Young Adults

Racial minority young adults include participants who identify as any race other than white. Racial

minority young adults made up 82.4% of the sample (n=1,118). Figure 3 presents the results (adjusted odds ratios [aOR]) from the multivariable logistic regression analyses examining significant relationships between the psychosocial stressors and tobacco and cannabis use. ACEs was associated with an increased odds of cigarette use (aOR=1.14, 95%CI=1.06-1.23), cannabis smoking (aOR=1.09, 95%CI=1.04-1.15), and cannabis vaping (aOR=1.06, 95%CI=1.01-1.12). Experience of everyday discrimination (EDDS) was associated with increased odds of e-cigarette vaping (aOR=1.31, 95%CI=1.09-1.56). Concern of social hostility (CoSH) was associated with increased odds of cannabis smoking (aOR=1.17, 95%CI=1.07-1.28) and cannabis vaping (aOR=1.18, 95%CI=1.08-1.30). Additional odds ratios regarding covariates are presented in Table 2. Compared to males, female racial/ethnic minority young adults were at reduced odds of cigarette use (aOR=0.60, 95%CI=0.43-0.85) and e-cigarette vaping (aOR=0.60, 95%CI=0.47-0.77). Racial/ethnic minority young adults who just meet their basic expenses were significantly more likely to vape cannabis (aOR=1.32, 95%CI=1.00-1.74).

Association of Psychosocial Stressors with Substance Use Among Non-Racial/Ethnic Minority Young Adults

Non-racial/ethnic minority young adults were categorized to only include participants who identify as white. White participants made up 16.0% (n=353) of the total sample. As shown in figure 4, no statistically significant relationships were found between the psychosocial stressors and substance use; however, significant relationships were found between financial situation and cannabis product use. As shown in Table 3, not meeting basic needs significantly increased odds of cannabis smoking (aOR=3.88, 95%CI=1.36-11.10) and cannabis vaping (aOR=3.77, 95%CI=1.28-11.11). Just meeting basic expenses increased odds cannabis smoking only (aOR=2.14, 95%CI=1.13-4.07). Meeting needs with little left increased odds of cannabis smoking (aOR=3.88, 95%CI=1.36-11.10) and cannabis vaping (aOR=3.77, 95%CI=1.28-11.11).

Discussion

This study advances knowledge regarding psychosocial stressors' influences on nicotine/tobacco and cannabis use among diverse young adults. Results of this study indicate a differential relationship between the experience of psychosocial stressors and various substance use in racial minority young adults. Specifically, experience of ACEs and concern for social hostility was associated with increased risk for cannabis smoking and vaping. ACEs was also associated with risk for cigarette smoking, and everyday discrimination was associated with an e-cigarette use risk.

No significance was found in the relationships between psychosocial stressor experience and substance use among non-racial/ethnic minority participants despite similar experience of ACEs and CoSH. The lack of statistical significance may be related to the smaller number of white participants when compared to the racial/ethnic minority group. Furthermore, this result may imply that the relationship between lower SES and cannabis product use is more influential on the maladaptive behaviors among this demographic than experience of psychosocial stressors.

These findings implicate voluntary use of nicotine/tobacco and cannabis products among minority young adults as coping for experienced psychosocial stressors among. This is in accordance with past studies which found the use of said products as self-medicating or relaxation devices to cope for psychological distress (Watson et al. 2018; Donaldson et al. 2022). Nicotine products, in particular, have been found to have relaxation and stress relief effects (Watson et al. 2018). Furthermore, vaping products are often marketed to target youth or young adults through the inclusion of flavorings which have been found to increase willingness to try said products (Chaffee et al. 2023).

This study's findings further support the previously established Race-Based Traumatic Stress model (RBTS) which posits that traumatic stress on the basis of racism can negatively impact psychological outcomes in people of color (Badien et al. 2023). While past studies have explored the associations between RBTS model and alcohol problems (Su et al. 2020), this study expands upon the model and its relationship with nicotine/tobacco and cannabis product use.

Conducting analyses within a racially diverse sample of young adult participants expand upon past findings which only explored one product, stressor type, or racial group (Fahey et al. 2021; Fortier et al. 2022; Assari et al. 2019 Shin et al. 2019). Addressing this gap can introduce greater acknowledgement of childhood trauma on the development or aggravation of maladaptive behavior. Thus, intervention strategies should be culturally sensitive when targeting nicotine/tobacco and cannabis use in young adult populations.

Despite increasing the current understanding of risk factors for maladaptive substance use, this study had various limitations. The use of existing secondary data restricted the scope of this project and the measures included in statistical analysis.

Conclusion

In this study of psychosocial stressors' association with substance use, racial/ethnic minority young adults who experienced these stressors saw an increased likelihood of nicotine/tobacco and cannabis product use. Experience of ACEs increased odds of cigarette and cannabis (vaping and smoking) product

use. Everyday discrimination increased odds of e-cigarette vaping. CoSH increased odds of cannabis smoking and vaping. These findings implicate the experience of psychosocial stressors as influential on maladaptive substance use behaviors in young adults. Further research and interventions should take into consideration the impact of psychological stressors when developing substance use prevention programs among diverse population subgroups.

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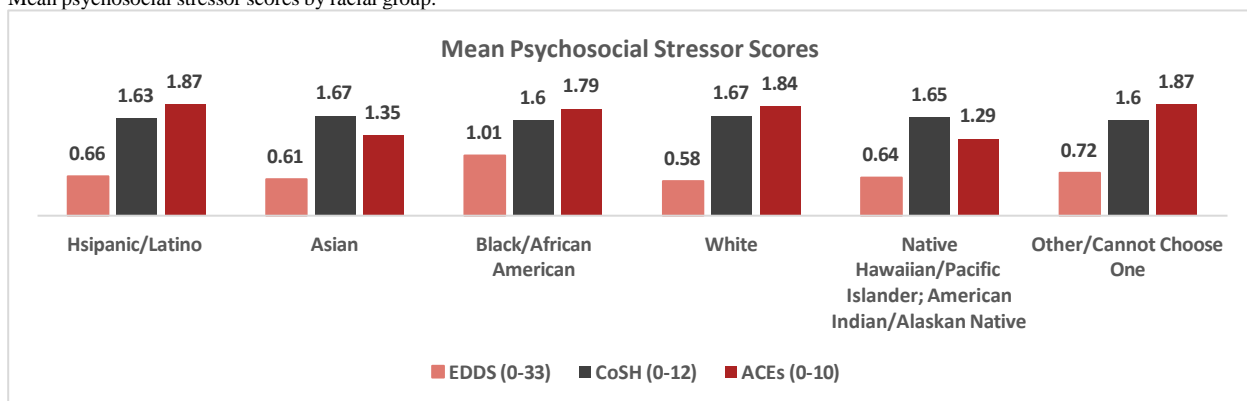
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Figures

Figure 1.
Mean psychosocial stressor scores by racial group.



EDDS = everyday discrimination scale, CoSH = concern of social hostility, ACEs = adverse childhood experiences

Figure 2.
Substance use by racial group.

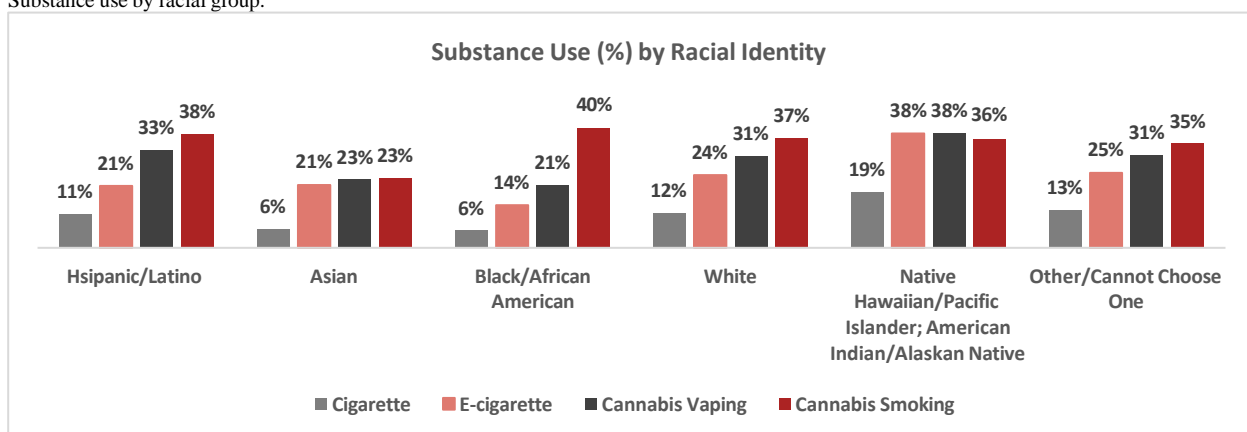
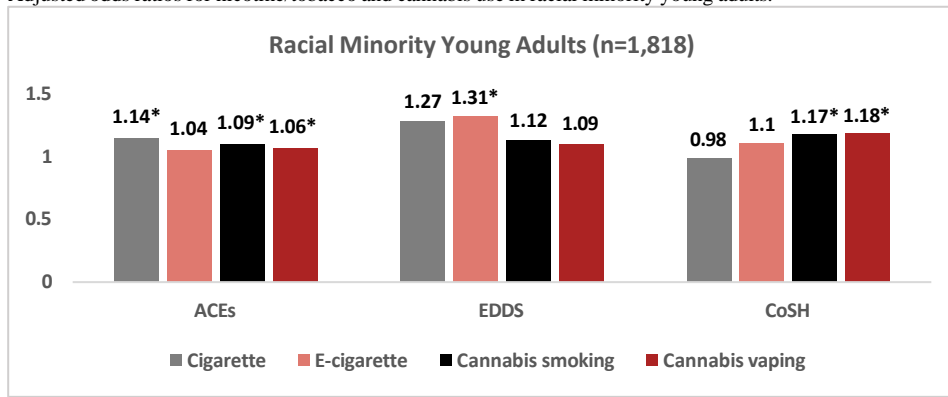
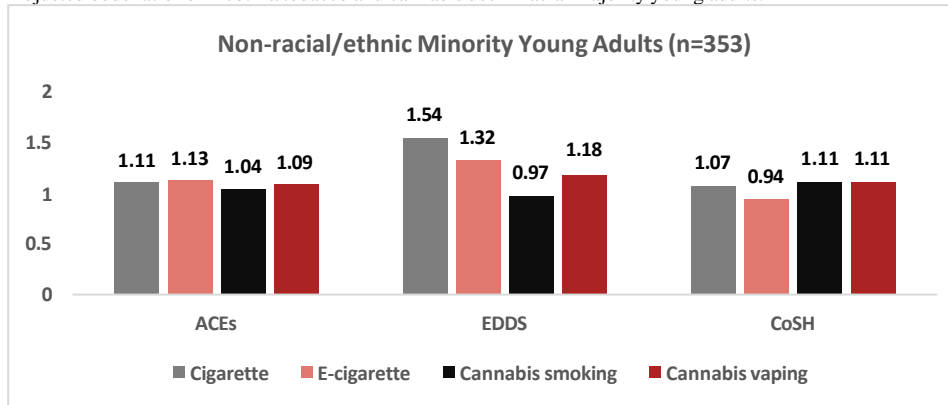


Figure 3. Adjusted odds ratios for nicotine/tobacco and cannabis use in racial minority young adults.



* = Statistical significance. Results adjusted for age, gender, and socioeconomic status. ACEs = adverse childhood experiences, EDDS = everyday discrimination scale, CoSH = concern of social hostility

Figure 4. Adjusted odds ratio for nicotine/tobacco and cannabis use in racial majority young adults.



Results adjusted for age, gender, and socioeconomic status. ACEs = adverse childhood experiences, EDDS = everyday discrimination scale, CoSH = concern of social hostility

Table 2. Logistic regression models for nicotine/tobacco and cannabis use in racial minority young adults (n = 1,818)

	Cigarette Smoking		E-cigarette with Nicotine Vaping		Cannabis Smoking		Cannabis Vaping	
	OR (95% CI)	P value	OR (95% CI)	P value	OR (95% CI)	P value	OR (95% CI)	P value
Age	1.18 (0.80-1.75)	.398	0.88 (0.66-1.19)	.408	0.93 (0.72-1.21)	.592	0.81 (0.62-1.06)	.122
Female	0.60 (0.43-0.85)	.004	0.60 (0.47-0.77)	<.001	0.97 (0.78-1.22)	.814	0.91 (0.72-1.14)	.410
SES								
Doesn't meet basic expenses	0.97 (0.47-2.01)	.941	1.41 (0.85-2.33)	.187	1.25 (0.78-1.99)	.352	1.39 (0.87-2.24)	.171
Just meet basic expenses	1.03 (0.68-1.55)	.895	1.13 (0.84-1.53)	.420	1.20 (0.92-1.57)	.175	1.32 (1.00-1.74)	.047
Meet needs with little left	0.86 (0.57-1.28)	.450	0.86 (0.64-1.12)	.316	1.18 (0.92-1.51)	.202	1.16 (0.89-1.51)	.262
ACEs	1.14 (1.06-1.23)	<.001	1.04 (0.98-1.10)	.166	1.09 (1.04-1.15)	<.001	1.06 (1.01-1.12)	.022
EDDS	1.27 (0.99-1.64)	.061	1.31 (1.09-1.56)	.005	1.12 (0.94-1.32)	.202	1.09 (0.92-1.30)	.321
CoSH	0.98 (0.85-1.14)	.822	1.10 (0.99-1.22)	.090	1.17 (1.07-1.28)	<.001	1.18 (1.08-1.30)	<.001

Abbreviations: SES, socioeconomic status; ACEs, adverse childhood experiences; EDDS, everyday discrimination scale; CoSH, concern of social hostility
*Reference Groups include male for female and lives comfortably for SES. Significant relationships (p < .05) denoted in boldface.

Table 3. Logistic regression models for nicotine/tobacco and cannabis use in non-racial/ethnic minority young adults (n = 353)

	Cigarette Smoking		E-cigarette with Nicotine Vaping		Cannabis Smoking		Cannabis Vaping	
	OR (95% CI)	P value	OR (95% CI)	P value	OR (95% CI)	P value	OR (95% CI)	P value
Age	2.11 (0.86-5.19)	.105	1.97 (1.00-3.89)	.050	0.80 (0.43-1.48)	.472	0.78 (0.40-1.50)	.451
Female	0.68 (0.32-1.46)	.323	1.14 (0.64-2.02)	.654	1.49 (0.89-2.51)	.133	1.60 (0.91-2.82)	.103
SES								
Doesn't meet basic expenses	3.29 (0.98-11.04)	.054	2.31 (0.80-6.73)	.123	3.88 (1.36-11.10)	.012	3.77 (1.28-11.11)	.016
Just meet basic expenses	1.66 (0.68-4.04)	.266	0.91 (0.44-1.89)	.801	2.14 (1.13-4.07)	.020	1.60 (0.79-3.21)	.191
Meet needs with little left	0.82 (0.33-2.04)	.663	1.21 (0.65-2.23)	.549	2.47 (1.42-4.31)	.001	2.58 (1.43-4.68)	.002
ACEs	1.11 (0.94-1.30)	.210	1.13 (0.99-1.29)	.064	1.04 (0.92-1.17)	.548	1.09 (0.96-1.24)	.185
EDDS	1.54 (0.83-2.88)	.174	1.32 (0.81-2.16)	.267	0.97 (0.61-1.55)	.890	1.18 (0.72-1.93)	.506
CoSH	1.07 (0.81-1.41)	.657	0.94 (0.76-1.16)	.570	1.11 (0.92-1.34)	.274	1.11 (0.91-1.35)	.309

Abbreviations: SES, socioeconomic status; ACEs, adverse childhood experiences; EDDS, everyday discrimination scale; CoSH, concern of social hostility.
*Reference Groups include male for female and lives comfortably for SES. Significant relationships (p < .05) denoted in boldface