



HHS Public Access

Author manuscript

Subst Use Misuse. Author manuscript; available in PMC 2021 February 18.

Published in final edited form as:

Subst Use Misuse. 2021 ; 56(3): 339–344. doi:10.1080/10826084.2020.1840588.

Associations of Objective and Perceived Neighborhood Ethnic Density on Hazardous Alcohol Use among Latinx Emerging Adults

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Abstract

Background/Purpose: Emerging adulthood is an important time where substance use often peaks. Neighborhood Latinx ethnic density could be protective against negative health behaviors. Most studies on neighborhood ethnic density have focused on census-level aggregate measures, however perception of the neighborhood ethnic density could differ from objectively measured neighborhood density. This study investigated the effects of neighborhood ethnic density, both perceived ethnic and objectively measured ethnic density, on hazardous alcohol use among Latinx emerging adults in Maricopa County Arizona and Miami-Dade County Florida by gender.

Methods: 200 Latinx emerging adults residing in Arizona and Florida completed a cross-sectional survey. Inclusion criteria were being age 18-25, self-identify as Latinx, and currently living in Maricopa County or Miami-Dade County. Data were analyzed using multivariate logistic regression and moderation analyses.

Results: There was a statistically significant difference between perceived and objective ethnic density ($Kappa = 0.353$, $p < 0.001$). When ethnic density was measured objectively, alcohol use severity was statistically significantly lower for individuals living in highly ethnically dense neighborhoods (OR: 0.34, 95% CI: 0.12, 0.92). However, this association was only found for women in moderation analyses. There was no statistically significant association between perceived ethnic density and alcohol use severity.

Conclusion: The present study found a statistically significant decrease in alcohol use severity among Latinx emerging adults who live in highly ethnically dense neighborhoods after adjusting for covariates. Future research should investigate the potential mechanisms in which these neighborhoods protect against alcohol use severity among Latinx emerging adults.

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Declarations of interest
None.

Keywords

Latinx; alcohol use; emerging adults; neighborhood ethnic density; neighborhoods

Background

Emerging adulthood (ages 18 to 25 years) is a critical period in life where substance use often peaks. According to the Substance Abuse and Mental Health Services Administration (SAMHSA), emerging adults have the highest prevalence of current alcohol use (55.1%) and binge drinking (34.9%) (SAMHSA, 2018). Various sociodemographic factors have been found to be associated with alcohol use among emerging adults including gender, race/ethnicity, college status, and employment as well as social and peer influences (White & Jackson, 2004). Not all emerging adults show the same drinking behavior patterns (Cleveland et al., 2013). Non-Latinx White emerging adults are often found to engage more in drinking than other race/ethnicities (White & Jackson, 2004). Fewer epidemiological studies have described alcohol use among Latinx emerging adults. One study found that 47.5% of Latinx emerging adults enrolled in college engaged in binge drinking while nearly 50% of Latinx college students engaged in heavy drinking at least once a week (Venegas et al., 2012). Furthermore, Latinx populations often experience more negative consequences to alcohol use compared to non-Latinx populations (Keyes et al., 2012). In addition to general developmental transitions and stressors, Latinx emerging adults may also experience cultural stressor that could increase alcohol use (Umaña-Taylor et al., 2009).

Research has suggested that neighborhood Latinx ethnic density, defined as the proportion of Latinx in an area, could protect against alcohol use among Latinx populations (Bécares et al., 2012, Molina et al., 2012). Markides et al., found that Mexican American (MA) women but not men living in more Latinx neighborhoods were less likely to be heavy drinkers (Markides et al., 2012). Molina and colleagues found that Latinx men and women living in highly concentrated Latinx neighborhoods had a lower risk of any past-year alcohol use disorder compared to non-Latinx whites (Molina et al., 2012). Analyzing a cohort of older MA men, Strooper et al., found that for each one unit increase in MA neighborhood density, older MA men had a 2% lower odds of problem drinking (Stroope et al., 2015). However, there is a relative gap in research on the effect of neighborhood Latinx ethnic density on alcohol use among women. Higher rates of acculturation has been associated with higher levels of alcohol use among Latinx women than among Latinx men (Lee et al., 2019). It has been shown that changes in social networks could lead to increases in drinking among Latinx women and decreases in drinking among Latinx men (Lee et al., 2019). Therefore, it becomes critical to examine gender differences in alcohol use and how social networks such as neighborhood Latinx ethnic density could impact these differences.

Interestingly, the protective effect of neighborhood Latinx ethnic density against alcohol use still holds despite the fact that more Latinx dense neighborhoods tend to have more alcohol outlets (Snowden, 2016) and to be disproportionately poorer compared to non-Latinx white neighborhoods (Osypuk et al., 2009), both of which are risk factors for increase alcohol use. One possible explanation for this protective effect is that densely Latinx neighborhoods

could provide more social and cultural support that could help buffer against the deleterious impacts of socioeconomic disadvantage neighborhoods (Becares et al., 2009). However, the effect of Latinx neighborhood ethnic density on alcohol use among Latinx emerging adults is largely unknown.

Most studies on neighborhood Latinx ethnic density have focused on census-level aggregate measures, however perception of the neighborhood Latinx ethnic density could differ from objectively measured Latinx neighborhood density (Hidalgo et al., 2015). Perceiving one's neighborhood as more ethnically dense could garner more benefit because one believes there are more culturally relevant resources and social supports compared to objectively measured density. However, few studies have compared objective neighborhood Latinx ethnic density and perceived Latinx ethnic density and its effects on alcohol use. Given the limited knowledge of neighborhood Latinx ethnic density and alcohol use among emerging adults, the objective of this study was to determine the association of perceived and objectively measured neighborhood Latinx ethnic density on alcohol use severity while testing the moderating effect of gender among Latinx emerging adults.

In this paper we argue that neighborhood Latinx ethnic density could provide a protective buffer against developmental stressors and prevent hazardous alcohol use among this population with possible differences by gender.

Material and methods

This study utilized data from a cross-sectional survey of 200 Latinx emerging adults in Maricopa County, AZ and Miami-Dade County, FL from August 2018 and February 2019 from the Project on Health Among Emerging Adult Latinos (Project HEAL). Sampling was done using a quota sampling design. The target quotas for Arizona was 100 participants and within Arizona we aimed to enroll 15 non-college student women, 15 non-college student men, 35 college student women, and 35 college student men. These quotas were also applied in Florida. Perspective participants were recruited in-person by distributing flyers, posting flyers with tear-off tabs, social media, and by emailing an announcement that described the study aims and procedures to organizations and individuals. Participants were eligible if they were 18 to 25 years of age, self-identified as Hispanic or Latina/o, and currently living in Maricopa County, AZ or Miami-Dade County, FL. Potential participants interested in the study contacted coordinators of Project HEAL and were screened to determine if they met eligibility criteria. Participants were provided informed consent by using an electronic informed consent form. Data were collected using a confidential online survey *via* Qualtrics that took approximately 50 min to complete. Participants were compensated with a \$30 electronic Amazon gift card. More details on the study methods have been documented elsewhere (Cano et al., 2020). This study was approved by the Florida International University Institutional Review Board.

Measures

Demographic variables—Baseline sociodemographic covariates included age, gender (0 = male, 1 = female), study site (0 = Florida, 1 = Arizona), financial stress (1 = has more money than needed, 2 = just enough money for needs, 3 = not enough money to meet needs),

partner status (0 = single, 1 = has a partner), nativity (0 = immigrant, 1 = non-immigrant), student status (0 = current college student, 1 = non-college student), employed (0 = unemployed, 1 = employed), and heritage (0 = other Hispanic heritage, 1 = Mexican heritage) were included as covariates. Poverty was measured using number of households below the national poverty rate. This variable was dichotomized into poverty yes/no if there were greater than 20% of households in the zip code making less than the national poverty level. Previous research has indicated that these sociodemographic variables are linked with alcohol use behavior therefore were included in regression analyses to control for potential confounding (Alegría et al., 2007).

Neighborhood ethnic density—We utilized zip codes as proxies for neighborhoods. Latinx neighborhood ethnic density was measured both objectively and subjectively. First, in the survey, participants were asked, “What percentage of the people in your current neighborhood are Latinx?” This was the perceived neighborhood Latinx ethnic density. Second, the percent Latinx was calculated using the 2018 US Census American Community Survey (ACS) (U.S. Census Bureau. American Community Survey (ACS), 2018) as the proportion of Latinx individuals in a zip code divided by the total population in that zip code. This was the objective measure of neighborhood Latinx ethnic density. Percent neighborhood Latinx ethnic density was categorized into three groups: less than 25%, 25 to 49%, and greater than or equal to 50% for both the objective measures and perceived measures.

Hazardous alcohol use—Alcohol use severity was measured using the Alcohol Use Disorder Identification Test (AUDIT) (Babor et al., 2001). The AUDIT consists of 10 self-report items with varied response choices on a Likert-type scale ranging from zero to four. The variable was dichotomized with those with a score greater to or equal to 8 being categorized as having hazardous drinking while those with scores less than 8 as not having hazardous drinking. Cronbach’s reliability coefficient for the AUDIT was ($\alpha = .90$).

Statistical analysis

Demographic characteristics were analyzed by ethnic density using chi-square methods for categorical variables and t-test for continuous variables. Percent agreement between perceived and objectively measured Latinx ethnic density was determined using kappa. Bivariate analysis was conducted to determine appropriate covariates to include in multivariate analyses. Multivariate logistic regression was conducted to estimate the adjusted odds ratios (AORs) for hazardous alcohol use overall and by gender while controlling for covariates. All analyses were conducted using R version 3.5.2 (R Core Team, 2018) using the acs version 2.1.3 packages (Glenn, 2018) and SPSS v25 (IBM SPSS Statistics for Window, 2017). Using PROCESS v3.2 for SPSS, moderation analyses were conducted with 50,000 bootstraps to examine the extent to which gender influenced the direction and/or strength of Latinx ethnic density on alcohol use severity. All statistical tests were two-sided and statistical significance was set at alpha less than 0.05.

Results

Descriptive analyses

The cohort consisted of 101 individuals 18 to 25 years old who resided in Miami-Dade County, FL and 99 individuals 18 to 25 years residing in Maricopa County in Arizona. The mean age of participants was 21.3 years (standard deviation (SD) 2.1) (not shown in tables). There was a similar proportion of men and women (49% and 51%, respectively). Most participants were college students (69.5%) and employed (78.5%). The most common heritage was Mexican (44.1%) followed by South American (22.5%) and Cuban (16.5%) with 30% being immigrants. The majority of participants lived in neighborhoods with 50% or greater Latinx ethnic composition (58.5% Census measured and 65.5% perceived). Approximately, 22.5% ($n = 42$) of participants reported hazardous alcohol use (AUDIT score ≥ 8). The mean AUDIT score was 5 (SD 5.98) with a range of 0 to 34.3. There were 47 (23.5%) participants who had AUDIT scores of zero. In terms of binge drinking, approximately 28% of participants reported binge drinking. Frequencies, proportions, means, and standard deviations for all study variables are presented by perceived and objective Latinx ethnic density in Table 1.

Perceived and objective ethnic density

There was a statistically significant difference in agreement between Census measured Latinx ethnic density and perceived Latinx ethnic density (Kappa = 0.353, $p < 0.001$) with more individuals perceiving that they lived in neighborhoods with greater than 50% Latinx population compared to the objective measure of Latinx ethnic density (65.5% vs. 58.5%, respectively) (Table 1). A Kappa value of 0.353 would indicate fair agreement (Viera & Garrett, 2005).

Hazardous alcohol use

There was a smaller proportion of individuals who lived in highly Latinx ethnically dense neighborhoods that engaged in hazardous alcohol use compared to those individuals living in low Latinx ethnic density neighborhoods both perceived and objectively measured (Table 1). In multivariate regression analyses, overall, individuals who lived in neighborhoods 50% or more ethnically dense were significantly less likely to engage in hazardous alcohol use compared to individuals living in neighborhoods characterized by an ethnic density of 25% or less (Table 2). This was seen only when Latinx ethnic density was measured objectively (AOR: 0.31, 95% CI: 0.12, 0.77). There was no statistically significant association between increased perceived Latinx ethnic density and alcohol use severity (AOR: 0.65, 95% CI: 0.23, 1.90). There were significant differences in alcohol use severity by study site with participants in Maricopa County, AZ having increased odds of alcohol use severity compared to participants in Miami Dade County, FL after controlling for objective Latinx ethnic density (AOR: 4.47, 95% CI: 1.12, 18.6) and perceived Latinx ethnic density (AOR: 7.08, 95% CI: 1.76, 29.5). In stratified analyses, women living in greater Latinx ethnically dense neighborhoods had decreased odds of alcohol use severity in objective (AOR: 0.15, 95% CI: 0.04, 0.58) measurements (Table 3). No statistically significant association was found between Latinx ethnic density, either objective or perceived, and alcohol use severity

among men. Furthermore, there was no significant moderation effect of gender and either perceived or objective Latinx ethnic density ($p = 0.38$ and $p = 0.15$, respectively).

Discussion

In this study about alcohol use severity among Latinx emerging adults, we found that increased neighborhood Latinx ethnic density, as measured objectively, was associated with decreased odds of alcohol use severity among women but not men. The association between perceived neighborhood Latinx ethnic density and alcohol use severity also demonstrated protective effects but this was not statistically significant. Our findings suggest Latinx ethnically dense neighborhoods could provide a buffer against alcohol use severity among Latinx emerging adults. Indeed, neighborhood Latinx ethnic density has been shown to protect against negative health effects among Latinx populations by possibly providing culturally relevant support (Bécares et al., 2012; Becares et al., 2009; Kulis et al., 2007). Previous research has demonstrated higher family cohesion and social support, both important factors in Latinx culture, to be associated with lower alcohol use severity (Cano et al., 2018). Although densely Latinx-populated neighborhoods may be disproportionately poorer, these cultural support systems could provide advantages not found in less Latinx ethnically dense neighborhoods such as access to culturally relevant social networks including friends from the same ethnic groups, more cultural venues such as social clubs from the same country, or businesses that speak the same language (Molina et al., 2012). All of these support systems can make Latinx populations feel more at home and possibly protect against adverse health behaviors.

However, it's interesting that we did not see a significant effect with perceived neighborhood Latinx ethnic density. Previous research on neighborhood ethnic density have focused on either perceived or objective measures, but not both. The need to include both perceived and objective neighborhood measures is emphasized in two key results. First, we demonstrated that there is limited agreement between perceived and objective measured neighborhood Latinx ethnic density. Second, we only found a significant effect for alcohol use when neighborhood Latinx ethnic density was measured objectively. Neighborhood characteristics such as number of Latinx markets or prevalence of the Spanish language could influence one's perception of a highly dense Latinx ethnic neighborhood and could elicit feelings of more socially and culturally appropriate environments. The fact that we did not find a statistically significant association between perceived Latinx ethnic density is counterintuitive as perceiving your neighborhood as more Latinx ethnically dense might make one feel more supported. However, we found that most individuals in our sample perceived themselves to be living in highly dense Latinx neighborhoods. It is possible that our null finding for perceived neighborhood Latinx ethnic density was because there were fewer individuals who perceived living in low Latinx ethnically dense neighborhoods. As few studies have analyzed the effect of perceived Latinx ethnic density on alcohol use severity, future research should include this potential important factor.

Finally, we found that the protective effect of increased neighborhood Latinx ethnic density was only statistically significant for women which is similar to a study by Markides and colleagues on alcohol use severity among Mexican American adults (Markides et al., 2012).

Previous research has shown that traditional Latinx culture is more tolerant of drinking among men than women (Black & Markides, 1993). It is possible that cultural norms present in more densely Latinx neighborhoods garner more protection to women than for men by discouraging problem drinking among women. Additionally, Arizona and Miami are different Latinx immigrant receiving communities and this could confer differential effects on hazardous alcohol use. In fact, we did find that alcohol use severity differed by study site with increased odds of alcohol use among participants in Arizona compared to those in Florida. This could be a reflection of the different Latinx populations in the two locations. Subsequent studies should consider differences in the receiving community and Latinx ethnic groups as influential factors in hazardous alcohol use.

Limitations

This study is not without limitations that should be noted. First, there could be measurement bias due to the use of self-reported measures. Second, we cannot establish causal or directional ordering of association as this was a cross-sectional design. Third, generalizability may be limited due to the non-probability sampling technique that was utilized in the present study. For example, most participants were current college students and US-born. The effect of nativity on neighborhood Latinx ethnic density has been previously documented with research showing that neighborhoods higher in immigrant concentration could confer more protection compared to neighborhoods with fewer immigrants (Kulis et al., 2007) or the effect to Latinx ethnically dense neighborhoods to be more influential for recent immigrants. Due to the sample of the current study, we were not able to explore these questions. Additionally, there are limitation to the measure of perceived Latinx ethnic density. Participants were asked to rate the Latinx percentage of their neighborhoods and there could be bias introduced in this measure that is not accounted for. Furthermore, we used zip codes as a proxy for neighborhoods. This might not be representative of a participant's neighborhood. The use of smaller geographies such as census tracts have been shown to better represent neighborhoods than zip code level proxies (Arcaya et al., 2016). Additionally, we did not include student status in our multivariate analyses. This factor could influence alcohol use among emerging adults however, it was excluded in regression analyses based on bivariate analyses which was found the variable to be not significantly associated with alcohol use severity in this population. Finally, we did not ask if the participant lived with their parents. This is an important dimension to alcohol use among emerging adults. Future studies should take this into consideration.

Conclusion

Despite these limitations, we found a statistically significant decrease in alcohol use severity among Latinx emerging adults who live in highly ethnically dense neighborhoods after adjusting for covariates. Future research should investigate the potential mechanisms in which these neighborhoods protect against alcohol use severity among Latinx emerging adults.

Acknowledgments

Funding

Preparation of this article was supported by the National Institute on Alcohol Abuse and Alcoholism [K01 AA025992] and the National Institute on Minority Health and Health Disparities [U54 MD002266]. The content is solely the responsibility of the authors and does not necessarily represent the official view of the National Institutes of Health.

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Table 1.

Sample characteristics by perceived and objective neighborhood Latinx ethnic density.

	Ethnic Density - Census				Ethnic Density - Perception				p
	<25% N (%)	25 - 49% N (%)	50% N (%)		<25% N (%)	25 - 49% N (%)	50% N (%)		
Age (mean (Standard Deviation))	42 (21.5)	39 (20.0)	114 (58.5)		30 (15.2)	38 (19.3)	129 (65.5)		<0.001
Gender	21.38 (1.89)	21.38 (2.25)	21.25 (2.16)	0.91	21.87 (2.01)	21.61 (1.91)	21.12 (2.14)		0.14
Male	23 (54.8)	15 (38.5)	57 (50.0)	0.31	15 (50)	18 (47.4)	62 (48.1)		
Female	19 (45.2)	24 (61.5)	57 (50.0)		15 (50)	20 (52.6)	67 (51.9)		0.98
Site				<0.01					<0.001
Maricopa County, Arizona	41 (97.6)	17 (43.6)	40 (35.1)		29 (96.7)	26 (68.4)	43 (33.3)		
Miami Dade County, Florida	1 (2.4)	22 (56.4)	74 (64.9)		1 (3.3)	12 (31.6)	86 (66.7)		0.22
Education				0.66					
No Bachelors	30 (71.4)	31 (79.5)	88 (77.2)		20 (66.7)	27 (71.1)	103 (79.8)		
Completed Bachelors Higher	12 (28.6)	8 (20.5)	26 (22.8)		10 (33.3)	11 (28.9)	26 (20.2)		0.18
Financial Stress				0.04					
More money than you need	3 (7.1)	6 (15.4)	4 (3.5)		4 (13.3)	5 (13.2)	5 (3.9)		
Just enough money	18 (42.9)	21 (53.8)	69 (60.5)		17 (56.7)	19 (50.0)	76 (58.9)		
Not enough money	21 (50.0)	12 (30.8)	41 (36.0)		9 (30.0)	14 (36.8)	48 (37.2)		0.84
Partner				0.61					
Has Partner	11 (26.2)	14 (35.9)	33 (28.9)		10 (33.3)	11 (28.9)	36 (27.9)		
Does not have partner	31 (73.8)	25 (64.1)	81 (71.1)		20 (66.7)	27 (71.1)	93 (72.1)		0.04
Native				0.001					
Immigrant	4 (9.5)	18 (46.2)	35 (30.7)		4 (13.3)	9 (23.7)	46 (35.7)		
US Native	38 (90.5)	21 (53.8)	79 (69.3)		26 (86.7)	29 (76.3)	83 (64.3)		<0.001
Heritage				<0.001					
Non-Mexican	9 (21.4)	24 (61.5)	75 (65.8)		2 (6.7)	16 (42.1)	91 (70.5)		
Mexican	33 (78.6)	15 (38.5)	39 (34.2)		28 (93.3)	22 (57.9)	38 (29.5)		<0.001
Poverty				<0.001					
Neighborhood<20% Poverty	13 (31.0)	6 (15.4)	21 (18.4)		9 (30)	11 (28.9)	20 (15.9)		

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	Ethnic Density - Census			Ethnic Density - Perception			P
	<25% N (%)	25 - 49% N (%)	50% N (%)	<25% N (%)	25 - 49% N (%)	50% N (%)	
Neighborhood 20% Poverty	29 (69)	33 (84.6)	93 (81.6)	20 (70)	27 (71.1)	106 (54.1)	<0.001
Hazardous Alcohol Use (AUDIT 8)							<0.001
No	22 (52.4)	32 (82.1)	97 (85.1)	21 (70)	21 (55.3)	112 (86.8)	
Yes	20 (47.6)	7 (17.9)	17 (14.9)	9 (30.0)	17 (44.7)	17 (13.2)	

Poverty was defined as the number of households living under the national poverty line in 2019 of \$25,750.

Objective and perceived latinx ethnic density and adjusted odds ratios (AOR) of hazardous alcohol use among latinx emerging adults.

Table 2.

	Objective Latinx Ethnic Density and Alcohol Hazard (AOR, 95% CI)	Perceived Latinx Ethnic Density and Alcohol Hazard (AOR, 95% CI)
Age	1.14 (0.93, 1.40)	1.11 (0.90, 1.37)
Study Site (Maricopa County, AZ vs. Miami Dade County, FL)	4.47 (1.12, 18.6)	7.08 (1.76, 29.5)
Gender (Female vs. Male)	0.94 (0.44, 2.01)	0.83 (0.38, 1.78)
Heritage (Mexican vs. Non-Mexican)	0.35 (0.9, 1.19)	0.34 (0.09, 1.27)
Employed	1.70 (0.54, 6.49)	1.40 (0.43, 5.48)
Objective		
>=50	0.31 (0.12, 0.77)	-
25-49	0.36 (0.11, 1.08)	-
< 25 (Ref)	1.00	-
Perceived		
>= 50	-	0.65 (0.23, 1.90)
25-49	-	2.51 (0.86, 7.67)
< 25 (Ref)	-	1.00

Note. CI = confidence interval; AOR = adjusted odds ratio.

Table 3.

Objective and perceived latinx ethnic density and adjusted odds ratios (AOR) of hazardous alcohol use among latinx emerging adults by gender.

	Alcohol Hazard (AOR, 95% CI) Males (N = 98)		Alcohol Hazard (AOR, 95% CI) Females (N = 102)	
	Objective Latinx Ethnic Density and Alcohol Hazard (AOR, 95% CI)	Perceived Latinx Ethnic Density and Alcohol Hazard (AOR, 95% CI)	Objective Latinx Ethnic Density and Alcohol Hazard (AOR, 95% CI)	Perceived Latinx Ethnic Density and Alcohol Hazard (AOR, 95% CI)
Age	1.18 (0.91, 1.55)	1.21 (0.94, 1.59)	1.18 (0.89, 1.58)	1.15 (0.87, 1.53)
Study Site (Maricopa County, AZ vs. Miami Dade County, FL)	5.84 (0.77, 59.7)	5.87 (0.81, 58.9)	2.38 (0.29, 18.4)	2.77 (0.33, 21.6)
Heritage (Mexican vs. Non-Mexican)	0.14 (0.016, 0.85)	0.18 (0.02, 1.00)	0.87 (0.15, 5.63)	0.82 (0.14, 5.20)
Employed	4.27 (0.65, 84.6)	4.54 (0.71, 89.1)	0.74 (0.15, 4.16)	0.56 (0.11, 3.18)
Objective				
>= 50	0.41 (0.09, 1.64)	-	0.15 (0.04, 0.58)	-
25-49	0.18 (0.007, 1.65)	-	0.36 (0.09, 1.39)	-
< 25 (Ref)	1.00	-	1.00	-
Perceived				
>= 50	-	0.48 (0.12, 1.83)	-	0.34 (0.07, 1.53)
25-49	-	0.16 (0.007, 1.48)	-	2.13 (0.52, 9.52)
< 25 (Ref)	-	1.00	-	1.00

Note. CI = confidence interval; AOR = adjusted odds ratio.