Cannabis Use in Young Adults: The Role of Neighborhood Cohesion

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ABSTRACT

Objective: Existing evidence suggests a connection between neighborhood factors and substance use. Limited studies have evaluated the role of neighborhood cohesion among young adult populations, and of those that exist, results are mixed. **Method:** This study examines associations between perceived neighborhood cohesion and cannabis outcomes among a sample of young adults from New York State (N= 3,451). **Results:** Among all participants, 43.4% endorsed current (past-month) cannabis use, and 16.6% were classified as having possible cannabis use disorder (CUD). Increasing perceived neighborhood cohesion predicted less cannabis use (AOR = 0.96); however, no significant relationship was found for possible CUD. **Conclusions**: These findings suggest the potential value of interventions aimed at improving neighborhood cohesion to decrease cannabis use behaviors in young adults. More research is warranted to add to this understudied area.

Key words: cannabis; neighborhood cohesion; young adult

Young adulthood represents a developmental period characterized by several peaks in risky behaviors, including most types of substance use and misuse. These behaviors can persist into later adult development (Patrick et al., 2023). Whereas young adults experiment with a variety of different substances, cannabis is the most commonly used illicit drug among this population (Substance Abuse and Mental Health Services Administration [SAMHSA], 2022). Cannabis consumption is at an all-time high among young adults (Patrick et al., 2023), with more than one-third of young adults aged 18–25 reporting past-year cannabis use and 14.4% diagnosed with a cannabis use disorder (CUD) in 2021 (SAMHSA, 2022). Cannabis use is particularly concerning among persons younger than 25 years due to the developing brain's increased sensitivity to cannabis-related harms (Dugas et al., 2018), including effects on cognitive functioning, physical health, and mental health (Hall et al., 2020). As more states begin to legalize cannabis, significant concerns about the potential risks linked to greater availability of these products arise, including rising potency levels, decreased perceptions of harm, and a higher risk of motor vehicle accidents (Marcotte et al., 2022; Tuvel et al., 2023; Wen et al., 2019).

Although individual characteristics might explain the heightened risk of use, it is important to investigate the more collective dimensions of society. The social-ecological model (SEM) suggests that individual behaviors can stem from reciprocal interactions with their environments and can be influenced by individual, relationship, community, and societal factors (Bronfenbrenner, 1977). Individuals are embedded within larger social systems; therefore, place plays a role in

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shaping population health (Golden & Earp, 2012). Residential neighborhoods contain an array of physical and social characteristics that influence a wide range of health behaviors and downstream outcomes pertaining to quality of life and well-being (Ribeiro, 2018). However, it is unclear whether neighborhoods exert a distinct influence on health outcomes, such as substance use, during young adulthood compared with adolescence or later adulthood (Bishop et al., 2020). Bishop et al. (2020) suggested that because young adulthood is a transitional period characterized by greater autonomy, increased social interaction, and exposure to new environments, the neighborhood setting becomes a more routine part of daily life. Depending on the specific neighborhood context, this may lead to unique exposures to neighborhood conditions that influence health in both positive and negative ways.

One specific component of neighborhoods that may influence young adults' engagement with cannabis is neighborhood social cohesion, which refers to the level of connectedness felt among groups in society (Berkman & Kawachi, 2000). Rich with social capital, a cohesive community is defined by the absence of social conflict and the presence of strong social bonds. Social capital refers to the elements within social frameworks, such as interpersonal trust and norms of mutual assistance, that support collective action and serve as resources for individuals within the group or for the group as a whole. Socially cohesive environments foster informal social control, encouraging individuals to intervene for the common good and thereby decreasing the likelihood of violent crime and risky behaviors (Sampson et al., 1997). Social cohesion has been suggested to have a protective health effect, as neighborhoods with higher levels of cohesion can rapidly share health information, encourage norms of healthy behavior, exercise greater social control over negative health behaviors, and foster substantial stress-reducing psychosocial resources (Lin et al., 2012). However, while social disorganization theories have traditionally been used to explain youth involvement in violent crimes, their applicability to substance use is more limited. If substance use is perceived as normative during adolescence, it may be subject to less adult intervention (Fagan et al., 2015). The neighborhood experience may differ for young adults, though, as this age period is often accompanied by less direct parental monitoring and more experimentation with social roles that may impact health (Bishop et al., 2020). Thus, it is essential to examine young adults' experiences of neighborhood social cohesion and how they, in turn, affect health behaviors.

While literature acknowledging the health benefits of such environments continues to grow, some studies suggest a "double-edged" phenomenon wherein social capital and cohesion may not always have a positive effect (Villalonga-Olives & Kawachi, 2017). Described as "behavioral-social contagion" (Villalonga-Olives & Kawachi, 2017), health information and norms of tightly-knit groups can potentially encourage both health-promoting and health-damaging behaviors across the social network. In a review of the literature, Villalonga-Olives and Kawachi (2017) identified 44 recent studies documenting a negative association between social capital and health outcomes, citing examples of social contagion in risky substance use and cross-level interactions between community trust and health.

Of the few studies that focus on the associations between neighborhood cohesion and cannabis use, most have examined adolescent populations (Booth & Shaw, 2023; Duncan et al., 2002; Pei et al., 2020; Pollard et al., 2014; Shih et al., 2017; Tache et al., 2020; Tucker et al., 2013). Many of the examined studies found inverse relationships between neighborhood cohesion and cannabis use, except for Pollard et al. (2014), who found decreased levels of cannabis use over time in less cohesive neighborhoods. Tache et al. (2020) and Tucker et al. (2013) did not find significant associations. In a general population sample (ages 13–65), Lin et al. (2012) found that decreases in cannabis consumption were correlated with increased individual-level neighborhood cohesion. While generally considered a protective health factor among adolescents, there remain research gaps that investigate whether neighborhood cohesion influences or moderates the risk of cannabis use in young adults.

Among studies looking specifically at neighborhood cohesion's impact on cannabis use in young adults, there is limited evidence that higher perceived neighborhood cohesion decreased the likelihood of probable cannabis use (Dupuis et al., 2016; Holmes et al., 2021; Studer et al., 2016; Tsai et al., 2020). In contrast, Taggert et al. (2018) concluded that heterosexual young

adult males (ages 18–25) had increased past 30-day marijuana use with higher perceived levels of social cohesion, which was hypothesized to be due to more permissive social norms within the neighborhood. The study suggested that social cohesion among people who use drugs may be stronger than that of those who do not use drugs, which may be related to the use of substances like cannabis.

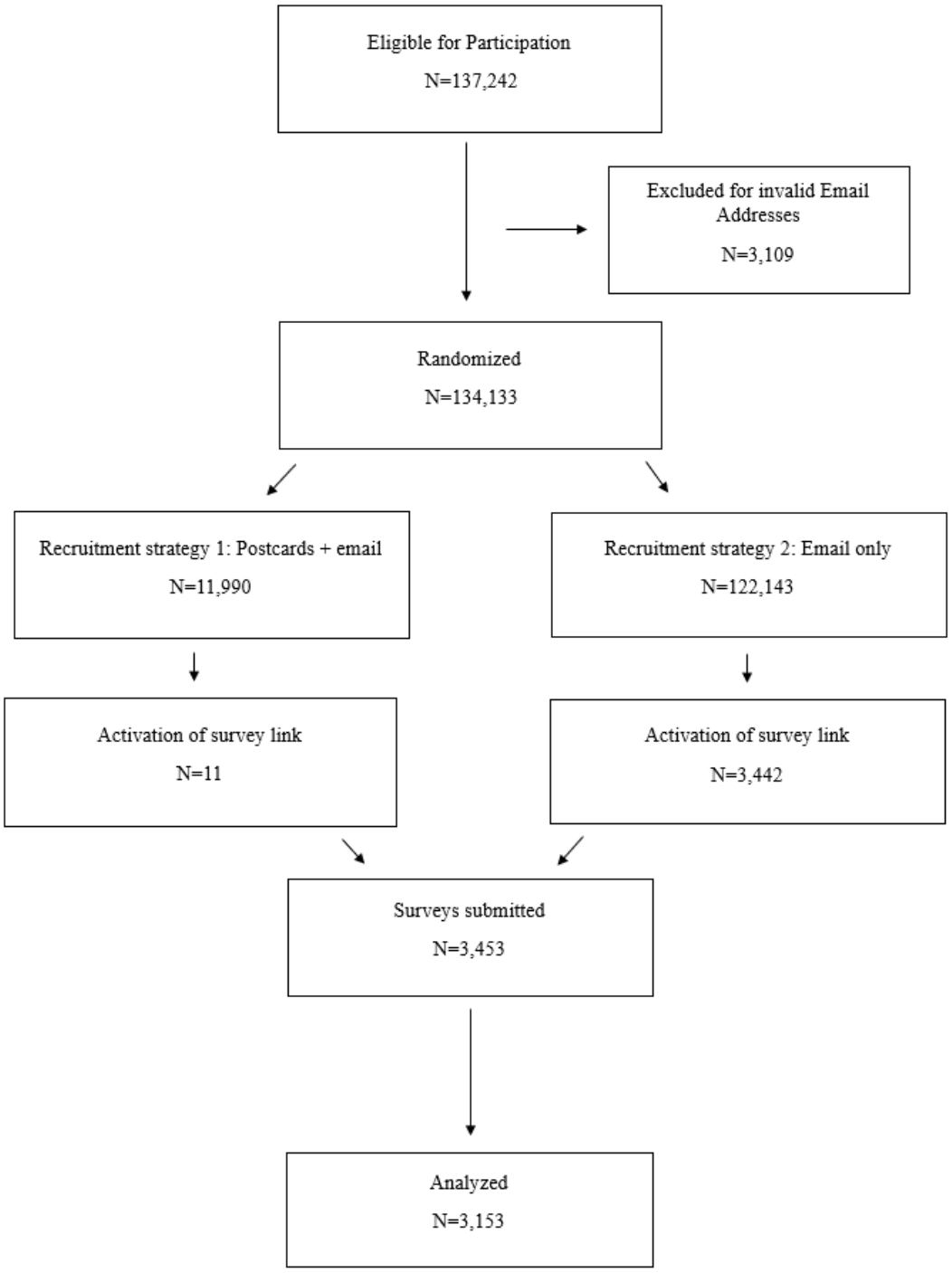
The current literature highlights a complex interplay between potential risk and resiliency factors of cannabis use, and there is a specific need for more research focused on the role of neighborhood cohesion on young adults. This analysis aims to fill the gap in the literature by (1) estimating the prevalence of current (i.e., past-month) cannabis use and cannabis use disorder (CUD) among young adults in New York State, (2) describing their perceived neighborhood cohesion, and (3) examining the odds of current cannabis use based on perceived neighborhood cohesion score. Additionally, we had two secondary aims. Because regular cannabis use predicts an increased risk of addiction (Volkow, 2014), a secondary aim focused on investigating the association of neighborhood cohesion with possible CUD. A subsequent secondary aim was to explore gender differences in CUD, which was a limitation in similar studies. These findings will add to the sparse literature on the relationship between neighborhood cohesion and young adult cannabis use and are anticipated to provide support for the development of interventions that focus on the collective risk and protective factors associated with neighborhood relationships in this population.

METHODS

Participants & Procedure

Participants were English- and Spanish-speaking young adults aged 18–25 who resided in New York State. Contact information for young adults in this age range was purchased from DirectMail for recruitment purposes. Participants were recruited via postcard mailing and/or email to participate in an online survey in 2023. Recruitment outreach was conducted in a staged fashion for several months (June 2023–December 2023). Participants were contacted in batches of approximately 500–1,000 across the six regions, for a total of 23 batches. Emails were sent to potential participants up to five times over two to three weeks. Recruitment efforts resulted in a total of N = 3,451 participants (2.6% response rate). This response rate is comparable to those reported in similar large-scale online surveys, which ranged from 1.6% to 3.7% (Hammond et al., 2021). Conducting large-scale online surveys, particularly those distributed via email, presents challenges that can impact response rates and generalizability, such as the inability to determine whether participants opened the email or even clicked the survey link (Murphy et al., 2020). Regional stratification with equal allocation was employed to target an equal number of potential participants from each of the six regions of New York State. Within each region, potential participants were selected randomly. Post-stratification weights were then applied to adjust for various factors that characterize the population and to enhance the sample's representativeness. See Figure 1 for a full flowchart of recruitment strategies and the determination of the final sample size. Participants were offered $10 e-gift cards to complete the survey. The University at Buffalo IRB reviewed this study protocol and deemed the research Exempt.

Figure 1. *Flow Chart of Recruitment Strategy*



Survey Instrument

Data were drawn from the Cannabis and Alcohol Use in Young Adults (CAYA) study, a survey-based study examining cannabis and other substance use among young adults in New York State. The study used a self-administered, web-based survey that included items on substance use prevalence, patterns, behaviors, and attitudes, along with other substance perceptions and potential co-use. Skip patterns were used to determine the necessary items to complete for each individual.

Measures

Dependent variables. Current cannabis use was defined as having used cannabis in the past 30 days and was assessed by the question, "When was the last time you used cannabis?" The response option, "Within the past 30 days," was coded to create a binary variable indicating "current user" (coded as 1) or "not current user" (coded as 0).

Neighborhood cohesion was assessed using a shortened version of the Collective Efficacy Scale (Sampson et al., 1997) comprising five items. Using a 5-point Likert scale ranging from 1 ("strongly agree") to 5 ("strongly disagree"), participants were asked to report their level of agreement with the following questions: (a) "People around here are willing to help their neighbors," (b) "This is a close-knit neighborhood," (c) "People in this neighborhood can be trusted," (d) "People in this neighborhood generally do not get along with each other," and (e) "People in this neighborhood do not share the same values." Items were reverse-coded where appropriate so that higher scores equate to higher perceived cohesion. The total score from each question was summed to determine overall neighborhood social cohesion, ranging from 5 to 25, with higher scores indicating greater perceived neighborhood cohesion. Cronbach's α was 0.79, indicating sufficient internal consistency of the neighborhood cohesion scale.

Possible cannabis use disorder (CUD) was determined using the revised Cannabis Use Disorders Identification Test (CUDIT-R) (Adamson et al., 2010). The CUDIT-R consists of eight items scored from 0 ("never") to 4 ("daily/almost daily") and is designed to evaluate factors related to cannabis misuse and dependence during the past six months. Total scores were summed, ranging from 0 to 32, with higher scores indicating greater hazardous use and scores of 12 or more indicating possible CUD. A binary variable was created to classify participants as either "no CUD" (coded 0) or "possible CUD" (coded 1).

Gender was assessed by the question: "What is your gender?" Response options included: "man," "woman," "non-binary," "two-spirit," "intersex," "questioning/unsure," "I use a different term (specify)," and "prefer not to answer." The responses "two-spirit," "intersex," "questioning/unsure," "I use a different term (specify)," and "prefer not to answer" were categorized as "other" for the current analyses. Our final variable was coded as 0 = "man," 1 = "woman," 2 = "non-binary," and 3 = "other."

Covariates

Age was self-reported and coded as a continuous variable ranging from 18 to 25.

Race was determined by the question: "Please choose the responses that best describe you (select all that apply)" and included six options: "Asian American," "Black or African American," "Native American or Alaska Native," "Native Hawaiian or Pacific Islander," "White," "Other." Participants could select multiple options to best describe themselves. Due to the small sample size of those who identified as "Native Hawaiian or Pacific Islander" (n = 11), this category was combined with "other" for the current analyses. This resulted in a final variable coded as 0 = "White," 1 = "Black," 2 = "Asian," 3 = "Native American," and 4 = "other."

Ethnicity was assessed by the question: "Are you Hispanic or Latino?" Responses were coded as 1 = "Yes" and 0 = "No." Ethnicity and race were not mutually exclusive categories; individuals could specify both their ethnicity and any race.

Region was determined by the participant information provided by DirectMail and included: "Central New York" (coded as 1), "Western Buffalo" (coded as 2), "Western Rochester" (coded as 3), "New York City" (coded as 4), "Long Island" (coded as 5), and "Eastern New York" (coded as 6). Participants were asked in the survey to enter their 5-digit ZIP code to confirm their location within the New York State regions.

Urbanicity was determined from participants' ZIP code data and the Rural-Urban Continuum Codes (RUCC) (U.S. Department of Agriculture, Economic Research Service, 2024). By matching participant ZIP code data to their respective county, counties were placed into the nine RUCC groups, ranging from high to low urbanicity. RUCC codes 1–3 are classified as "metro" areas (coded as 1), and 4–9 are "non-metro" (coded as 0). The metro categories were determined according to the total population of the area: (1) ≥ 1 million, (2) 250,000–1 million, (3) < 250,000 people. Population sizes determined non-metro categories: (4), (5) ≥ 20,000, (6), (7) 5,000–20,000, (8), (9) < 5,000 people, and then subdivided by proximity to a metro area: (4), (6), (8) adjacent and

(5), (7), (9) nonadjacent. Participants in these current analyses did not reside in any counties with RUCC codes 5 or 9.

Statistical Analysis

Descriptive statistics were used to examine the percentages, means, and standard deviations of participant demographic characteristics and their cannabis use patterns. Logistic regression models and correlation matrices were used, with a *p*-value set at .05, to examine the relationships between cannabis use and total neighborhood cohesion scores. Final models adjusted for the covariates gender, age, race, ethnicity, region, and urbanicity. Covariates were included as categorical variables using indicator (dummy) coding via Stata's factor variable notation, with one category designated as the reference group. Survey weights were created based on New York State census data to ensure accurate representation by region, sex at birth, race (White, Black, Asian, mixed, other), and sexual identity (heterosexual; all other sexual orientations). Observations with missing data were omitted from the analyses. Stata v. 18.0 was used for all analyses (Stata Corporation, College Station, TX).

RESULTS

Among all participants (N = 3,451), 43.4% endorsed current (past 30-day) use of cannabis products (n = 1,497). Approximately 16.6% (n = 571) met the criteria for probable CUD. The sample characteristics are summarized in Table 1 by cannabis use status and are unweighted. Of the 1,497 respondents who endorsed current cannabis use, most identified as being a woman (66.3%; n = 992) and White (66.6%; n = 996), with a mean age of 22.4 years (SD = 2.0). As designated by the RUCC, a majority (90.7%; n = 1,350) of young adults who currently use cannabis lived in a metro area. All participants were spread relatively evenly across the six regions of NYS, with most coming from Western Buffalo.

Table 1. *Characteristics of the Analytic Sample (Unweighted)*

Characteristic	People who do not currently use cannabis % (n) or Mean (SD)	People who currently use cannabis % (n) or Mean (SD)	People with possible CUD % (n) or Mean (SD)
Gender			
Man	49.7% (452)	31.3% (285)	19.0% (173)
Woman	45.9% (984)	37.3% (799)	16.9% (362)
Non-binary	30.4% (34)	46.4% (52)	23.2% (26)
Other	47.6% (30)	36.5% (23)	15.9% (10)
Race			
Asian American	65.6% (181)	26.1% (72)	8.3% (23)
Black	45.1% (250)	34.3% (206)	24.0% (144)
Native American	34.7% (25)	40.3% (29)	25.0% (18)
White	45.1% (937)	37.9% (788)	17.0% (354)
Other	48.0% (86)	34.6% (62)	17.3% (31)
Ethnicity			
Not Hispanic	48.0% (1311)	35.0% (954)	17.0% (465)
Hispanic	37.7% (188)	41.1% (205)	21.2% (106)
Region			
Central New York	49.2% (254)	33.3% (172)	17.4% (90)
Western Buffalo	50.6% (389)	33.6% (258)	15.9% (122)

Western Rochester	46.6% (219)	35.5% (167)	17.9% (84)
New York City	50.2% (275)	33.6% (184)	16.2% (89)
Long Island	52.3% (315)	33.2% (200)	14.5% (87)
Eastern New York	49.3% (269)	32.6% (178)	18.1% (99)
Urbanicity			
Metro	45.3% (1281)	36.2% (1026)	18.5% (524)
Non-metro	37.1 % (101)	47.4% (129)	18.2% (42)

Note. The percentages in Table 1 are calculated relative to the cannabis use designation, with each percentage reflecting the distribution of individuals within each characteristic group.

Perceptions of Neighborhood Cohesion and Associations With Cannabis Outcomes

The study's second aim sought to describe young adults' perceptions of neighborhood cohesion. Ranging from a total score of 5–25, with higher scores indicative of higher perceived social cohesion, the mean perceived total neighborhood social cohesion was 16.0 (*SD* = 3.6) for all participants (*N* = 3,451). About half of all participants (54.8%) agreed/strongly agreed that "people around here are willing to help their neighbors." Fewer participants considered their neighborhood to be close-knit, with only 31.4% agreeing/strongly agreeing, compared to 34.2% who disagreed/strongly disagreed. Around 37.7% agreed that their neighbors could be trusted, while 24.3% did not. Most participants (48.1%) disagreed/strongly disagreed with the notion that "people in this neighborhood generally do not get along with each other." Slightly more participants disagreed/strongly disagreed (28.2%) that "people in this neighborhood do not share the same values" than those who agreed/strongly agreed (23.6%). The mean perceived neighborhood cohesion scores varied by cannabis use status, from 16.3 (*SD* = 3.6) among young adults who do not currently use cannabis, 16.0 (*SD* = 3.6) among young adults who currently use cannabis, and 15.4 (*SD* = 3.6) among those with probable CUD.

The third aim of the study was to examine differences in the odds of current cannabis use based on perceived neighborhood cohesion. Correlations between current cannabis use and related variables are presented in Table 2. In unadjusted models, neighborhoods with higher perceived neighborhood cohesion scores (indicative of more social cohesion) had significantly lower odds of past-month cannabis use (odds ratio (OR) = 0.96; 95% confidence interval (CI) = 0.92, 0.99; see Table 3). Given the different milieu of college dorms, we also conducted the analyses excluding those residing in dorms, which produced the same results. After adjusting for age, gender, race, ethnicity, urbanicity, and region, regression analyses indicated that neighborhoods that had more perceived social cohesion were still associated with significantly lower risk of current cannabis use (adjusted odds ratio (AOR) = 0.96; 95% CI = 0.93, 1.00; see Table 3). Past-month cannabis use was also associated with older age (AOR = 1.11; 95% CI = 1.04, 1.20; see Table 3). The only significant association between past-month use and race was observed among those identifying as Asian (AOR = 0.33; 95% CI = 0.27, 0.42; see Table 3), with decreased odds of past-month use among Asians. Those identifying as Hispanic were more likely to identify as a person who currently uses cannabis (AOR = 1.36; 95% CI = 1.04, 1.76; see Table 3). There were no significant associations between past-month use and gender or urbanicity (Table 3).

Table 2. *Correlation Matrix of Factors Associated with Current Cannabis Consumption (Unweighted)*

Variable	1	2	3	4	5	6	7	8	9
1. Current Cannabis Use	1.0000								
2. Neighborhood Cohesion Score	-0.0714*	1.0000							
3. Possible CUD	0.2340*	-0.0716*	1.0000						
4. Age	0.0626*	0.0145	-0.0498*	1.0000					
5. Gender	0.0442*	-0.0582*	-0.0483*	-0.0094	1.0000				
6. Race	-0.0268	-0.0827*	0.0204	-0.0189	0.0150	1.0000			
7. Ethnicity	0.0619*	-0.0885*	0.0107	-0.0076	0.0241	0.2574*	1.0000		
8. Urbanicity	0.0148	-0.0121	-0.0589*	0.0107	0.0156	-0.1230*	-0.1005	1.0000	
9. Region	-0.0078	-0.0325	0.0018	-0.0466*	-0.0544*	0.1558*	0.1973*	-0.1819*	1.0000

Note. *$p < .05$

Table 3. *Odds of Past-Month Cannabis Use Among All Participants (Weighted)*

	OR	95% CI	*AOR*	95% CI
Neighborhood cohesion	0.96*	[0.92, 0.99]	0.96*	[0.93, 1.00]
Age			1.11*	[1.04, 1.20]
Gender (Man)			1.00	reference
Woman			0.91	[0.72, 1.15]
Non-binary			1.15	[0.27, 4.95]
Other			2.24	[0.56, 8.99]
Race (White)			1.00	reference
Black			0.88	[0.62, 1.27]
Asian			0.33***	[0.27, 0.42]
Native American			0.73	[0.20, 2.60]
Other			0.83	[0.61, 1.12]
Ethnicity (non-Hispanic)			1.00	reference
Hispanic			1.36*	[1.04, 1.76]
Urbanicity (Metro)			1.00	reference
Non-metro			1.65	[0.83, 3.29]
Region (Central New York)			1.00	reference
Western Buffalo			0.87***	[0.84, 0.91]
Western Rochester			1.50***	[1.36, 1.65]
New York City			1.28*	[1.01, 1.61]
Long Island			0.95	[0.83, 1.08]
Eastern New York			1.26***	[1.16, 1.37]

Note. OR = odds ratio; *AOR* = adjusted odds ratio. *** $p < .001$; ** $p < .01$; * $p < .05$

Due to the potential for hazardous use in people who currently use cannabis, this research also sought to investigate the differences in the odds of possible CUD based on perceived neighborhood cohesion. The association between perceived neighborhood cohesion and possible CUD among participants who endorsed past-six-month use was not significant (see Table 4). No significant associations were found among gender, race, or ethnicity variables. However, living in a non-metro area significantly lowered the odds of possible CUD (AOR = 0.61; 95% CI = 0.41, 0.90) (see Table 4).

Table 4. *Odds of Cannabis Use Disorder (CUD) Among Those who Endorsed Past-Six-Month Use (Weighted)*

	OR	95% CI	*AOR*	95% CI
Neighborhood cohesion	0.97	[0.92, 1.03]	0.98	[0.91, 1.04]
Age			0.97	[0.90, 1.03]
Gender (Man)			1.00	reference
Woman			0.78	[0.55, 1.11]
Non-binary			0.57	[0.07, 4.75]
Other			0.36	[0.06, 2.10]
Race (White)			1.00	reference
Black			1.31	[0.85, 2.00]
Asian			0.71	[0.49, 1.03]
Native American			1.17	[0.37, 3.68]
Other			1.22	[0.82, 1.81]
Ethnicity (non-Hispanic)			1.00	reference
Hispanic			0.87	[0.70, 1.07]
Urbanicity (Metro)			1.00	reference
Non-metro			0.61*	[0.42, 0.90]
Region (Central New York)			1.00	reference
Western Buffalo			0.99	[0.94, 1.04]
Western Rochester			0.90**	[0.85, 0.96]
New York City			0.80	[0.63, 1.03]
Long Island			0.71***	[0.63, 0.80]
Eastern New York			1.27***	[1.16, 1.40]

Note. OR = odds ratio; *AOR* = adjusted odds ratio. ***$p < .001$; **$p < .01$; *$p < .05$

DISCUSSION

Neighborhoods are micro-level environments linked to health behaviors and outcomes (Bronfenbrenner, 1977); however, little is known about the link between neighborhoods and health during the transition into adulthood (Bishop et al., 2020). Among existing studies, most have emphasized the physical aspects of neighborhoods. Meanwhile, the social environment, such as neighborhood cohesion, has received less attention, despite its potential role in shaping pro-social norms (Reboussin et al., 2018). To address the current gaps in the literature, the present study aimed to examine the association of cannabis use outcomes, including current use and possible addictive use, and perceived neighborhood cohesion among a convenience sample of young adults in New York State. Results indicated that neighborhoods with greater perceived cohesion are associated with a decreased likelihood of young adults engaging in current or past-month cannabis use. In addition, this study further explored the relationship between perceived neighborhood cohesion and cannabis use by looking at the risk of possible CUD, finding similar negative correlations. One possible explanation for this relationship is that more cohesive neighborhoods allow individuals to feel more integrated and monitored by others, thereby deterring them from engaging in health-damaging behaviors such as substance use (Lin et al., 2012). This is consistent with findings by Reboussin et al. (2018), who observed that positive neighborhood social activity was associated with reductions in cannabis use among young people. While Reboussin et al. (2018) focused on observable activity and the current study centers on perceived neighborhood social cohesion, both point to the potential influence of socially connected neighborhood environments on cannabis use patterns in young adults.

These findings suggest that neighborhood cohesion may play a protective role in young adult cannabis use, aligning with some previous studies (Dupuis et al., 2016; Holmes et al., 2021; Studer et al., 2016; Tsai et al., 2020). Associations of current cannabis use with neighborhood cohesion

were significant and negative, with a 3% decrease in odds of current cannabis use with every one-point increase in neighborhood cohesion score, meaning that individuals who perceived higher levels of neighborhood cohesion were slightly less likely to currently use cannabis. These results have important implications for future substance abuse research by highlighting the potential role of prosociality in neighborhood contexts. To our knowledge, only one other publication has similarly measured neighborhood cohesion and prior month cannabis use in young adults. Holmes et al. (2021) identified associations between cannabis use days and various neighborhood attributes, which included social cohesion. They found that more neighborhood cohesion predicted less cannabis use frequency within the past-month for young adults living in San Francisco County, California (ß = -0.11). While the current analysis and that of Holmes et al. (2021) used regression models, Holmes et al. (2021) focused on local variation. They identified specific neighborhood compositions and qualities that may have been contributing factors, whereas our current analysis more broadly examines perceived neighborhood cohesion and past-month cannabis use across NYS. Identifying protective factors, such as neighborhood cohesion, is worth noting, especially given the decline in Americans' social connectedness over the past two decades, with the most dramatic trends seen among those aged 15–24 years (Kannan & Veazie, 2023). These findings can help guide interventions aimed at building community-level resilience against substance misuse among young adults. For instance, Glover et al. (2022) suggest a need for a research agenda on neighborhood walking, which is argued to play a meaningful role in facilitating social connectedness and access to coping resources.

Despite the significant findings between current cannabis use and perceived neighborhood cohesion, we did not find a significant relationship between possible CUD and perceived neighborhood cohesion (Table 4). Few studies have investigated the role of neighborhood cohesion, specifically on substance use disorders (Tsai et al., 2020). The study findings are consistent with Savage and Mezuk (2014), who did not find a significant relationship between neighborhood cohesion and drug use disorders (including cannabis). Our results contrast with Dupuis et al. (2016), who found significant negative correlations between perceived neighborhood cohesion scores and cannabis use and dependence. Both studies focused on young adults and used the CUDIT-R to measure CUD; however, Dupuis et al. (2016) used a cut-off score of 8 for cannabis dependence, whereas the current analyses used a cut-off score of 12 to indicate possible CUD, which is consistent with scoring guidelines (Adamson et al., 2010). According to the CUDIT-R, scores of 8 or more are indicative of hazardous use, and scores of 12 or more indicate a need to assess for CUD; therefore, using scores higher than 12 may be a more accurate representation of possible CUD (Adamson et al., 2010). Further research on the social role of neighborhoods and the prevalence of CUD is needed to examine the potential for hazardous use in young adults.

The present study adds to the limited research examining the influence of neighborhood cohesion on cannabis use outcomes in young adulthood. Of the few studies available, three (Dupuis et al., 2016; Studer et al., 2016; Tsai et al., 2020) used the same sample (C-SURF study) for their analyses, focusing only on male participants. This current study expands upon previous research by investigating gender as a factor in the relationship between cannabis use and neighborhood cohesion. While sex plays a role in explaining hormonal differences that impact the effects of cannabis use on the brain and body (Cooper & Craft, 2018), it is important to consider gender differences in cannabis use, which may influence social cannabis use behaviors related to gender norms (Hemsing & Greaves, 2020). Additional research is needed, given that there is a lack of research studying the role of gender and cannabis use among people with diverse gender identities (Hemsing & Greaves, 2020).

Limitations

There are a few limitations to these findings that should be noted. First, using self-reported data may impact validity and reliability. However, self-report data are common in large epidemiological studies. Due to the recruitment strategy, selection bias may have affected the results, potentially underrepresenting certain neighborhoods. To better contextualize the generalizability of the findings, future research should consider using geospatial modeling, which

could provide a more accurate and comprehensive representation of data. Secondly, this is a cross-sectional study, so causal inferences cannot be made. It is unknown whether neighborhood contexts had direct effects on cannabis use. For example, young adulthood is a time of exploration, and so cannabis use behaviors may have already been set if individuals had relocated to new neighborhoods. The findings should also be interpreted in light of how cannabis use was operationalized. Past 30-day use captures any recent use but does not reflect its frequency, quantity, or context, and therefore should not be interpreted as inherently problematic. Notably, neighborhood cohesion was not associated with possible CUD, suggesting that neighborhood social processes may be more relevant to the likelihood of any use rather than to more hazardous or dependent patterns of use. Further, the study relies on perceived neighborhood cohesion, which may not always align with objective measures of neighborhood characteristics.

Another challenge arises when examining the stress and social connectedness pathway linking environmental features to health. An understudied mediating pathway in the current literature, it remains difficult to measure neighborhood sources of stress and the direct effect on health outcomes (Diez Roux, 2016). It is also worth noting that the size of the effect, although significant, was small, and that our response rate was low (2.6%). However, small effect sizes may be expected when examining the effects of neighborhoods (Diez Roux, 2001), especially given the multifactorial nature of ecological systems (Booth & Shaw, 2023). Lastly, although we considered urbanicity in our neighborhood analyses, associations may vary across socioeconomic status, which was not assessed in the survey. Despite these limitations, this study makes important contributions to the current literature and has several strengths. It adds to the few studies examining neighborhood cohesion and specifically cannabis use among young adults rather than grouping cannabis under the broader category of "illicit drug use." This study also considers the dimension of gender in the analyses, which was a limitation of many of the other studies on neighborhood cohesion and young adult cannabis use.

Conclusion

Research has begun to suggest the importance of social connection in the neighborhood context and its relation to substance use. This study used data from a statewide sample of young adults to test the association between neighborhood cohesion and cannabis use outcomes. Among young adults in a total sample of N= 3,451, higher levels of perceived neighborhood cohesion were associated with slightly lower odds of current cannabis use and possible CUD, which is consistent with most other findings. These results support the importance of considering neighborhood social influence to better understand the risk and resiliency factors of cannabis use. Given the rising popularity of cannabis use and the progression of legalization policies, this research has important implications for interventions aimed at improving neighborhood cohesion in young adulthood to facilitate access to health-benefiting resources and mitigate the risks of cannabis use.

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