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Publication Date

2020-03-01

DOI

10.1016/j.jad.2020.01.029

Peer reviewed



Published in final edited form as:

J Affect Disord. 2020 March 15; 265: 26–31. doi:10.1016/j.jad.2020.01.029.

Personality disorders and social support in cannabis dependence: A comparison with alcohol dependence

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Abstract

Background: Cannabis use disorder (CUD) has been linked to personality disorders (PDs) and interpersonal problems, though these relationships have been understudied. We examined PDs and social support associated with cannabis dependence and how it may be distinguishable from alcohol dependence on these indices in a large representative sample.

Method: Data on social support and *Diagnostic and Statistical Manual of Mental Disorders-IV* substance dependence and PDs were assessed in Wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions ($N > 34,500$).

Results: Cannabis dependence was associated with higher rates of personality disorders and lower social support. Lifetime cannabis dependence without alcohol dependence was associated with higher rates of all PDs than alcohol dependence without cannabis dependence (with the exception of borderline PD). Cannabis dependence alone was also associated with lower social support than alcohol dependence alone.

Limitations: The survey was conducted in 2004–2005 and relied on DSM-IV criteria.

Conclusions: These findings highlight a broad range of PDs as well as deficits in social support in cannabis dependence. The potential interrelationships between interpersonal dysfunction and CUD as well as the relevance of PDs to treatment for CUD warrant further research.

Keywords

cannabis dependence; personality disorder; social support; alcohol dependence

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Contributors

JC conceived of the study idea. KM and KJ wrote the methods and results sections and tables. JH conducted the analyses. All authors contributed to the manuscript and read and approved the final manuscript.

Conflict of Interest

No conflict declared

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1. Introduction

Cannabis use disorder (CUD) is a growing public health concern. In the US, the prevalence of CUDs has increased in recent years, likely due in part to loosening of state laws regarding its use as well as increases in cannabis potency (Hasin et al., 2017). Among regular users, cannabis has been linked to higher rates of dependence than alcohol (Cogle *et al.*, 2016). Prospective research has found that persistent cannabis use and cannabis dependence were associated with financial difficulties, downward social mobility, and workplace problems (Cerde et al., 2016).

There is some evidence to suggest CUDs are associated with poor interpersonal functioning, as well. Research has linked cannabis use to poorer relationship quality in midlife (Cerde et al., 2016), and CUD has been associated with elevated rates of personality disorders (Cogle *et al.*, 2016; Lopez-Quintero *et al.*, 2011), which are characterized by severe interpersonal dysfunction. Further, multiple studies, including those using data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) (Afifi, Henriksen, Asmundson, & Sareen, 2012; Smith, Homish, Leonard, & Cornelius, 2012), have found CUDs are associated with increased intimate partner aggression and victimization (Moore & Stuart, 2005; Testa & Brown, 2015).

Problematic cannabis use may have important direct effects on interpersonal dysfunction. The acute effects of cannabis on working memory, attention, and concentration (Crean, Crane, & Mason, 2011) may impair conversations and interactions individuals have while intoxicated and lead them to avoid certain social settings. Additionally, cannabis-induced alterations in mood and perception may make users less able to show empathy and provide support to their friends while intoxicated; this may also lead them to avoid relationship conflict, which could inhibit the high they experience. Cannabis may also induce an amotivational state (Volkow et al., 2016) that leads users to be anchored to their homes and less willing to take steps to develop relationships or meet up with friends; as such, severe loneliness may be a potential consequence. Cannabis use may contribute to aggression among some users (Moore & Stuart, 2005), perhaps by increasing arousal, paranoia, and disinhibition, or through its effects on attention and information processing (Testa & Brown, 2015). Cannabis withdrawal has also been linked to increased anger and aggression across multiple studies (Budney *et al.*, 2001; Budney and Hughes, 2006; Kouri *et al.*, 1999). Frequent coping-motivated cannabis use could also prevent individuals from developing more adaptive coping skills for handling uncomfortable social situations, relationship conflict, or emotional distress.

Interpersonal dysfunction could also contribute to problematic patterns of cannabis use. Individuals with CUDs commonly report using it to decrease aggression (Arendt et al., 2007), which suggests interpersonal conflict often precipitates cannabis use. Individuals with CUD also report using to cope with or avoid uncomfortable social situations (Buckner, Bonn-Miller, Zvolensky, & Schmidt, 2007); socially anxious individuals, in particular, are at elevated risk for CUD (Buckner et al., 2012). Being unmarried (Cogle *et al.*, 2016) and living alone are risk factors for the progression from frequent use to CUD (Van der Pol et al., 2013).

Despite evidence to suggest an important bi-directional relationship between interpersonal dysfunction and CUD, several gaps in the literature exist. Some studies have relied on smaller, non-representative samples (Feingold *et al.*, 2008). Additionally, research has compared cannabis users to non-users (DuRant *et al.*, 2007; Temple & Freeman, 2011) or combined cannabis abuse and dependence in comparisons to the rest of a sample (Afifi *et al.*, 2012; Smith *et al.*, 2012). Multiple characteristics distinguish cannabis users from non-users (Cogle *et al.*, 2016; Lopez-Quintero *et al.*, 2011), and combining cannabis dependence with less severe (and more common) cannabis abuse likely dilutes associations that may be present between cannabis dependence or more severe CUD and interpersonal dysfunction. Indeed, one study of the NESARC found that the relationship between cannabis dependence with schizotypal personality disorder (OR = 7.32) was stronger than that found for cannabis abuse and this PD (OR = 2.83; Davis, Compton, Wang, Levin, & Blanco, 2013). Similarly, a more recent study relying on NESARC-III, which used DSM-5 criteria, found severe CUD showed stronger associations with presence of three PDs (OR = 8.0) than mild CUD (OR = 3.2; Hasin *et al.*, 2016). Severe CUD was also associated with higher rates of outpatient treatment (8.7%) compared to mild CUD (1.1%).

Research is needed to examine whether interpersonal dysfunction is linked to severe patterns of cannabis use specifically rather than cannabis use more generally. Though personality disorders have been linked to cannabis use problems (Cogle *et al.*, 2016; Lopez-Quintero *et al.*, 2011), relations between specific PDs and such problems have been given little consideration. Lastly, while the consequences of cannabis dependence have been found to equal or exceed that for alcohol dependence (Cerdeira *et al.*, 2016), differences between these disorders have been given little attention, especially with regard to interpersonal functioning. Alcohol dependence has also been linked to reduced social support (Dutton *et al.*, 2014; Schuckit & Smith, 2001) and elevated rates of PDs (Cogle *et al.*, 2016; Lopez-Quintero *et al.*, 2011). Comparisons between cannabis and alcohol dependence could help distinguish interpersonal problems related to substance use disorders in general from those with specific relations to CUD. It could also potentially inform treatments for CUD populations, which may require strategies that are distinct from those used for other substance use disorders.

The goal of the present study was to examine personality disorders and social support in cannabis dependence using a large representative sample. We considered personality disorders, specifically, given the severity and range of interpersonal dysfunction they represent. We also focused on social support, given its strong connection to interpersonal functioning and its important role in many mental and physical health outcomes (Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015). We hypothesized that cannabis dependence would be associated with lower social support and greater rates of all PDs. Given that interpersonal problems have also been linked to alcohol dependence (Afifi *et al.*, 2012; Smith *et al.*, 2012; Whisman, 2007), we considered our comparisons between cannabis and alcohol dependence exploratory and had no a priori hypotheses for these analyses, though we predicted having both diagnoses would be related to greater rates of PDs and lower social support than either diagnosis alone.

2. Methods

2.1. Sample and Procedures

The present sample was Wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions conducted by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) (Grant, Kamplan, Moore, & Kimball, 2007). The NESARC sample is reflective of the national non-institutionalized U.S. population, with young adults and under-represented minorities (e.g., African Americans) over-sampled to ensure adequate representation. Wave 2 data were collected in 2004–2005, with 34,653 total participants. Descriptive information for the sample used for the comparisons between alcohol and cannabis dependence is presented in Table 3.

2.2. Measures

2.2.1. Diagnostic assessment—Substance use disorders (SUDs) and personality disorders (PDs) were assessed using NIAAA’s Alcohol Use Disorder and Associated Disabilities Interview Schedule-IV (AUDADIS-IV) (Grant *et al.*, 2001). Cannabis dependence and alcohol dependence were outcomes of interest in the present analyses. All personality disorders were considered as predictor variables.

2.2.2. Perceived social support.—Perceived social support was assessed using the twelve item Interpersonal Support Evaluation List (ISEL) (Cohen & Hoberman, 1983). This is a widely used measure that has shown good reliability and validity (Merz *et al.*, 2014; Ruan *et al.*, 2008). Sample items include “There is someone I can turn to for advice about handling problems with my family.” Participants responded on a scale from 1 (definitely true) to 4 (definitely false). Items were averaged and coded such that higher scores indicated greater perceived social support.

2.3. Data Analytic Plan

All analyses were conducted with Statistical Analysis Software (SAS), version 9.4 PROC SURVEYLOGISTIC procedure. Multivariate logistic regression analyses were conducted controlling for age, gender, race, and ethnicity (Hispanic vs. non-Hispanic). Because income and marital status are likely to be a cause or consequence of substance use disorders (Cogle *et al.*, 2016), we did not include these variables as covariates in analyses. Demographic variables were also compared between cannabis and alcohol dependent groups. For continuous outcomes, particularly the number of PDs endorsed and social support, least squares difference in means were calculated to provide the difference in means between those with cannabis dependence and those without.

Additional analyses examined ORs or least squares differences in means for those with lifetime cannabis dependence and those with co-occurring cannabis and alcohol dependence compared to an alcohol dependence reference group on PDs and social support, as well as the demographic variables. Thus, the reference group was again shared for both predictor variables, allowing for comparison of effect sizes. Past-year analyses were underpowered for these specific comparisons but are presented in Supplemental Table 1.

3. Results

3.1. Cannabis Dependence vs No Cannabis Dependence

Tables 1 and 2 show the associations between cannabis dependence and personality disorders and social support in the past year and lifetime, respectively. Both past-year and lifetime cannabis dependence diagnoses were associated with a significantly higher risk of all PDs. Past-year and lifetime cannabis dependence were also associated with lower social support.

3.2. Cannabis Dependence versus Alcohol Dependence

Table 3 show the associations between interpersonal problems with lifetime diagnoses of cannabis dependence-only and comorbid cannabis and alcohol dependence, with alcohol dependence only as the reference group. Cannabis dependence only was associated with a significantly higher risk of all PDs, with the exception of borderline PD. Cannabis/alcohol dependence was associated with lower risk of dependent PD diagnosis and higher risk for all other PDs except avoidant PD. Compared to cannabis dependence-only, cannabis/alcohol dependence was associated with higher rates of antisocial, paranoid, and borderline PDs, and lower rates of avoidant and dependent PDs. Cannabis/alcohol dependence met for more PDs than either those with cannabis or alcohol dependence alone. Cannabis dependence with and without alcohol dependence was also associated with lower social support relative to alcohol dependence alone.

4. Discussion

The goal of the current study was to examine PDs and social support in those with cannabis dependence. Overall, we found PDs were very common in those with cannabis dependence, with this group endorsing two PDs on average and 72% having at least one PD. Unsurprisingly, cannabis dependence was also associated with reduced social support.

It was interesting to note higher rates of all PDs in cannabis dependence compared to those without the disorder. The relationship between antisocial PD and cannabis dependence makes sense, given that cannabis was illegal in most states at the time of the survey, and engaging in illegal behavior is one of the criteria for antisocial PD diagnosis (American Psychiatric Association, 2013). However, borderline and narcissistic PDs were more common in those with cannabis dependence and (along with schizotypal PD) were more strongly related to cannabis dependence than antisocial PD in past year analyses.

We had no a priori hypotheses for the comparisons between cannabis and alcohol dependence, though we found higher rates of every PD except borderline PD in cannabis dependence alone compared to alcohol dependence alone. Most individuals with lifetime history of cannabis dependence also had a lifetime history of alcohol dependence, and, unsurprisingly, those meeting for both diagnoses (and a more severe substance use disorder profile) had a significantly higher rate of PD and a greater number of PDs compared to either diagnosis alone. This study set out to examine whether differences in PDs exist between cannabis and alcohol dependence, not *why* they might exist. We did not control for co-occurring substance use or comorbidity in our analyses, as these variables could be a

cause or consequence of these disorders. A range of characteristics may help explain the differences between these two diagnoses, and future research may wish to examine these differences more rigorously, using longitudinal designs, for example.

Surprisingly little research has examined social support in CUD, though strong correlates of low social support such as depression (Zimet, Dahlem, Zimet, & Farley, 1988) have been linked to cannabis dependence (Cogle *et al.*, 2016; Lopez-Quintero *et al.*, 2011). The current study's findings of a relationship between cannabis dependence with lower social support represents a novel contribution to this literature. Alcoholism is characterized by intense feelings of loneliness (Åkerlind & Hörnquist, 1992), so it was also interesting to note lower social support in cannabis dependence alone compared to alcohol dependence alone. The lower perceived social support in cannabis dependence may be a consequence of the social withdrawal effects of cannabis use (Volkow *et al.*, 2016), though individuals who are anxious in social situations or avoid contact with others may also be prone to use as a means to cope with such feelings or escape such situations. The elevated rates of PDs in cannabis dependence may also contribute to reduced social support in this group.

The vast range of personality dysfunction linked to cannabis dependence in this study begs for an examination of potential mediating mechanisms in future research. Problems of impulsivity and emotion regulation are found in PDs (Linehan, 1987) as well as CUDs (Bujarski *et al.*, 2012) and may represent factors accounting for their co-occurrence. Individuals with interpersonal problems may also be more likely to use cannabis to cope, and coping motives have been found to predict the progression to dependence (Van der Pol *et al.*, 2013). Prolonged cannabis use may also contribute directly to greater isolation, distrust of others, and a general deterioration in social functioning. Experimental and longitudinal research is needed to examine these relationships.

The current study possesses a few limitations. First, the survey was conducted in 2004–2005, and multiple states have passed laws legalizing recreational cannabis use since then. Thus, the population of cannabis users has changed since the survey. Additional research is needed to examine these relationships in newer data and different populations, including samples from other countries. The current survey also relied on DSM-IV criteria for substance use disorders instead of more recent DSM-5 criteria. However, DSM-IV substance dependence has excellent concordance with DSM-5 moderate to severe substance use disorder (Goldstein *et al.*, 2015). It is noteworthy that the newer NESARC-III survey did not assess most personality disorders and other aspects of interpersonal functioning (e.g., social support) (Grant *et al.*, 2014); thus, the survey we chose seemed particularly well-suited for addressing our specific study aims. Interestingly, in the NESARC-III survey, which was collected in 2012, the rates of borderline PD among those with moderate to severe cannabis use disorder actually exceeded we found in the NESARC among those with cannabis dependence (Kerridge *et al.*, 2018). Lastly, some of the past-year analyses may have been underpowered. The fact that past year findings were highly consistent with lifetime analyses, which had much greater power, give us more confidence in these effects.

The findings of the current study add uniquely to the literature on the potential causes and consequences of CUD. The high rates of PDs and low social support found in cannabis

dependence may contribute to the high relapse and attrition rates associated with cannabis cessation interventions (Budney, Moore, Rocha, & Higgins, 2006). Treatments for CUDs may benefit from incorporating components that address interpersonal and emotion regulation problems found in personality disorders such as borderline personality disorder (e.g., Dialectical Behavior Therapy) (Linehan, 1987). Research is needed to understand the mechanisms underlying personality dysfunction in CUD.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgements

This manuscript used data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), which can be accessed at the website of the National Institute on Alcohol Abuse and Alcoholism at <http://www.niaaa.nih.gov>. This paper is released to inform interested parties of research and to encourage discussion. Any opinions and conclusions expressed herein are those of the authors and do not necessarily reflect the views of the U.S. Census Bureau. All results have been reviewed to ensure that no confidential information is disclosed. The statistical summaries reported in this document have been cleared by the Census Bureau's Disclosure Review Board release authorization number CBDRB-FY19-130.

Role of Funding Source

Dr. Cogle is supported by grant R34DA035944 awarded from the National Institutes of Health, Bethesda, MD, USA.

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Highlights

- Compared personality disorders (PD) and social support between cannabis and alcohol dependence
- Cannabis dependence alone had higher rates of most PDs than alcohol dependence alone
- Cannabis dependence alone was associated with lower social support than alcohol dependence alone

Table 1.

Demographics, personality disorders and interpersonal functioning by past-year cannabis dependence diagnosis.

	Descriptives, mean (s.e.) or N (wtd. %, [s.e.])		OR (95% CI) or least squares difference in means from “No Cannabis Dependence” baseline (SE)
	No Cannabis Dependence	Cannabis dependence	
Personality disorder			
Antisocial	1100 (3.5 [0.07])	30 (26.8 [1.7])	5.45 (4.42–6.72) ***
Avoidant	800 (2.3 [0.05])	<15	[D]
Dependent	150 (0.4 [0.02])	<15	[D]
Obsessive-compulsive	2700 (8.0 [0.09])	20 (17.4 [1.1])	2.09 (1.80–2.44) ***
Paranoid	1700 (4.3 [0.07])	20 (14.2 [1.1])	2.54 (2.06–3.13) ***
Schizoid	1100 (3.0 [0.06])	<15	[D]
Histrionic	650 (1.8 [0.04])	<15	[D]
Borderline	2200 (5.8 [0.08])	50 (40.8 [2.1])	7.72 (6.45–9.24) ***
Schizotypal	1500 (3.9 [0.06])	40 (25.8 [1.9])	6.20 (5.02–7.65) ***
Narcissistic	2400 (6.1 [0.08])	50 (39.0 [1.6])	6.90 (5.95–8.00) ***
Any PD	7700 (21.2 [0.15])	90 (72.4 [1.6])	6.93 (5.89–8.14) ***
PD count (wtd. mean [s.e.])	0.390 [0.003]	2.02 [0.06]	1.49 (0.06) ***
Social support (wtd. mean [s.e.])	3.54 [0.002]	3.41 [0.021]	–0.18 (0.02) ***
N ^f	34,500	100	34,500

Notes:

* p<.05

** p<.01

*** p<.001.

Cannabis dependence was compared to all other participants without cannabis dependence. All analyses controlled for age, gender, race, and ethnicity (Hispanic vs. non-hispanic). [D] Suppressed due to small cell count and low statistical power. Census Bureau authorization CBDRB-FY19–130.

Table 2.

Demographics, personality disorders and interpersonal functioning by lifetime cannabis dependence diagnosis.

		Descriptives, mean (s.e.) or N (wtd. %, [s.e.])		OR (95% CI) or least squares difference in means from “No Cannabis Dependence” baseline (SE)
		No Cannabis Dependence	Cannabis dependence	
Personality disorder				
	Antisocial	950 (3.1 [0.07])	200 (34.6 [1.4])	11.0 (9.50–12.6) ***
	Avoidant	750 (2.2 [0.05])	70 (11.7 [1.0])	4.94 (4.03–6.07) ***
	Dependent	100 (0.3 [0.02])	20 (4.9 [0.4])	12.9 (10.1–16.4) ***
	Obsessive-compulsive	2600 (7.7 [0.09])	150 (26.3 [1.5])	3.86 (3.28–4.54) ***
	Paranoid	1600 (4.0 [0.07])	150 (21.8 [1.5])	5.54 (4.57–6.72) ***
	Schizoid	1100 (2.9 [0.06])	70 (11.7 [0.8])	3.86 (3.24–4.59) ***
	Histrionic	600 (1.6 [0.03])	60 (11.3 [0.8])	5.07 (4.25–6.05) ***
	Borderline	2100 (5.5 [0.08])	150 (28.4 [1.1])	5.29 (4.70–5.95) ***
	Schizotypal	1400 (3.7 [0.06])	100 (19.2 [0.9])	5.07 (4.46–5.75) ***
	Narcissistic	2300 (5.8 [0.08])	150 (25.0 [1.0])	4.21 (3.74–4.73) ***
	Any PD	7400 (20.6 [0.14])	400 (69.7 [1.0])	7.04 (6.38–7.76) ***
	PD count (wtd. mean [s.e.])	0.369 [0.003]	1.95 [0.04]	1.49 (0.04) ***
	Social support (wtd. mean [s.e.])	3.54 [0.002]	3.46 [0.015]	–0.127 (0.016) ***
	N	34,000	550	34,500

Notes:

*
p<.05**
p<.01***
p<.001.

Cannabis dependence was compared to all other participants without cannabis dependence. All analyses controlled for age, gender, race, and ethnicity (Hispanic vs. non-hispanic). Census Bureau authorization CBDRB-FY19–130.

Table 3.

Demographics, personality disorders and interpersonal functioning by lifetime cannabis and alcohol dependence diagnosis.

		Descriptives, mean (s.e.) or N (wtd. %, [s.e.])			OR (95% CI) or least squares difference in means from alcohol dependence alone (SE)	
		Cannabis dependence alone	Alcohol dependence alone	Both cannabis and alcohol dependence	Cannabis dependence alone	Both cannabis and alcohol dependence
Age		35.4 (0.4)	40.9 (0.2)	34.5 (0.3)	5.48 (0.43) ***	6.42 (0.28) *** ^a
Female		70	1800	150	1.20 (1.01–1.41) *	0.76 (0.64–0.89) *** ^b
Marital status		38.2 [1.8]	34.1 [0.5]	31.9 [1.2]		
	Married/cohabitating	70	2200	150	0.77 (0.67–0.88) ***	0.73 (0.63–0.84) ***
	Widowed/divorced/separated	40	1100	90	1.03 (0.89–1.19)	1.18 (0.99–1.39)
	Never married	60	1200	150	1.35 (1.17–1.56) ***	1.28 (1.08–1.51) **
Race/Ethnicity		32.0 [1.5]	25.9 [0.4]	37.5 [1.5]		
	White	90	3000	250	0.56 (0.51–0.63) ***	1.47 (1.21–1.79) *** ^c
	Black	<15	<15	<15	[D]	[D]
	Hispanic	30	700	60	0.80 (0.68–0.94) **	1.04 (0.83–1.29)
	Other race/ethnicity	<15	<15	<15	[D]	[D]
Income [ln(income)]		40,270 (982)	34,520 (248)	26,840 (657)	0.24 (0.02) ***	0.44 (0.16) **
Education						
	High school dropout	20 19.5 [1.5]	550 11.8 [0.3]	60 15.8 [1.1]	1.80 (1.49–2.18) ***	0.78 (0.58–1.04) ^c
	Diploma/	100	2800	300	0.91 (0.81–1.03)	1.74 (1.43–2.12) *** ^c
	Some college/College graduate	60.5 [1.5] 30	62.7 [0.4] 1100 25.5	72.7 [1.1] 50	0.73 (0.65–0.82) ***	0.52 (0.44–0.61) *** ^b
Personality disorder		20.0 [0.8]	[0.4]	11.5 [0.6]		

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	Descriptives, mean (s.e.) or N (wt. %, [s.e.])			OR (95% CI) or least squares difference in means from alcohol dependence alone (SE)	
	Cannabis dependence alone	Alcohol dependence alone	Both cannabis and alcohol dependence	Cannabis dependence alone	Both cannabis and alcohol dependence
Antisocial	30 (18.0 [1.1])	450 (10.0 [0.3])	150 (41.0 [1.7])	1.91 (1.64–2.23)***	3.10 (2.50–3.84)*** ^D
Avoidant	<15	200 (4.9 [0.2])	60 (11.9 [1.2])	2.38 (1.82–3.12)***	1.12 (0.85–1.47) ^b
Dependent	<15	40 (0.7 [0.09])	20 (4.4 [0.6])	8.57 (6.62–11.1)***	0.65 (0.49–0.88)*** ^C
Obsessive-compulsive	30 (18.8 [1.0])	650 (13.4 [0.3])	100 (29.1 [2.0])	1.54 (1.34–1.77)***	1.82 (1.48–2.23)***
Paranoid	30 (14.8 [0.6])	450 (9.2 [0.3])	100 (24.4 [2.0])	1.46 (1.29–1.65)***	2.06 (1.66–2.56)*** ^D
Schizoid	20 (8.7 [0.3])	300 (5.9 [0.2])	60 (12.9 [1.2])	1.47 (1.33–1.63)***	1.60 (1.28–2.00)***
Histrionic	<15	250 (5.0 [0.2])	50 (12.4 [1.1])	1.53 (1.37–1.71)***	1.56 (1.26–1.93)***
Borderline	40 (16.5 [1.1])	700 (14.5 [0.3])	150 (32.9 [1.6])	1.02 (0.87–1.21)	2.69 (2.16–3.35)*** ^C
Schizotypal	30 (14.1 [1.1])	400 (7.8 [0.3])	90 (21.2 [1.3])	1.77 (1.44–2.16)***	1.76 (1.36–2.28)***
Narcissistic	40 (21.1 [1.1])	550 (11.1 [0.3])	100 (26.5 [1.4])	1.97 (1.70–2.30)***	1.44 (1.16–1.78)**
Any PD	100 (50.4 [1.7])	1900 (40.0 [0.5])	300 (77.1 [1.0])	1.41 (1.23–1.61)***	3.48 (2.92–4.15)*** ^C
PD count (wt. mean [s.e.])	1.38 [0.04]	0.83 [0.012]	2.16 [0.05]	0.49 (0.04)***	1.30 (0.05)*** ^C
Social support (wt. mean [s.e.])	3.47 [0.012]	3.52 [0.004]	3.46 [0.020]	–0.07 (0.02)***	–0.10 (0.02)***
N ^f	150	4500	400		

Notes:

* p<.05

** p<.01

*** p<.001.

Difference between ORs or means for the cannabis dependence and combined cannabis/alcohol dependence group is significant at

^a p<.05

^b p<.01

^c p<.001.

Cannabis dependence and combined cannabis/alcohol dependence were compared to those with alcohol dependence alone. Demographic analyses did not control for covariates. All other analyses controlled for age, gender, race, and ethnicity (Hispanic vs. non-hispanic). [D] Suppressed due to small cell count and low statistical power. Census Bureau authorization CBDRB-FY19–130.