



CENTER ON ALCOHOL,
SUBSTANCE USE
& ADDICTIONS

Cannabis Protective Behavioral Strategies as a Proximal Mediator of the Relationship Between Psychosocial Risk Factors and Cannabis-Related Outcomes

Vanessa C. Hernandez, Chloe E. Martinez, Matthew R. Pearson, & Addictions Research Team
Center on Alcohol, Substance use, And Addictions, University of New Mexico



CENTER ON ALCOHOL,
SUBSTANCE USE
& ADDICTIONS

Introduction

- ❖ Cannabis use remains a significant public health concern among young adults due to its association with various adverse outcomes
- ❖ Cannabis protective behavioral strategies (PBS) are individual-level harm reduction techniques shown to mitigate cannabis-related harms including negative cannabis-related consequences and symptoms of cannabis use disorder (CUD)
- ❖ Several risk/protective factors for cannabis-related harms have been identified including cannabis use motives, indicators of mental health, cannabis user identity, and other psychosocial factors
- ❖ Cannabis PBS is a plausible proximal mechanism that can fully or partially account for the relationships between these factors and cannabis-related outcomes

Methods

PARTICIPANTS

- ❖ Three large, independent samples of college student cannabis users (n= 1,200; n=1,308; n=607)

MEASURES

Risk Factors:

- ❖ Cannabis use motives (Marijuana Motives Questionnaire; Simons et al., 1998)
- ❖ Cannabis user identity (Modified Smoker Self-Concept scale; Shadel & Mermelstein, 2003)
- ❖ Mental health (DSM-5 Self-Rated Level 1 Cross-Cutting Symptom Measure-Adult; APA, 2013)
- ❖ Harm reduction self-efficacy (Harm Reduction Self-Efficacy Scale, HRSES; Schwebel et al., 2023)
- ❖ Sleep quality (Pittsburgh Sleep Quality Index, PSQI; Buysse et al., 1989)
- ❖ Stressful events (College Student's Stressful Events Checklist - an adaptation of the Social Re-Adjustment Scale; Holmes & Rahe, 1967)
- ❖ Suicidality (Colombia Suicide Severity Rating Scale; Posner et al., 2011)

Mediator:

- ❖ Cannabis PBS (Protective Behavioral Strategies for Marijuana scale, Pedersen et al., 2017)

Outcomes

- ❖ Past 30-day cannabis use frequency (MJ30)
- ❖ Marijuana Consequences Questionnaire (MACQ; Simons et al., 2012)
- ❖ Cannabis Use Disorder Identification Test (CUDIT-R; Adamson et al., 2010).

Results

ANALYSIS PLAN

- ❖ We conducted separate mediation analyses (see Figure 1) for each predictor variable on each cannabis-related outcome in each dataset using the PROCESS macro (Model 4) for SPSS

Figure 1. Conceptual Model

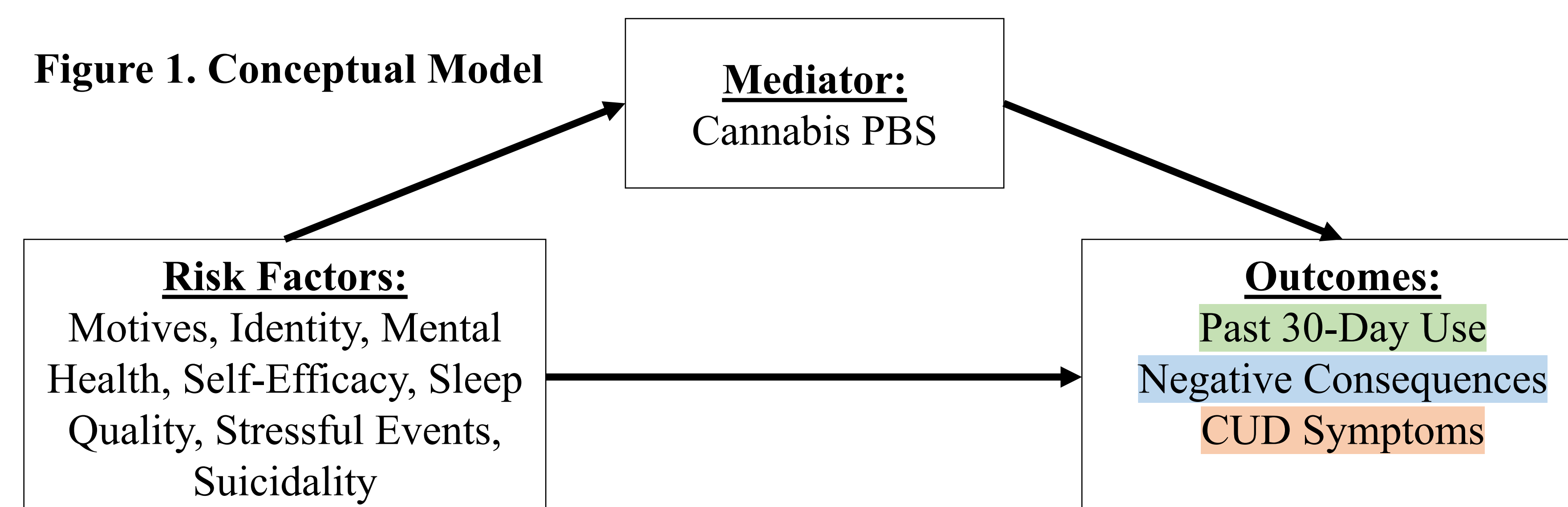


Table 1. Indirect Effects of Predictors on Cannabis-Related Outcomes via Cannabis PBS

	ART 2 (n=1200)			ART 3 (n=1308)			ART 4 (n=607)		
	MJ30	MACQ	CUDIT-R	MJ30	MACQ	CUDIT-R	MJ30	MACQ	CUDIT-R
Marijuana Motives Questionnaire									
Social Motives	.396*	.113*	.224*	.430*	.120*	.215*	.431*	.155*	.247*
Coping Motives	1.117*	.270*	.556*	1.138*	.259*	.485*	1.177*	.410*	.625*
Enhancement Motives	.766*	.208*	.410*	.407*	.114*	.205*	.761*	.273*	.437*
Conformity Motives	.056	.013	.025	.323	.092	.163	-.526	-.196	-.308
Expansion Motives	.856*	.233*	.459*	.834*	.241*	.415*	.659*	.243*	.380*
Harm Reduction Self-Efficacy									
Negative Emotions	-	-	-	-	-	-	-.699*	-.239*	-.393
Positive Social Situations	-	-	-	-	-	-	-.614*	-.214*	-.345
Low Self Regulation	-	-	-	-	-	-	-.722*	-.247*	-.397
Pleasant Emotions	-	-	-	-	-	-	-.445*	-.159*	-.254
DSM-5 Cross-Cutting Symptom Measure									
Depression	.302*	.082*	.163*	.283*	.079*	.145*	.391*	.129*	.213*
Anger	.470*	.129*	.254*	.432*	.122*	.223*	.474*	.164*	.266*
Mania	.346*	.095*	.186*	.275*	.080*	.143*	.402*	.137*	.222*
Anxiety	.140*	.038*	.075*	.122*	.035*	.064*	.186*	.065*	.105*
Somatic Symptoms	.319*	.088*	.174*	.244*	.070*	.127*	.276*	.096*	.156*
Suicidal Ideation	.795*	.218*	.429*	.725*	.208*	.374*	.922*	.321*	.508*
Psychotic Symptoms	.530*	.145*	.285*	.438*	.130*	.227*	.598*	.210*	.333*
Sleep Problems	.455*	.124*	.247*	.432*	.121*	.223*	.591*	.199*	.328*
Memory	.809*	.222*	.439*	.874*	.221*	.422*	.887*	.287*	.477*
Repetitive Thoughts & Behaviors	.479*	.132*	.262*	.362*	.100*	.183*	.517*	.174*	.284*
Dissociation	.711*	.195*	.385*	.719*	.191*	.358*	.589*	.203*	.328*
Personality Functioning	.644*	.177*	.352*	.383*	.102*	.192*	.475*	.152*	.254*
Cannabis User Identity	-	-	-	1.193*	.302*	.444*	1.238*	-.239*	.654*
Pittsburgh Sleep Quality Index	-	-	-	.348	.105	.185	1.008*	.354*	.569
Stressful Events Checklist	-	-	-	.001	.000	.001	.001	.001*	.001
Colombia Suicide Severity Rating Scale									
Suicidal Ideation (lifetime)	-	-	-	.166*	.050*	.090*	.479*	.105	.276
Suicidal Ideation (past month)	-	-	-	.433*	.131*	.2273*	.521*	.041	.334

Note. Indirect effects were considered significant (*) when the 95% bootstrapped confidence intervals did not include zero.

Results

- ❖ Mediation analyses revealed that cannabis PBS significantly mediated the relationships between most risk factors and most cannabis-related outcomes (88.2%, see Table 1)
- ❖ Cannabis PBS was a robust predictor of all cannabis-related outcomes in each dataset (i.e., b path was always significant), thus the driver of whether there was a significant indirect effect was whether the risk factor significantly related to cannabis PBS (i.e., a path)
- ❖ The strongest predictor of cannabis PBS use was cannabis user identity, which accounted for between 22.7% and 23.5% of the variance in cannabis PBS use, exhibiting the strongest indirect effects on cannabis-related outcomes
- ❖ Yet, cannabis user identity still had significant direct effects on cannabis-related outcomes, suggesting only partial mediation
- ❖ Among the cannabis use motives, coping motives were most strongly negatively related to cannabis PBS use (.063<R²<.092), yet coping motives had robust positive associations with cannabis-related outcomes even when controlling for cannabis PBS use (i.e., partial mediation)
- ❖ Conformity motives were consistently related to lower cannabis use and higher consequences/CUD symptoms, yet were unrelated to cannabis PBS use (.000<R²<.004)

Discussion

- ❖ Although cannabis PBS was a partial mediator of the relationships between most predictors and cannabis-related outcomes, these effects do not appear to be very specific to the type of risk factor
- ❖ We have clear evidence that cannabis PBS does not account for the relationship between conformity motives and cannabis-related outcomes
- ❖ Our cross-sectional design prohibits the ability to examine true mediation (i.e., cannot demonstrate temporal precedence), thus experimental and longitudinal designs are needed to provide higher quality evidence of mediation to establish cannabis PBS as a viable mechanism of behavior change

CONTACT

- ❖ e-mail: vhernandez@unm.edu
- ❖ Website: <http://mateolab.yolasite.com/>



We would like to acknowledge members of the Addictions Research Team (ART) who contributed to data collection.

ART 2:

Matthew R. Pearson, University of New Mexico (Coordinating PI); Adrian J. Bravo, William & Mary (site PI); Bradley T. Conner, Colorado State University – Fort Collins (site PI); Carrie Cuttler, Washington State University (site PI); Craig A. Field, University of Texas at El Paso (site PI); Vivian Gonzalez, University of Alaska - Anchorage (site PI); James M. Henson, Old Dominion University (site PI); Jon M. Houck, Mind Research Network; Kevin M. King, University of Washington (site PI); Benjamin O. Ladd, Washington State University (site PI); Kevin S. Montes, California State University – Dominguez Hills (site PI); Mark A. Prince, Colorado State University – Fort Collins (site PI); Maria M. Wong, Idaho State University (site PI).

ART 3:

Matthew R. Pearson, University of New Mexico (Coordinating PI); Adrian J. Bravo, William & Mary (site PI); Bradley T. Conner, Colorado State University – Fort Collins (site PI); Carrie Cuttler, Washington State University (site PI); Craig A. Field, University of Texas at El Paso (site PI); Vivian Gonzalez, University of Alaska - Anchorage (site PI); James M. Henson, Old Dominion University (site PI); Jon M. Houck, Mind Research Network; Kevin M. King, University of Washington (site PI); Benjamin O. Ladd, Washington State University (site PI); Kevin S. Montes, California State University – Dominguez Hills (site PI); Mark A. Prince, Colorado State University – Fort Collins (site PI); Maria M. Wong, Idaho State University (site PI).

ART 4:

Matthew R. Pearson, University of New Mexico (Coordinating PI); Adrian J. Bravo, William & Mary (site PI); Bradley T. Conner, Colorado State University – Fort Collins (site PI); Carrie Cuttler, Washington State University (site PI); Robert D. Dvorak, University of Central Florida (site PI); James M. Henson, Old Dominion University (site PI); Kevin M. King, University of Washington (site PI); Benjamin O. Ladd, Washington State University (site PI); Kevin S. Montes, California State University – Dominguez Hills (site PI); Dylan K. Richards, University of Georgia (site PI); Maria M. Wong, Idaho State University (site PI).