



CENTER ON ALCOHOL,
SUBSTANCE USE
& ADDICTIONS

Buffering Against Risk: Cannabis Protective Behavioral Strategies as a Moderator of the Relationship between Psychosocial Risk Factors and Cannabis-Related Outcomes

Zurial A. Lamour, Joey C. Mok, 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 **protective behavioral strategies (PBS)** are harm reduction techniques shown to reduce frequency, quantity, intoxication, and/or related harms
- ❖ The present study investigated whether cannabis PBS serves as a buffer (moderator) between several established psychosocial risk factors and cannabis-related outcomes, including cannabis use frequency, negative cannabis-related consequences, and symptoms of **cannabis use disorder (CUD)**

Method

Participants

- ❖ College students were recruited from one of 10 universities across three consecutive years of data collection by the Addictions Research Team
- ❖ Our analytic samples were restricted to past 30-day cannabis uses (ART 1 N = 1,200; ART 2 N = 1,308; ART 3 N = 607)

Measures

- ❖ Cannabis PBS were assessed using the 17-item version of the Protective Behavioral Strategies for Marijuana scale (PBSM; Pedersen et al., 2017)

Moderators:

- ❖ Moderators included cannabis use motives (MMQ; Simons et al., 1998), cannabis user identity (Modified Smoker Self-Concept scale; Shadel & Mermelstein, 2003), harm reduction self-efficacy (Harm Reduction Self-Efficacy Scale, HRSES; Schwebel et al., 2023), mental health symptoms (DSM-5 Self-Rated Level 1 Cross-Cutting Symptom Measure; APA, 2013), 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)

Outcomes:

- ❖ Cannabis use frequency was assessed with a single item of number of days used in the past 30 days (**MJ30**)
- ❖ Negative cannabis-related consequences were assessed using the brief 21-item version of the Marijuana Consequences Questionnaire (**MACQ**; Simons et al., 2012)
- ❖ CUD symptoms were assessed using the 8-item Cannabis Use Disorder Identification Test-Revised (**CUDIT-R**; Adamson et al., 2010)

Results

- ❖ Moderation analyses were conducted using the PROCESS macro for SPSS (Model 1) to evaluate the interactive effects of PBSM and various risk factors (depression, anxiety, stress, etc.) on cannabis-related outcomes (see Conceptual Model)

Table 1. Interactive Effects Between Risk Factors and Cannabis PBS on Cannabis-Related Outcomes

	ART2 (n=1200)			ART3 (n=1308)			ART4 (n=607)		
Cannabis Use Motives	MJ30	MACQ	CUDIT-R	MJ30	MACQ	CUDIT-R	MJ30	MACQ	CUDIT-R
Social Motives	-.44	-.23	-.27	-.44	-.20	-.35	-.57	-.08	-.34
Coping Motives	-.87	-.52	-.81	-.87	-.23	-.29	-.60	-.20	-.33
Enhancement Motives	-1.29	-.47	-.80	-1.29	-.37	-.63	-.97	-.10	-.34
Conformity Motives	1.87	-.11	.22	1.87	.34	.04	2.11	-.25	-.63
Expansion Motives	-.69	-.19	-.49	-.69	.14	-.04	-.61	-.19	-.32
Cannabis User Identity	-.47	-.11	-.22	-.47	.16	.11	-.41	-.05	-.21
Harm Reduction Self-Efficacy									
Negative Emotions	---	---	---	---	---	---	-.28	.17	.67
Positive Social Situations	---	---	---	---	---	---	-.03	.15	.15
Low Self-Regulation	---	---	---	---	---	---	-.32	.24	.10
Pleasant Emotions	---	---	---	---	---	---	-.28	-.07	.19
Mental Health Symptoms									
Depression	-.36	-.40	-.53	-.36	-.29	-.41	-.13	-.22	-.23
Anger	-.25	-.71	-.85	-.25	-.52	-.81	-.19	-.37	-.53
Mania	-.05	-.32	-.37	-.05	-.22	-.30	.11	.02	-.08
Anxiety	-.27	-.25	-.33	-.27	-.19	-.30	-.19	-.17	-.22
Somatic	.30	-.32	-.35	-.14	-.21	-.33	.03	-.06	-.04
Suicidal Ideation	.51	-.27	-.08	.51	-.35	-.40	.20	-.45	-.54
Psychosis	.61	.00	.20	.61	.05	.04	.52	.10	.27
Sleep Problems	-.26	-.45	-.37	-.26	-.47	-.74	.49	-.20	-.28
Memory	-.20	-.45	-.43	-.20	-.33	-.56	-.01	-.40	-.65
Repetitive Thoughts and Behaviors	.01	-.23	-.20	.01	-.18	-.28	.18	-.20	-.19
Dissociation	-.15	-.53	-.42	-.15	-.41	-.68	-.18	-.32	-.35
Personality Functioning	-.21	-.32	-.30	-.21	-.23	-.35	.14	-.15	-.13
Sleep Quality	---	---	---	-.62	-.36	-.66	-.56	-.30	-.55
Stressful Life Experiences	---	---	---	-.00	.00	.00	.00	.00	.00
Suicide Lifetime	---	---	---	-.47	-.21	-.32	-.40	.00	-.14
Suicide Past Month	---	---	---	.05	-.20	-.28	.01	-.49	-.43

Significant effects ($p < .05$) are in bold typeface for emphasis

Figure 1. Example Moderation Effect

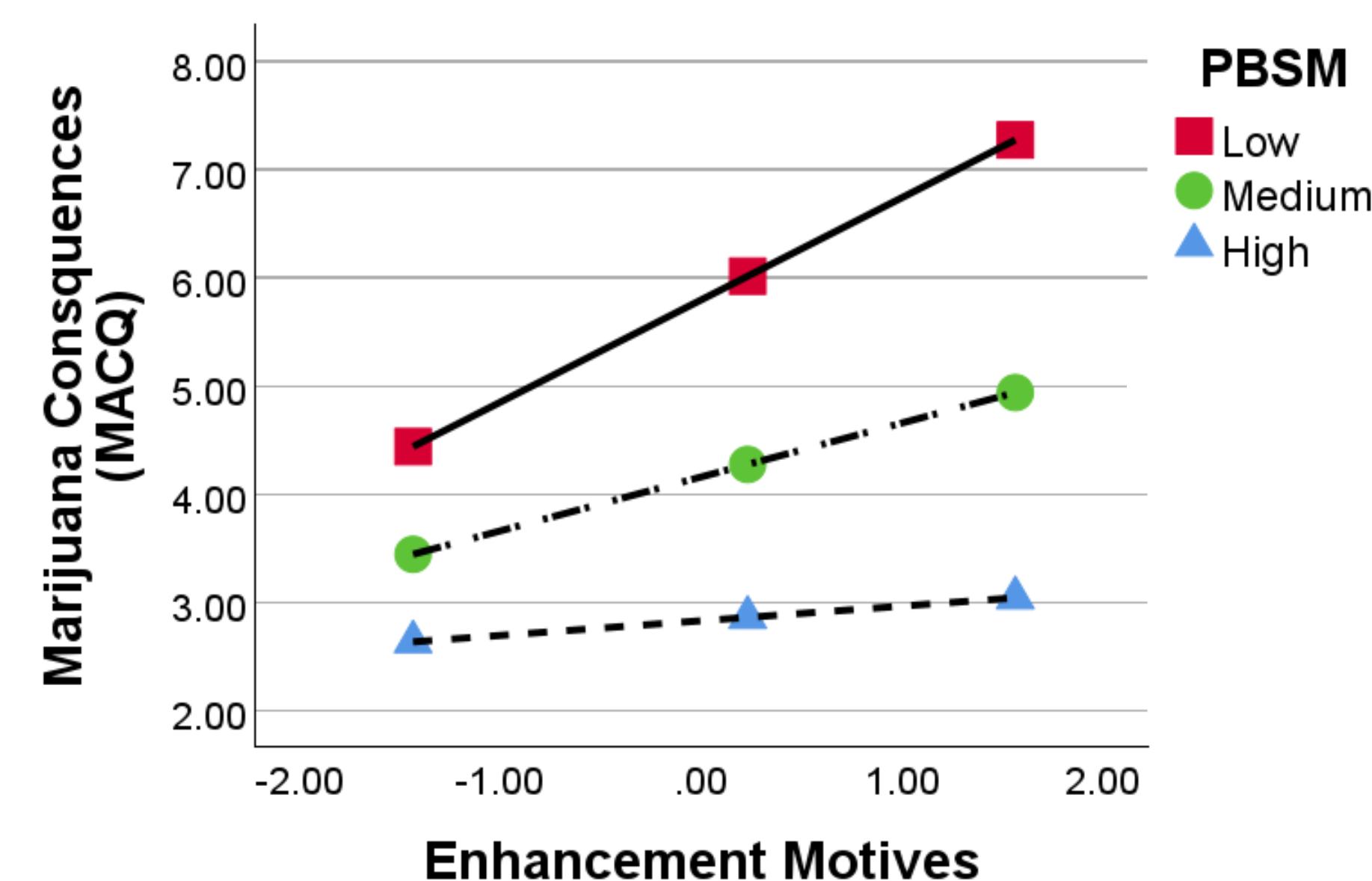
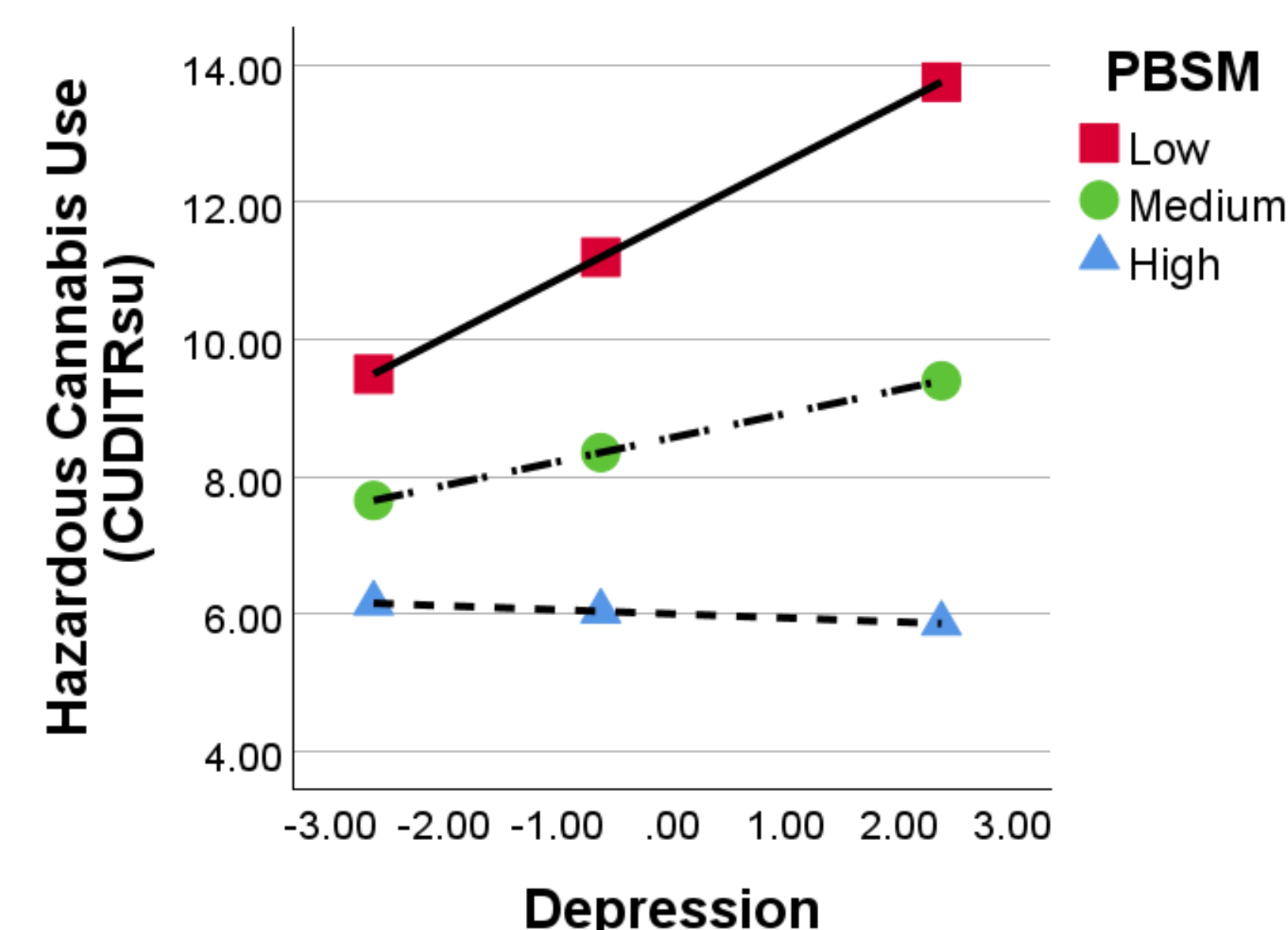


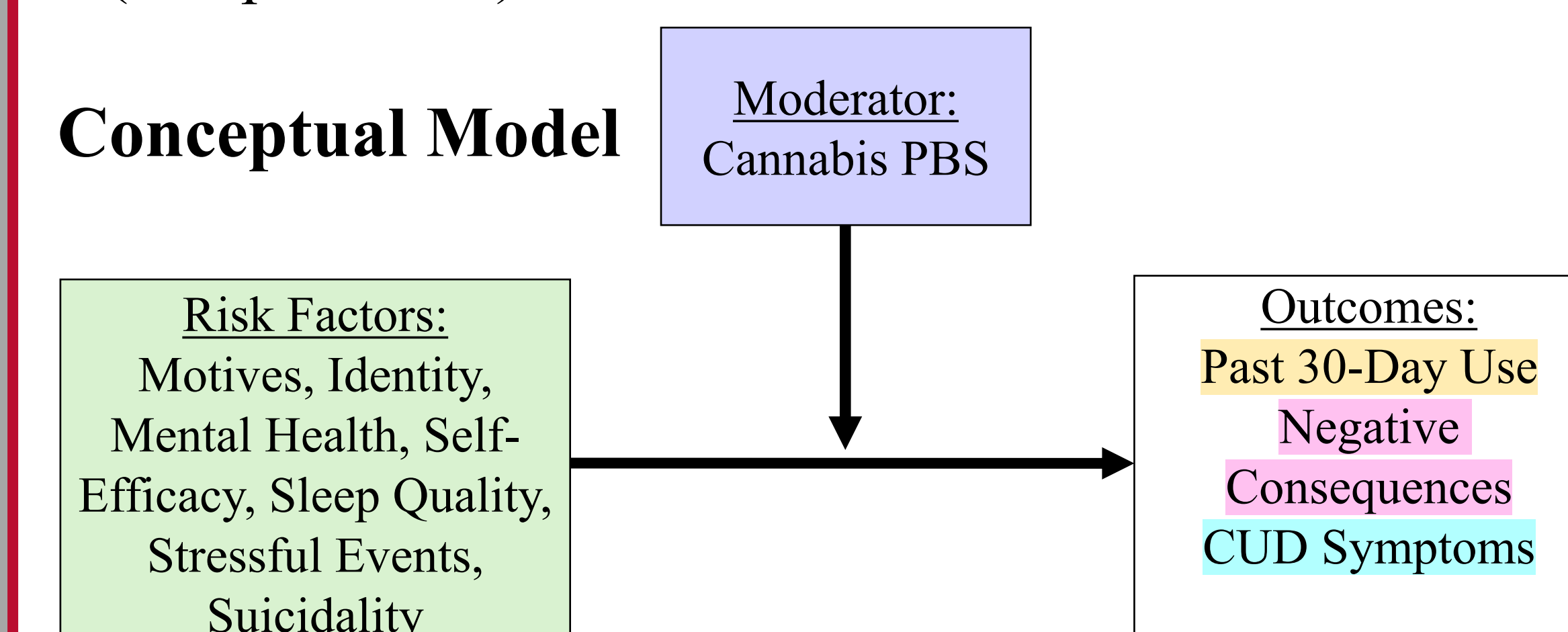
Figure 2. Example Moderation Effect



Results

- ❖ Moderation analyses revealed that cannabis PBS significantly buffered the relationship between most risk factors and cannabis-related outcomes (see Table 1)
- ❖ For example, motives were positively associated with cannabis-related outcomes, and cannabis PBS use attenuated this association (e.g., see Figure 1 for enhancement motives)
- ❖ Indicators of poor mental health (e.g., depression, see Figure 2) were robust predictors of higher negative cannabis-related consequences and CUD symptoms when cannabis PBS use was low (16th percentile)
- ❖ However, these associations were significantly weaker among individuals reporting high levels of cannabis PBS (84th percentile)

Conceptual Model



Discussion

- ❖ About 2/3rds of the interaction effects were significant with larger samples (65.5%-68.1% ART2-3), and about a quarter were significant in the smaller sample (25.6%)
- ❖ Our findings suggest that cannabis PBS acts as a generalized buffer, reducing the impact of a wide array of risk factors on cannabis-related harms
- ❖ Rather than focusing on highly specific, individual moderation models, intervention development would benefit more from leveraging cannabis PBS as a broad-spectrum protective resource
- ❖ Additional research is needed to determine whether higher risk users benefit more from PBS-based interventions

Contact

Email:
zlamour@unm.edu
Website:
<https://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).