

Impulsivity and Inhibition as Risk Factors for Suicide

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INTRODUCTION

- Suicides rates have increased by 37% from 2000-2022, indicating a greater need for well-informed intervention (Centers for Disease Control and Prevention [CDC], 2024)
- Impulsivity:** Urge or completion of actions that can be seen as premature, unduly, risky, or poorly conceived (Crews & Boettiger, 2009)
- Behavioral Inhibition System:** Dispositional sensitivity to signals of punishment associated with anticipating and avoiding unfavorable outcomes
- Behavioral inhibition and facets of impulsivity, specifically negative urgency, have been associated with risk for suicidal behavior (SB; Cyders & Smith, 2007)
- Virtual Reality (VR)** has offered a way to study SB without placing participants at risk

AIMS & HYPOTHESES

- Aim:** Examine impulsivity and inhibition as potential risk factors for SB using VR
- Hypothesis 1:** Higher impulsivity will be associated with a greater likelihood of engaging in VR SB
- Hypothesis 2:** Lower inhibition will be associated with a greater likelihood of engaging in VR SB

METHODS

Participants

- N = 63**, at-risk young adults (18-35) who had recent suicide ideation or SB, recruited as part of a larger study on suicide risk
- Age:** $M = 25.78$, $SD = 5.04$
- Gender:** Cis-woman ($n = 40$, 63.5%), Cis-man ($n = 16$, 25.4%), Non-binary ($n = 7$, 11.1%)
- Race:** White ($n = 42$, 66.7%), Asian ($n = 8$, 12.7%), Black ($n = 7$, 11.1%), Other ($n = 6$, 9.6%)
- Lifetime Suicide Attempts:** 30.2% (multiple attempts 14.3%)

Measures

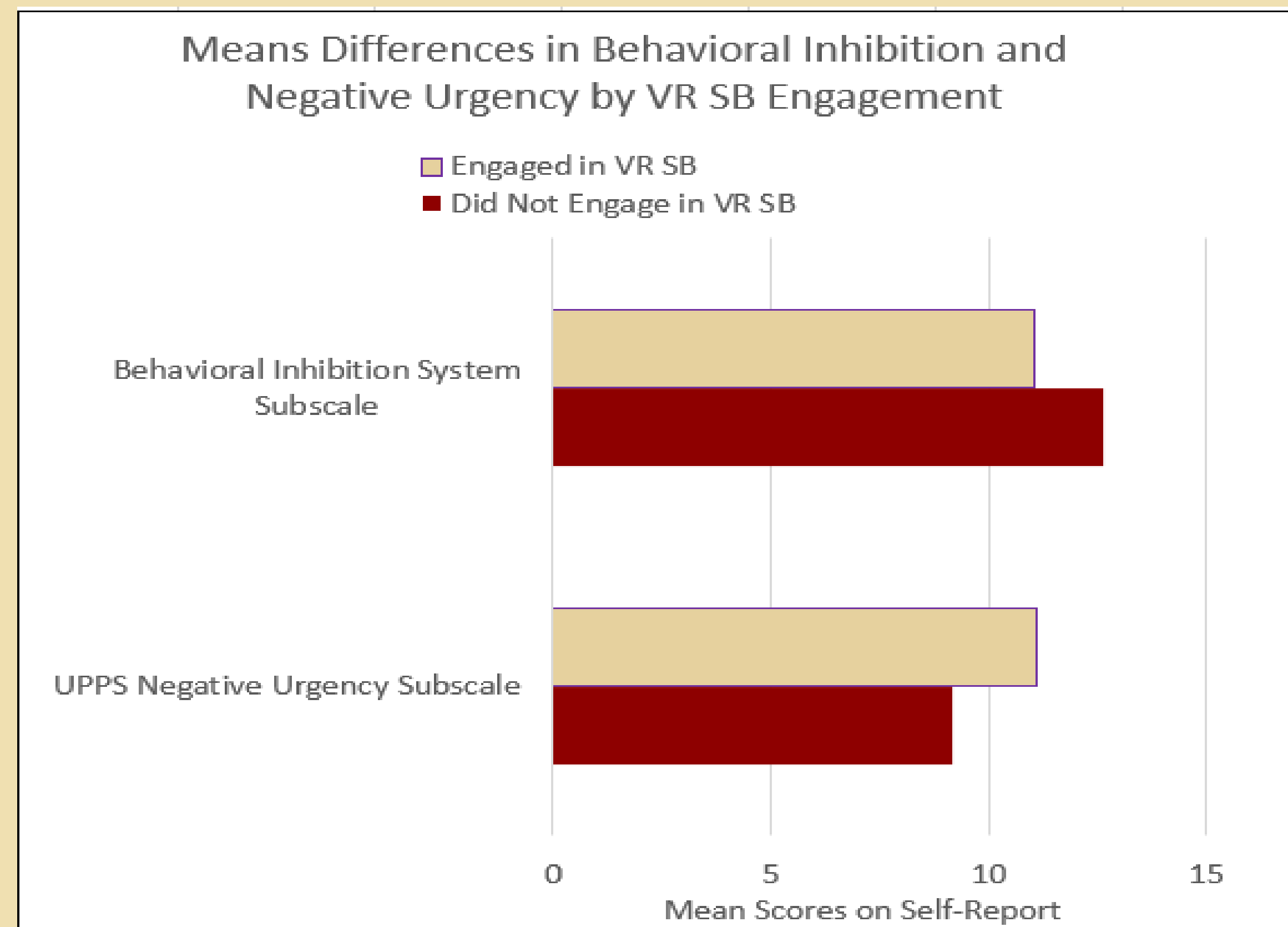
- Short Urgency, Premeditation, Perseverance, Sensation Seeking Impulsive Behavior Scale (SUPPS-P, Cyders, M. A., 2014, $\alpha = .86$): 20-item self-report measure assessing impulsivity based on five, four-item subscales: Positive Urgency ($\alpha = .88$), Negative Urgency ($\alpha = .77$), Lack of Perseverance ($\alpha = .65$), Lack of Premeditation ($\alpha = .88$), Sensation Seeking ($\alpha = .72$)
- Behavioral Inhibition Subscale (BIS; Carver, C.S., 1994): 6-item self-report subscale of the BIS/BAS Scale that measures behavioral inhibition ($\alpha = .72$)

VR Suicidal Decision Scenarios

- Jumping scenario (Richie's Plank Experience)
- Shooting scenario (Arizona Sunshine)

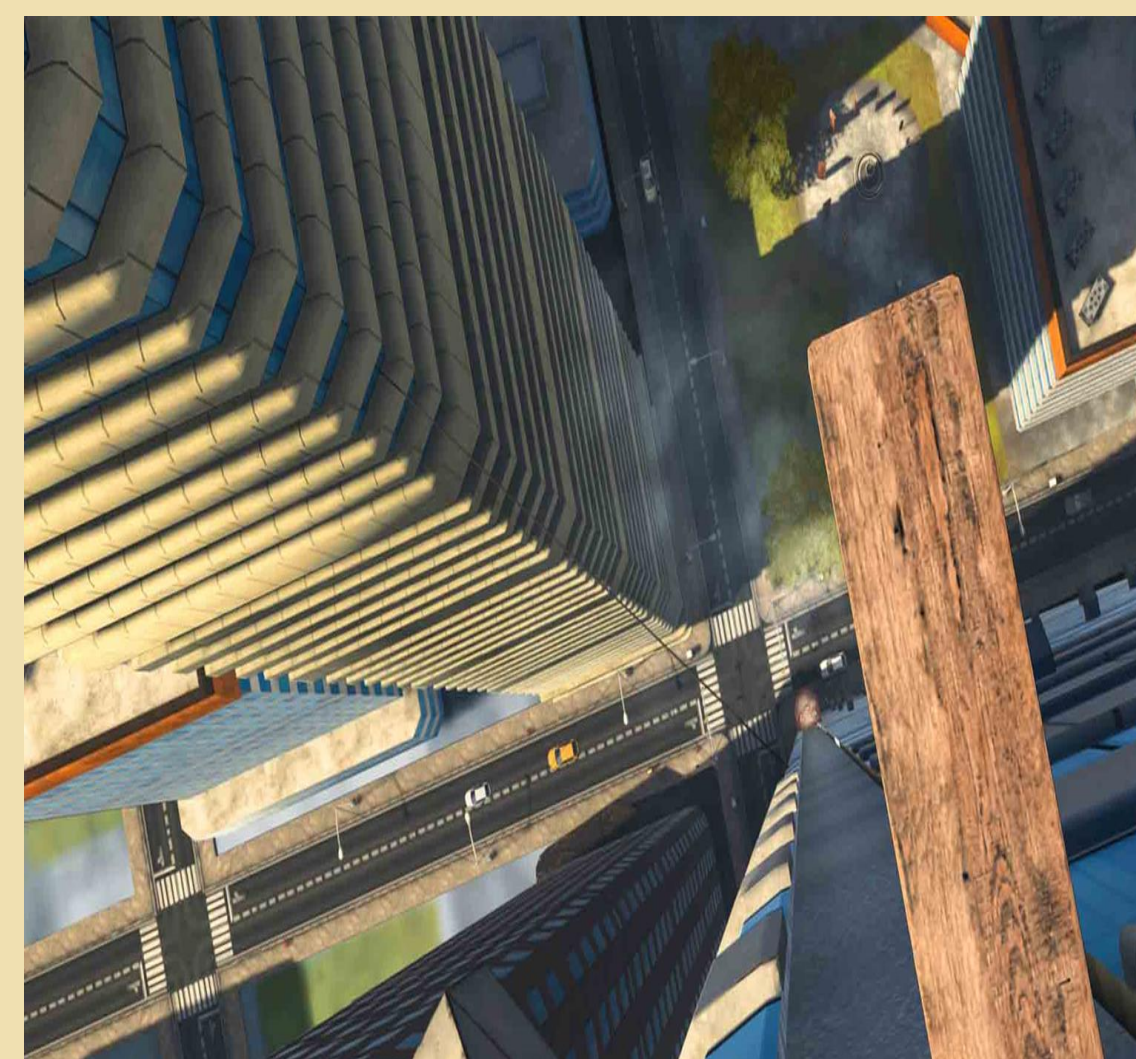
Data Analysis

- Binary Logistic regression conducted in SPSS to examine whether impulsivity (UPPS-P subscales), and lower inhibition (BIS subscale) would be associated with a greater likelihood of engaging in a VR SB
- Pearson correlation tests conducted in SPSS to examine associations between impulsivity, behavioral inhibition, and VR SB



Variable	Behavioral Inhibition System Subscale	UPPS Negative Urgency Subscale	UPPS Lack of Perseverance	UPPS Lack of Premeditation Subscale	UPPS Sensation Seeking	UPPS Positive Urgency	Any VR Behavior (interrupted, aborted, or actual)	Lifetime suicide attempt baseline
Behavioral Inhibition System Subscale	1	-.302*	.210	.152	.083	.046	-.123	.212
UPPS Negative Urgency Subscale		1	-.075	-.384**	.063	.594**	.190	.221
UPPS Lack of Perseverance			1	.420**	-.008	.027	-.039	.081
UPPS Lack of Premeditation Subscale				1	.047	.583	-.074	.334*
UPPS Sensation Seeking					1	.389**	-.095	.029
UPPS Positive Urgency						1	.087	.352*
Any VR Behavior (interrupted, aborted, or actual)							1	.291*
Lifetime suicide attempt baseline								1

* Correlation is significant at the 0.05 level
** Correlation is significant at the 0.01 level



RESULTS

Hypothesis 1

- The Omnibus Test of Model Coefficients indicated that the overall model was not significant, $\chi^2(5) = 8.592$, $p = .126$
 - The model accounted for 18.7% of the variance in VR SB (*Nagelkerke R*² = .187)
- Negative Urgency was the only significant predictor of VR SB ($B = .319$, $p = .029$, $Exp(B) = 1.376$)
 - For every one-point increase in negative urgency, there is a 57.9% increase in the chances that the participant made a VR SB

Hypothesis 2

- The Omnibus Test of Model Coefficients indicated that the overall model was not significant, $\chi^2(5) = 3.185$, $p = .071$
 - The model accounted for 7.1% of the variance in VR SB (*Nagelkerke R*² = .071)
- Behavioral Inhibition was not a significant predictor of VR SB ($B = -.168$, $p = .100$, $Exp(B) = .845$)

CONCLUSIONS

- Hypothesis regarding behavioral inhibition was not supported
 - This indicates either inefficient measurement of cognitive inhibition or cognitive inhibition is not a strong risk factor for SB
- Hypothesis regarding impulsivity was partially supported
 - Negative urgency was a significant predictor of VR SB, suggesting that impulsivity in response to negative emotions, is a potential factor for SB

Limitations

- Preliminary data and small sample size
- Self-report bias
- Ecological validity with SB in VR environment
- Lack of addressing external factors (stress, anxiety, context, etc.)

Future Directions

- Explore ways to create more ecologically valid VR suicidal decision scenarios
- Consider alternative approaches to measure behavioral inhibition, such as behavioral tasks

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