

Predicting Decision Latency in Suicide-Related Virtual Reality: The Role of Perceived Burdensomeness, Thwarted Belongingness, and Capability

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Introduction

Background

- Suicide remains a leading cause of death worldwide and is influenced by complex psychological factors
- The Interpersonal Theory of Suicide (ITS) proposes three constructs associated with suicide risk:
 1. **Perceived Burdensomeness (PB)**—belief that one is a burden on others
 2. **Thwarted Belongingness (TB)**—feelings of social disconnection
 3. **Acquired Capability (FSS)**—reduced fear of death or pain

Research Gap

- While the Interpersonal Theory of Suicide identifies PB, TB, and FSS as key psychological constructs associated with suicide risk, it remains unclear how these three constructs influence the decision time of individuals during virtual reality (VR)-simulated suicide scenarios
- Decision latency may reflect cognitive conflict during suicide-related decision-making

Study Aim

- The goal of this project was to determine how these three psychological constructs influence decision latency during VR-simulated suicide scenarios

Study Overview

- Participants: FSU students
- Sample size: Varied by analysis due to missing data (N = 39)
- Design: Within-subject VR decision-making task
- Predictors: PB, TB, FSS
- Outcome: Reaction time (seconds) when choosing between suicide and non-suicide options

Methods

- Participants completed:
 1. Self-report measures assessing PB, TB, and FSS
 2. A VR task presenting suicide-related and non-suicide scenarios
- Reaction time (seconds) was recorded for each decision
- Linear regression analyses examined whether ITS constructs predicted overall reaction time
- An independent samples t-test compared reaction times between scenario types

Table 1

Linear Regression Analyses Examining Interpersonal Theory of Suicide (ITS) Constructs as Predictors of Overall, Non-Suicide, and Suicide Reaction Time (RT)

FSS (Capability) Predicting Overall RT				
Predictor	b	SE	t	p
Intercept	6.80	.99	6.85	< .001
FSS	-0.02	0.15	-0.12	.903
$R^2 = .00$				
PB and TB Predicting Non-Suicide RT				
Predictor	b	SE	t	p
Intercept	4.67	2.92	1.60	.118
PB	-0.08	0.35	-0.24	.813
TB	0.11	0.18	0.62	.542
$R^2 = .01$				
PB, TB, and FSS Predicting Suicide RT				
Predictor	b	SE	t	p
Intercept	38.08	15.84	2.40	.043
PB	0.03	0.85	0.04	.972
TB	-1.32	0.80	-1.64	.139
FSS	-0.36	0.46	-0.77	.463
$R^2 = .31$				

Note. FSS = Fearlessness about Suicide Scale; RT = Reaction Time; PB = Perceived Burdensomeness; TB = Thwarted Belongingness

None of the ITS constructs significantly predicted reaction time in any model

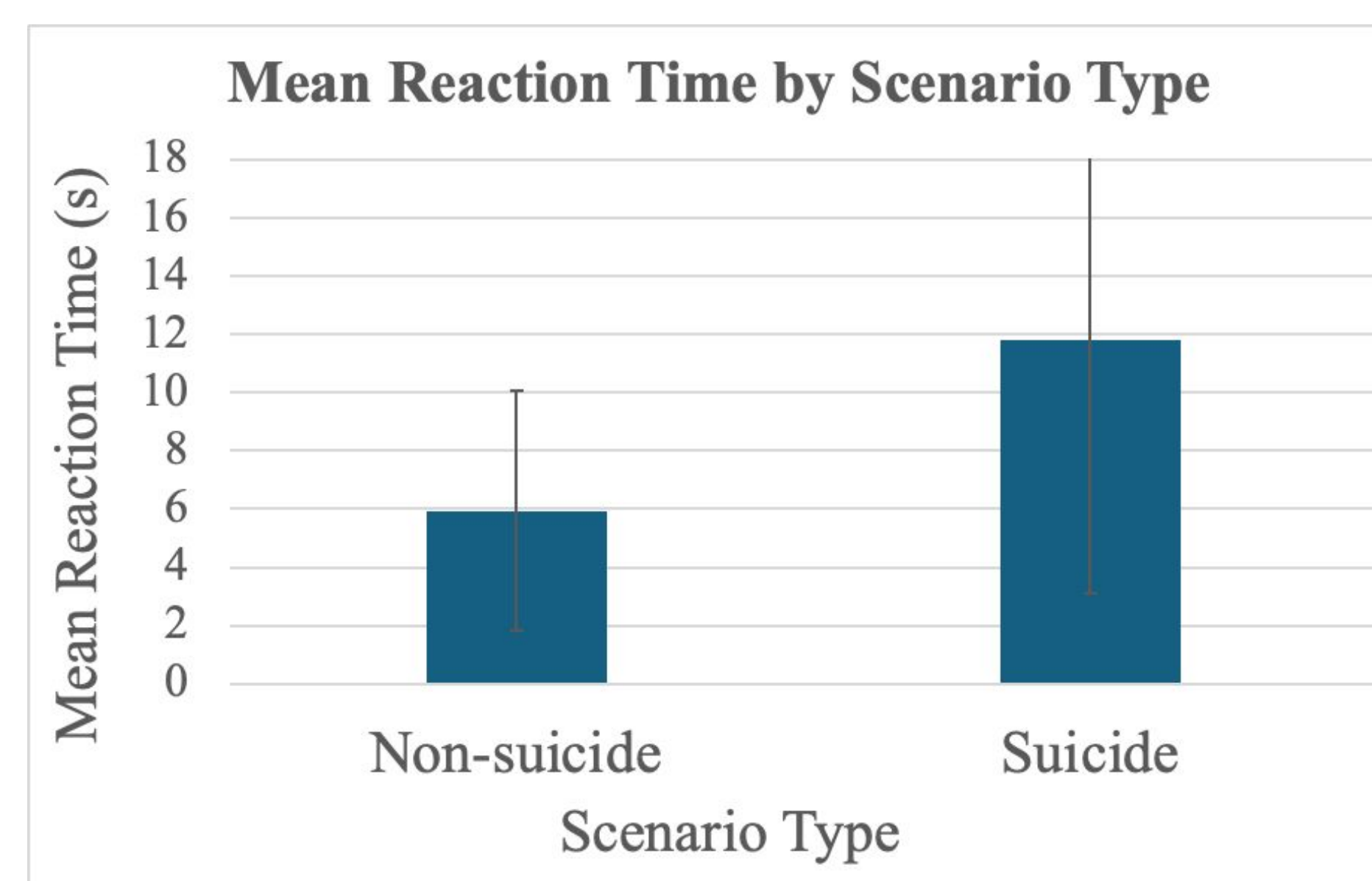


Figure 1: Mean reaction time (seconds) by scenario type (suicide vs. non-suicide). Error bars represent ±1 standard error



Figure 2: Example VR environment used during the decision-making task

Results

ITS Constructs x Reaction Times

- ITS constructs did not significantly predict overall reaction time

Mean Reaction Times

- Non-suicide scenarios were slower on average than suicide scenarios
- The mean difference was 5.12 seconds, $t(11) = 1.72$, $p = 0.113$
- The 95% confidence interval ranged from -1.42 to 11.66 seconds
- While not statistically significant, the trend suggests potential differences that warrant examination in larger samples

Discussion

- Although ITS constructs did not significantly predict reaction time, non-suicide scenarios elicited longer response times on average
- The wide confidence interval suggests variability and limited statistical power in the current sample
- These findings suggest that:
 1. VR may serve as a promising tool for measuring behavioral markers of suicide-related cognition
 2. Larger samples are needed to clarify whether ITS constructs influence decision latency

Future Directions

- Increase sample size to improve statistical power
- Examine effect sizes and behavioral variability
- Explore whether reaction time reflects cognitive conflict
- Investigate additional behavioral markers within VR paradigms

Resources

Scan for references:

