

Introduction

- 1,100 college students die by suicide every year in United States (Wilcox, 2010).
- Given that previous studies have been mostly correlational in nature, inferences regarding the causal relationship between risk factors, such as social exclusion, and suicidal behavior remain elusive.
- Advancement of novel technologies such as Cyberball, a virtual reality task to manipulate the degree of social inclusion or exclusion, enable us to study social exclusion in a controlled lab setting.
- Implicit Association Test (IAT), a behavioral assessment that taps into one's self-association to life/death stimuli, may be more useful predictors of future suicidal behavior compared to traditional assessment of self-reports.

Goal: The current study aimed to explore the potential causal relationship between social exclusion and suicide risk by experimentally manipulating experiences of social exclusion and assessing both implicit and explicit measures of suicide risk.

Methods

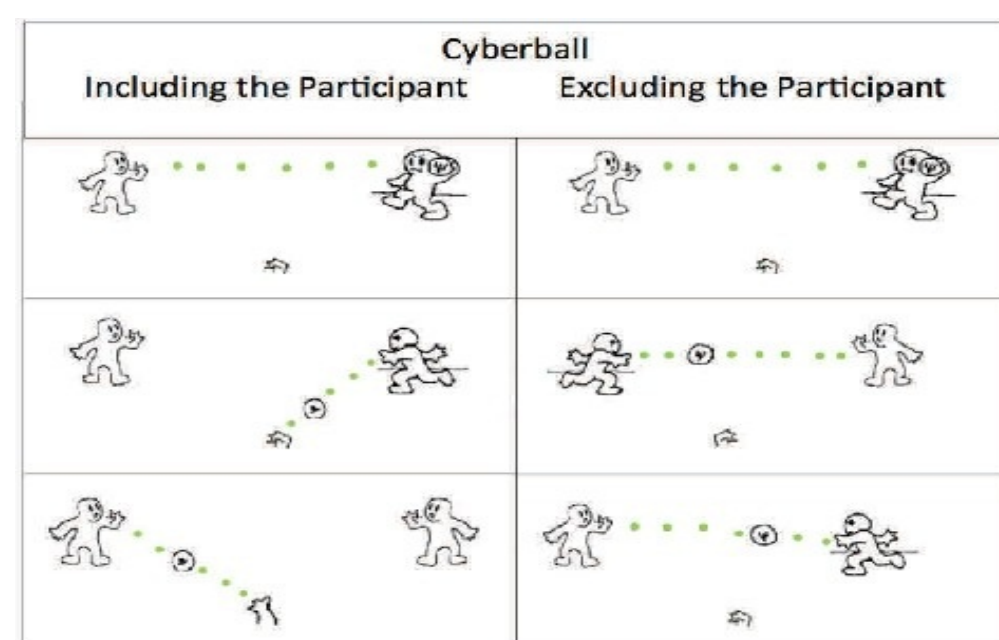
Participants

41 college students ranging from 18 to 30 years
($M = 19.67$ years, $SD = 2.51$ years)

Social Exclusion Manipulation

Cyberball (Williams et al., 2000)

- 3-minute virtual ball-tossing computer game, in which the participant engages with pre-programmed "players."
- Random assignments to inclusion or exclusion condition
- Participant led to believe he/she is playing with other live participants.



- The participant in the inclusion condition gets an equal amount of tosses (33.3%), while the participant in exclusion condition receives the ball only first few times (10%).

Assessments

Explicit measure:

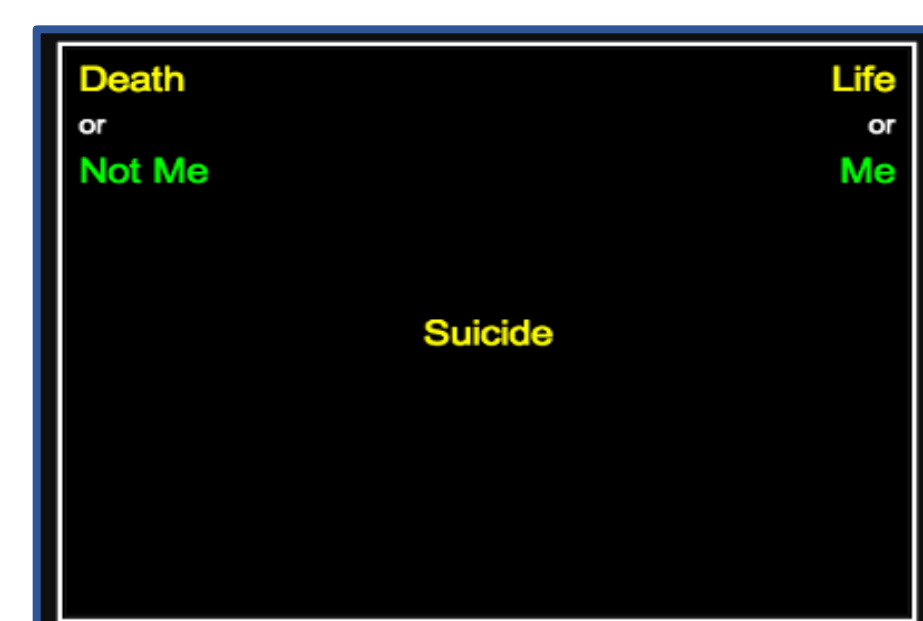
Survival and Coping Beliefs Scale (SCB-S):

- 23-item questionnaire that prospectively predicts future suicidal behavior

Implicit measure:

death/suicide IAT:

- A behavioral task that measures the reaction time in a word categorizing task.
- Aims to measure the strength of subject's implicit association with "self" and either "death" or "life"-related concepts.



Results

Table 1. Descriptive Statistics of Participants in Social Exclusion Condition and Social Inclusion Condition

	n	SCB-S ($d=0.350$)			D Score ($d=0.667$)		
		M	SD	95% CI	M	SD	95% CI
Social Exclusion	23	4.132	0.306	3.513-4.752	-0.405	0.361	-0.677-(-0.145)
males	6	4.347	0.495	3.663-5.032	-0.564	0.36	-0.858-(-0.269)
females	16	4.22	0.746	3.801-4.639	-0.35	0.367	-0.531-(-0.170)
agender	1	3.83	0.827	2.153-5.507	-0.32	NA	-1.04-0.402
Social Inclusion	18	3.948	0.954	3.577-4.388	-0.686	0.334	-0.853-(-0.504)
males	7	4.137	0.83	3.503-4.771	-0.647	0.401	-0.920-(-0.375)
females	11	3.839	1.045	3.323-4.334	-0.71	0.401	-0.927-(-0.492)
Total	41	4.11	0.808		-0.528	0.373	

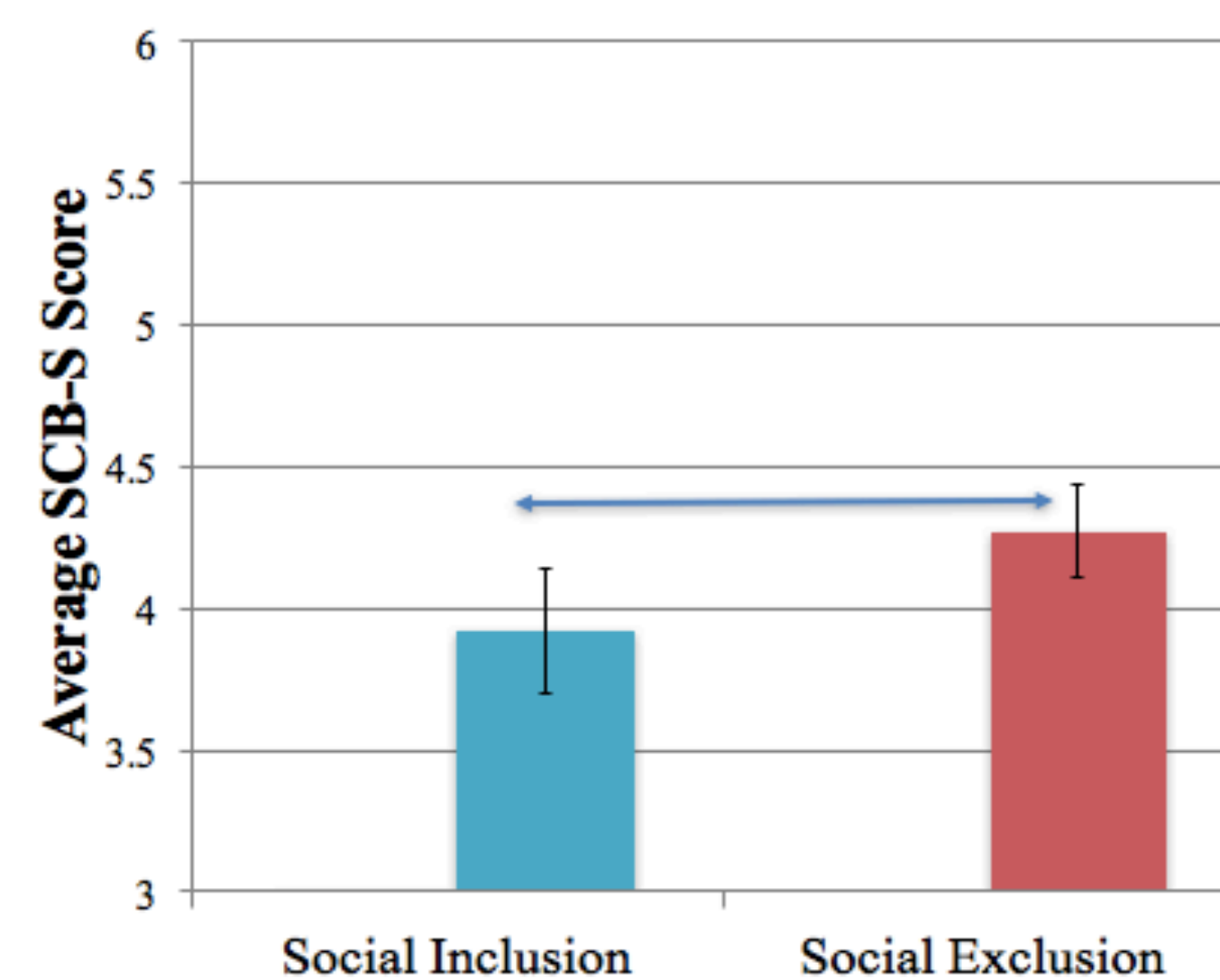
*Note. Significant at the 0.05 level, two-sided test.

d = effect size; M = Mean; SD = Standard Deviation; CI = confident interval

Explicit Measure:

Self-Report on One's Orientation Toward Life and Survival

Figure 2. Average SCB-S Scores in Social Inclusion Condition and Social Exclusion Conditions



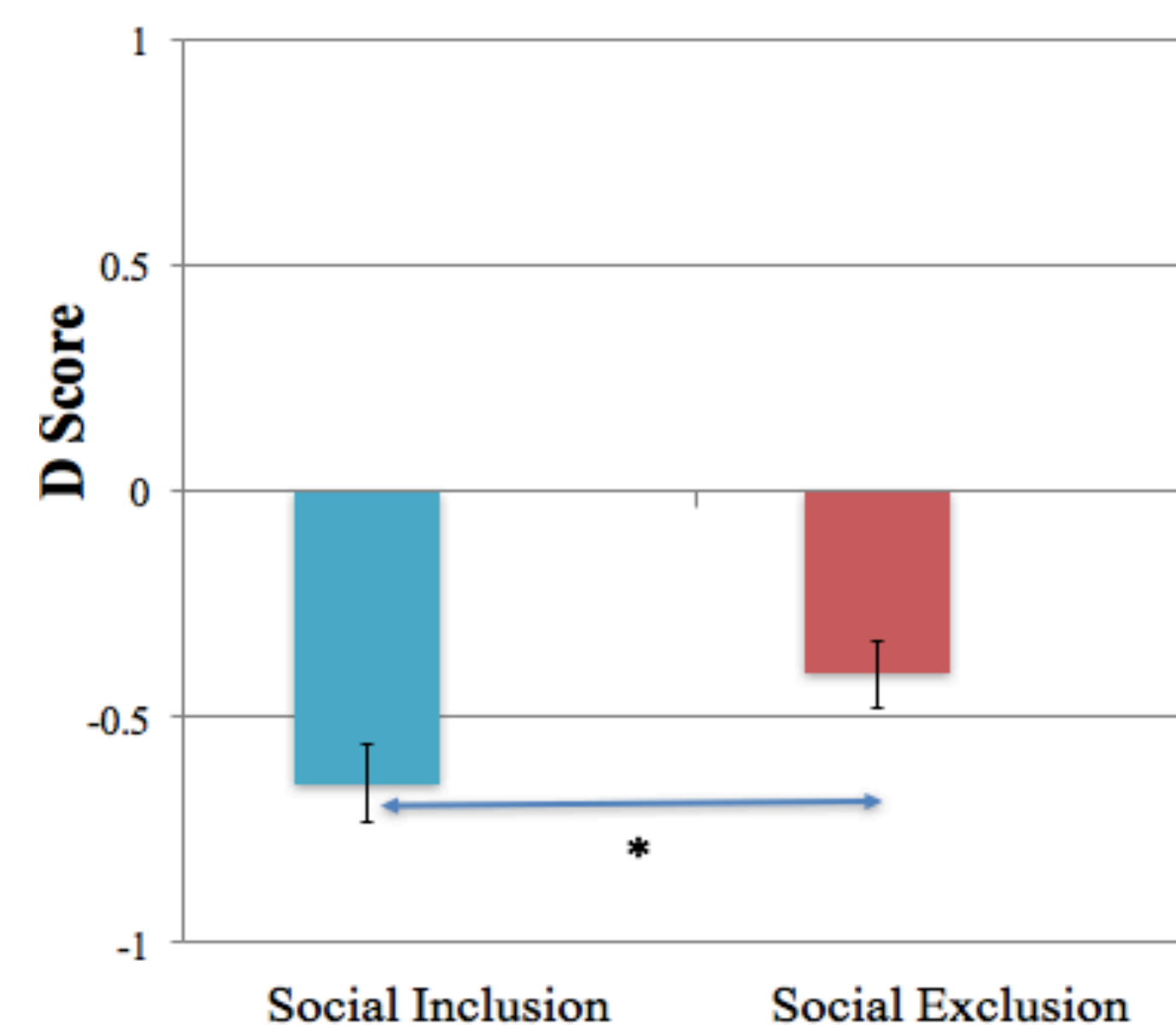
- An independent samples t -tests found no evidence for a statistically significant difference between experimental conditions in average SCBS scores following Cyberball;
- $t(39) = -1.137, p = .319$.

*Note. Probability less than .05.

Implicit Measure:

Change in Implicit Association Between Self and Life

Figure 1. Average D Scores in Social Inclusion Condition and Social Exclusion Condition



- An independent-samples t -test found a modest to strong difference in mean D-scores ($d=0.667$) between conditions.
- Participants in the social exclusion condition displayed significantly weaker implicit associations between self- and life-related items than those in the social inclusion condition,
- $t(39) = -2.552, p = .015$.

*Note. Probability less than .05.

Discussion

- Participants in the social exclusion condition showed a weaker association between "self" and "life" on average than those in social inclusion condition as reflected in IAT D-Scores.
- We found no evidence of mean differences between conditions in explicit self-reports of attitudes towards life on SCB-S.
- From these findings, we infer that there may be a causal impact of social exclusion on one's relationship to suicide and death on implicit levels that may not correspond with explicit reports.

Implications:

- Taken together, the present findings provide preliminary evidence that social exclusion may causally contribute to an increase in implicit suicide cognition.
- This study establishes a experimental paradigm for other researchers investigating links between previously established risk factors and suicidal thoughts and behaviors.

Limitations:

- Our study did not contain a randomization check to ensure that there were no differences in suicidality between conditions before the experiment.
- Our study sample was composed solely of college students, a group known for its homogeneity (Peterson, 2001), so generalizability may be limited. More specifically, our results may not generalize to clinical samples at higher risk of suicide.

Future research:

- Conduct randomization check .
- Use matched randomization procedure to control for demographic correlates of risk for suicide.
- Replicate the study with both non-college and clinical samples.

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