



# Examination of the Protective Effects of Religious Affiliation on VR Suicide Behaviors

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## ~ Introduction ~

**Why Protective Factors:** Identifying protective factors can elucidate how suicidality develops and where in that process clinical interjection is possible

**Literature:** Religious affiliation is intriguing among protective factors as it combines social and cognitive traits into a single belief system. Literature generally supports the protective effects of religion in these contexts; e.g. coping within church settings & increased sense of hope and belonging associated with religion

**Gaps in Knowledge:** However, because of methodological limits and use of similar populations, many nuanced effects are inconsistent in prior literature

- *Example:* Despite more attempts, studies demonstrate higher rates of religious affiliation and stronger protective effects in women to all other groups
- *Example:* Only White and Hispanic Americans show correlation between poor or no religious event attendance and suicidal ideation, which does not correspond to trends in religious affiliation, especially in Black communities

**Virtual Reality as a Novel Approach:** Additional insights can be gained through translational virtual reality (VR) methods (Franklin et al., 2019). The present study employs VR to simulate the development of suicide related thoughts and behaviors to compare with psychometrics to see trends via real-time decision making

### Hypotheses:

1. Religiously affiliated participants will attempt fewer virtual suicides
2. Religiously affiliated participants will have less significant suicidal histories

## ~ Methods ~

Data from two previous VR studies: Park *et al* (2023) & Huang *et al* (2020)

### Participants (Ps)

188 undergraduates from FSU were recruited for extra credit. Ps were predominantly young (mean age = 19.21, SD = 1.955), female (71.8%), and Caucasian (53.2%).

### Principle Measures

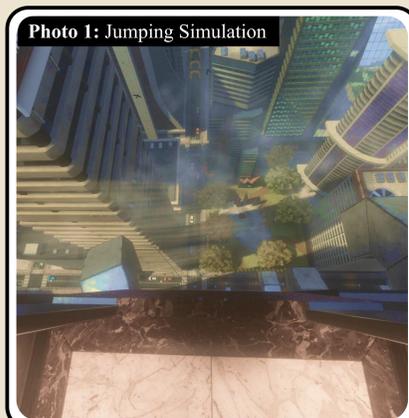
- **Religious Affiliation.** 10 common secular and religious denominations.
- **Prior Suicidality.** Prior history of suicidality (ideation, planning, attempts)
- **Baseline Suicidality Related Measures.** 6 psychometrics (see table 1)
- **VR Suicide Decisions.** suicide vs non-suicide decision across two VR scenarios
- **Post-VR Questions.** Reasons for choosing VR suicide rated on a 0 (*not true at all*) to 4 (*very true*) scale; 1) moral, 2) personal, 3) scary, 4) circumstantial

### Procedure

Completion of baseline/demo measures and completion of VR scenarios adopted from Franklin *et al* (2019) including two suicide simulations

• **Suicide by Jumping; Richie's Plank Experience**

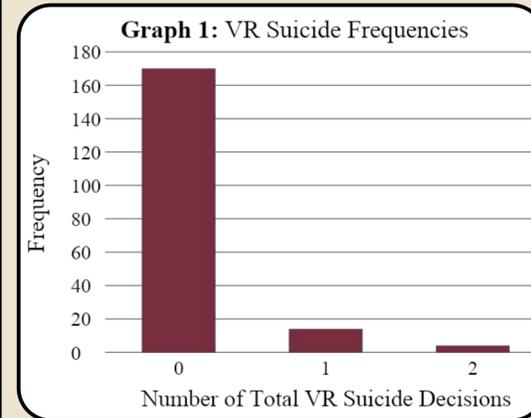
• **Suicide by firearm; Arizona Sunshine**



## ~ Results ~

*No statistical difference was observed in tendencies for religious and secular participants to attempt VR suicide, the severity of prior experience or current suicidality measures*

Most Ps did not attempt VR suicide in either tasks with only 2.1% choosing both suicide options. Ps were mostly religious (78.5%) with the following distribution across denominations; 31.9% Catholic, 16.5% other Christian, 14.9% Protestant, 12.2% Agnostic, 6.9% unaffiliated believer, 4.8% Jewish, 4.8% Atheist, 4.3% affiliation non-believer, 2.1% other, 1.1% Islamic, and 0.5% Buddhist.



### Primary Analysis

**H1: Low rates of VR suicide in religious Ps**  
Poisson regression comparing current **religious affiliation** with performance of at least **one VR suicide decision** yielded **non-significant results** ( $\beta = .52, p = .28$ )

**H2: Secular Ps will have greater suicide history**

- Logistic regression demonstrated **no significant differences among rates of suicide ideation** ( $\chi^2(1) = .92, p = .34$ ), **planning** ( $\chi^2(1) = 1.02, p = .31$ ), or **attempting** ( $\chi^2(1) = .27, p = .61$ ) comparing religious to non-religious groups (see table 1)

### Exploratory Analysis (see table 2)

- "I'm just not the kind of person who would ever choose the virtual suicide option" **was significant related to a history of suicide ideation** ( $F = 3.87, p < .01, 95\%CI [1.12, 3.64]$ ), **planning** ( $F = 3.96, p < .01, 95\%CI [1.85, 5.53]$ ) **and attempting** ( $F = 2.75, p < .01, 95\%CI [.97, 5.91]$ )
- Those who report **less potential for engaging in VR suicide** in other circumstances were **significantly more fearful of death**,  $F = 6.18, p = .01, \beta = .06, 95\%CI [.01, .12]$

**Table 1 - Prior and Current Suicidality Psychometrics at Baseline Compared by Religiosity**

| Mean (SD)<br>n (%)                            | Religious<br>(n = 147) | Secular<br>(n = 41) | All Ps<br>(n = 188) | F or $\chi^2$ | p                 |
|---|------------------------|---------------------|---------------------|---------------|-------------------|
| History of Sui Ideation                       | 27 (18.4%)             | 5 (12.2%)           | 32 (17%)            | 0.87          | .35               |
| History of Sui Plan                           | 9 (6.1%)               | 1 (2.4%)            | 10 (5.3%)           | --            | .69 <sup>a</sup>  |
| History of Sui Attempt                        | 6 (4.1%)               | 1 (2.4%)            | 7 (3.7%)            | --            | 1.00 <sup>a</sup> |
| INQ Thwarted Belongingness                    | 10.86 (9.80)           | 12.02 (9.13)        | 11.12 (9.65)        | 0.46          | .49               |
| INQ Perceived Burdensomeness                  | 1.29 (3.08)            | 1.39 (3.38)         | 1.31 (3.14)         | 0.04          | .85               |
| Item "I have the courage/ability for suicide" | 0.18 (0.66)            | 0.34 (0.79)         | 0.21 (0.69)         | 1.82          | .18               |
| Item "I accept the idea of killing myself"    | 0.07 (0.28)            | 0.15 (0.53)         | 0.09 (0.35)         | 1.63          | .20               |
| Item "I have no desire to kill myself"        | 3.73 (0.85)            | 3.88 (0.40)         | 3.77 (0.77)         | 1.10          | .29               |
| Item "I have a strong wish to die"            | 0.10 (0.38)            | 0.20 (0.56)         | 0.12 (0.42)         | 1.79          | .18               |
| ACSS - Fearlessness about Death               | 10.80 (6.23)           | 12.90 (6.59)        | 11.26 (6.35)        | 3.58          | .06               |
| Moral Objection to Suicide                    | 127.40 (19.99)         | 122.90 (21.52)      | 126.42 (20.35)      | 1.57          | .21               |
| DOSPRT  | 92.08 (19.66)          | 97.13 (19.39)       | 93.16 (19.66)       | 2.08          | .15               |
| Brief Agitation Measure                       | 4.61 (4.33)            | 5.03 (4.60)         | 4.70 (4.38)         | 0.29          | .59               |
| Self Rating Scale                             | 19.44 (10.03)          | 18.46 (9.90)        | 19.23 (9.99)        | 0.31          | .58               |

Note. INQ = Interpersonal Needs Questionnaire; DOSPRT = Domain Specific Risk-Taking Scale; <sup>a</sup> Fisher's exact test

**Table 2 - Non-Suicide Post VR Decision Rational**

| Mean (SD)                       | Religious<br>(n = 135) | Non-Religious<br>(n = 35) | Total<br>(n = 170) | M-Whitney<br>(35, 135) | p      |
|---------------------------------|------------------------|---------------------------|--------------------|------------------------|--------|
| Moral/Religious <sup>1</sup>    | 3.32 (2.98)            | 1.34 (2.54)               | 2.91 (3.00)        | 3334.50                | < .001 |
| Not kind of person <sup>2</sup> | 6.14 (2.55)            | 6.00 (2.41)               | 6.11 (2.52)        | 2621.00                | .28    |
| Too scary <sup>3</sup>          | 4.53 (2.73)            | 3.91 (3.06)               | 4.41 (2.80)        | 2615.50                | .33    |
| Potential <sup>4</sup>          | 1.71 (2.23)            | 1.94 (2.48)               | 1.76 (2.28)        | 2226.50                | .58    |

Note. Included are only those who chose neither VR suicide option (VR suicide sum = 0); answers to post VR questions are summed across the two potential VR suicide scenarios and compared to religious affiliation, <sup>1,2,3,4</sup> for full questions, see "Post VR Questions" in methods, principal measures

## ~ Discussion ~

*Within our sample, we did not find any link between religion and past suicidality or suicide decisions within the VR context.*

### Relationship to Prior Literature

**Converging Findings:** Protective traits vary greatly across populations

- Different denominations in cross-cultural studies have varied levels of protection with some holding much more than others
- Ethnicity varies both the degree of religious affiliation and direction of religious effects of suicidality, with some groups showing negligible results

**Diverging Findings:** Religion may improve coping and health outcomes

- Greater religious event attendance has shown to be related to reduced suicide risk, including among inpatient populations cross-culturally
- Religious affiliation is shown to be related to better health outcomes including reduced depression, anxiety, and substance use

### Potential Rationales from Exploratory Analysis

- **Moral Perspective:** High scores on moral rational matched low scores on suicidality measures across both groups suggesting some level of protection related to moral thinking that itself may be protective in and out of religious identity.
- **Personal Value Assessment:** Post VR rational described by the statement "I am just not the kind of person to commit suicide" was related to many measures of suicidality which reflects a level of value judgment towards suicide. This appears to have some impact within the study population which may be protective.
- **Translation Effects:** Although previous studies have supported the translatability of the VR model, other unknown effects may be present.
- **Insight from VR:** Use of VR simulations may access functionable protective effects in a way previous literature struggles to.

### Limitations

**Ps Homogeneity:**

- Ps were largely homogeneous and cultural variations are likely important factors influencing the protective effects of religion, if present.

**Indirect Approach to Religiosity:**

- While the VR model is useful in simulating suicidality in a variety of scenarios, accessing explicit religious driven cognitions or beliefs in addition to denominational affiliation may evoke more representative trends.

### Future Directions

**Direct & Explicit Cognitive Patterns:**

- Assessing cognitions immediately before and after suicidal behaviors in VR may help explore cognitive patterns which may offer benefits regardless of religion.

**Experimental Manipulation of Religiosity on VR:**

- The VR model has potential to explore causal relationships within suicidality. Exposure to religious settings and teachings may be manipulated before VR suicide exposure to discern the interaction more directly than available through correlational analysis.



see QR code for: complete results, additional materials and full reference list



1. Franklin, J. C., Huang, X., & Bastidas, D. (2019). Virtual reality suicide: Development of a translational approach for studying suicide causes. *Behaviour Research and Therapy, 120*, 103360. <https://doi.org/10.1016/j.brat.2018.12.013>
2. Huang, X., Funsch, K. M., Park, E. C., & Franklin, J. C. (2020). Anticipated consequences as the primary causes of suicidal behavior: Evidence from a laboratory study. *Behaviour Research and Therapy, 134*, 103726. <https://doi.org/10.1016/j.brat.2020.103726>
3. Park, E. C., Harris, L. M., Sigel, A. N., Huang, X., Chen, S., & Ribeiro, J. D. (2023). Is physical pain causally related to suicidal behavior: An experimental test. *Behaviour Research and Therapy, 165*, 104321. <https://doi.org/10.1016/j.brat.2023.104321>