

Mediation of Non-suicidal Self-Injury frequency by aversion to NSSI images on implicit association with death and suicide

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INTRODUCTION

Non-suicidal self-injury (NSSI) is the direct, deliberate destruction of one's own body tissue in the absence of suicidal intent (Nock & Favazza, 2009). It has been shown to be a strong predictor of future suicide attempts (Muehlenkamp & Brausch, 2019), but research is lacking in concrete explanations of that relationship (Hamza, Stewart, & Willoughby, 2012).

The Interpersonal Theory of Suicide (IPTS) proposes that one of the components of the path to suicide is capability for suicide (Chu et al, 2017), which can include fearlessness about death and pain. Engaging in NSSI may habituate a person to painful, potentially life-threatening stimuli and experiences. This could lower their aversion to self-injury related stimuli (e.g. images of self-cutting, burning, scraping), which may then increase their capability for suicide.

Previous literature has shown a relationship between suicidal behaviors and decreased aversion to stimuli associated with death (Nock, Park, Finn, Deliberto, Dour, & Banaji, 2010). One possible mechanism linking NSSI to suicidal behavior is low aversion to self-injury stimuli. In our study, we aimed to examine this relationship using a behavior assessment of suicide rather than rely on a self-report measure.

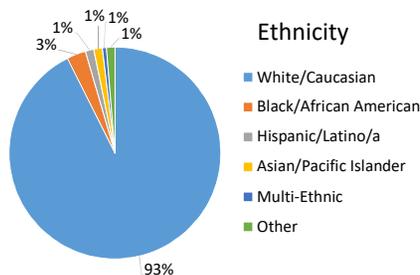
HYPOTHESIS

Low aversion to self-injury will mediate the relationship between NSSI frequency and implicit self-association with death and suicide.

METHODS

PARTICIPANTS

The sample included 319 undergraduate students ($M_{age} = 19.06$, $SD = 1.63$; 83.6% female) at two public universities who screened positive for lifetime NSSI in a survey sent to all first and second year students. The mean lifetime NSSI frequency was 49.40 ($SD = 96.91$) and 69.3% percent reported past suicidal thoughts within the past year. The mean number of NSSI methods used was 4.11 ($SD = 2.03$).



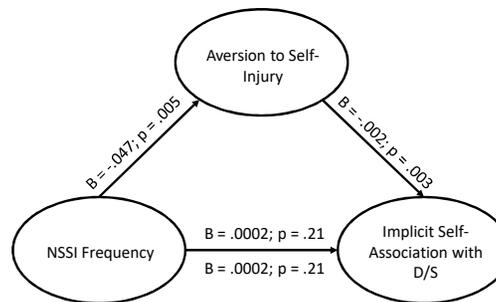
PROCEDURES

Participants came into a research lab and completed computer-administered self-report questionnaires and reaction-time tasks in a private room as part of a longitudinal study. We used the data from the first time-point only. Measures included for the current study included:

- Aversion to self-injury: Affect Misattribution Paradigm-Self-Injury (AMP-SI), which displays emotionally-charged pictures and NSSI images, Chinese symbols, and then a gray screen and asks participants to rate how pleasing they find the Chinese symbols
- NSSI frequency: Self-Injurious Thoughts and Behaviors Interview (SITBI), which is a self-report scale assessing suicidal thoughts and behaviors, as well as frequency of NSSI
- Implicit self-association with death and suicide: death/suicide Implicit Association Task (d/s IAT) which is a reaction time task measuring the strength of an individual's automatic associations with life relative to death

RESULTS

Mediation analyses using Hayes' PROCESS macro for SPSS (Hayes, 2018) were conducted to test the study's hypothesis. The full model was significant, $F(2, 318) = 5.88$, $p < .01$, and accounted for 3.6% of the variance.



NSSI frequency was negatively associated with aversion to self-injury stimuli. Aversion to self-injury stimuli was negatively associated with implicit self-association with death/suicide. NSSI frequency and implicit self-association with death/suicide was not significantly mediated by the effect of aversion to self injury stimuli, $B = .0001$, 95% LLCI = $-.0000$; ULCI = $.0002$.

DISCUSSION

The current results failed to confirm our hypothesis about the mediating effect of aversion to self-injury. This is inconsistent with what the IPTS model suggests regarding the role of capability in the relationship between NSSI frequency and suicide (Chu et al, 2017). One reason our data may not support that model is that capability for suicide is comprised of behavioral experiences and fearlessness about death which may not have been adequately captured by our measure of aversion to self-injury stimuli. Aversion to self-injury stimuli might relate more to habituation processes than capability and therefore did not have a mediational effect.

Alternatively, our use of the d/s IAT as an outcome may have affected our results because it measures self-association with death/suicide and not explicit suicidal thoughts or behaviors. Prior research regarding the relationship between NSSI and suicide has used mainly self-report measures (Chu et al, 2017), it may be that the relationships previously observed (e.g., Ribeiro et al., 2016) are due to the self-reported suicidal thoughts and behaviors rather than implicit associations. It could be that habituation and capability processes do not affect self-associations with death/suicide but do affect suicide thoughts and behaviors. Additional research is needed to figure this out.

We found NSSI frequency to be negatively associated with aversion to self-injury stimuli, meaning that the more frequently someone engages in NSSI behaviors, the less likely they are to react to the stimuli with disgust. This reinforces what has been seen in prior research (Franklin, Lee, Puzia, & Prinstein, 2017) and supports the idea that repeated NSSI may lead to habituation. We also found that with a decrease in disgust to self-injury stimuli, there is increased self-identification with death and suicide. This means that people with low aversion to self-injury may have stronger self-identification with death/suicide so it could represent a risk factor.

LIMITATIONS

While our sample had a high frequency of NSSI and suicidal thinking, it was pulled from college students rather than a clinical sample. Our data was also cross-sectional, so causal connections cannot be drawn, and was predominantly white and female. Future research should make efforts to include more diverse samples from differing locations and means of gathering data.

CONCLUSIONS

Although aversion to self-injury did not appear to have a mediating effect on the relationship between NSSI frequency and implicit self-association with and suicide, we did find significant associations with NSSI frequency and aversion to self-injury stimuli. These relationships add to a body of evidence suggesting that increasing frequency of NSSI decreases aversion to self-injury stimuli, which may relate to suicide, but additional research is needed.

References available upon request.