

Time Course of Physiological Response to Aversiveness in Individuals with a History of Non-Suicidal Self-Injury

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Introduction

- Non-suicidal self-injury (NSSI) is related to completed suicide
 - It's unclear *how* NSSI leads to suicide^{1,2}
 - Interpersonal-Psychological Theory of Suicide suggests repeated exposure to painful or aversive events leads to **acquired capability for suicide**³
 - The time course of responding to aversiveness may serve as a laboratory analogue of this process
 - In prior studies, individual differences in NSSI is often confounded with other psychopathology

Aims

- Examine the association between NSSI history and proxies of the process of acquiring capability, including...
 1. physiological **habituation** to aversive stimuli
 2. **initial reactivity** to an aversive stimulus
 3. pain threshold

Participants

- 48 females (17 with a history of NSSI and 31 matched controls without NSSI) recruited from the community as part of a larger study
 - Matched on lifetime suicide attempt history and psychopathology

	NSSI (n = 17)	No NSSI (n = 31)
Age (M, SD)	22.2 (2.8)	21.6 (2.5)
Lifetime suicide attempt	17.6%	16.1%
Current medications	64.7%	75.8%
Lifetime MDD	94.1%	87.1%
Current MDD	23.5%	22.6%
Lifetime AUD or SUD	64.7%	58.1%
Current AUD or SUD	11.8%	16.1%
Lifetime PD	35.3%	41.9%
Current PD	17.6%	16.1%
Lifetime GAD	31.3%	25.8%
Current GAD	23.5%	6.5%

ps ≥ .167

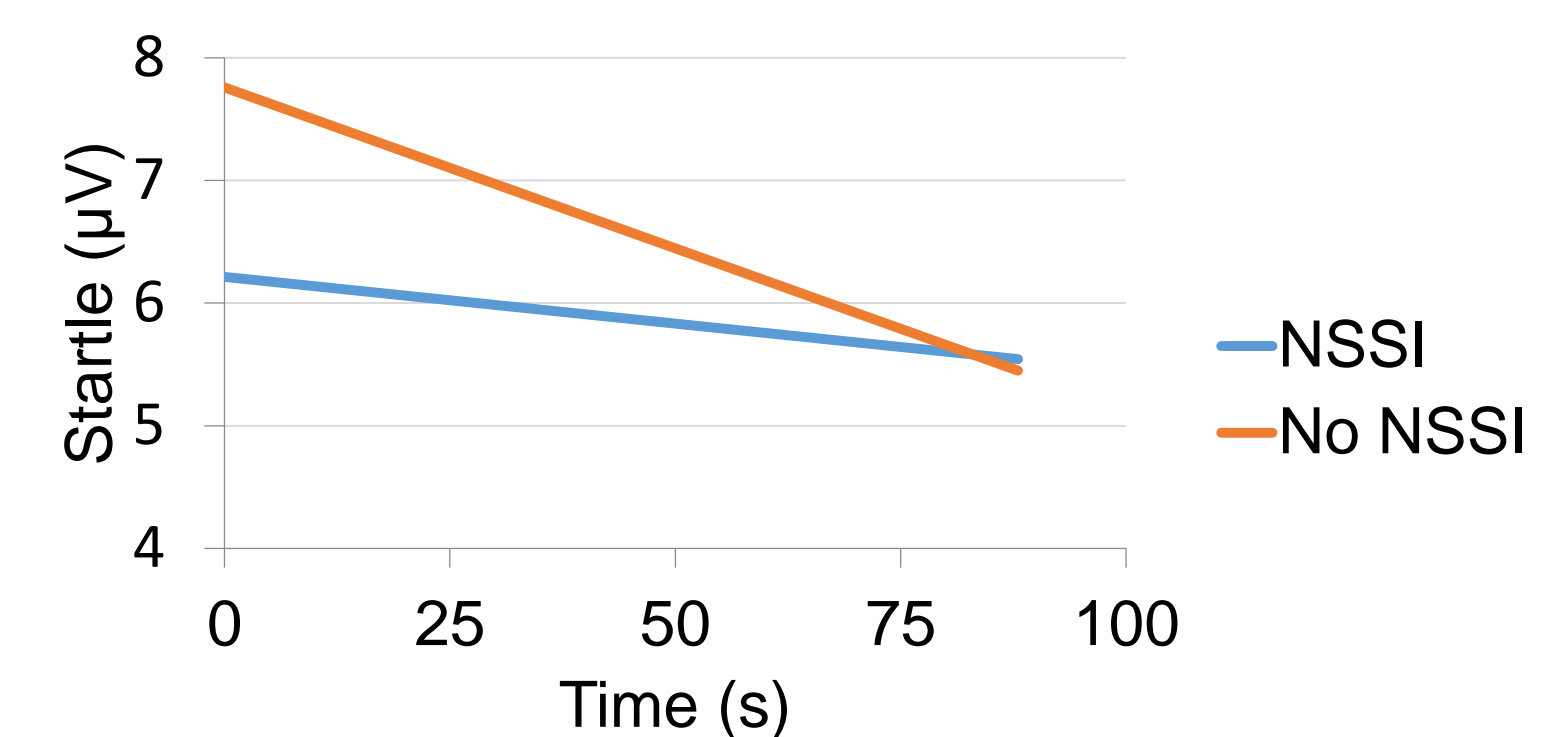
Task and Measures

- NSSI history dichotomously assessed using the SCID-5⁴
- Habituation and initial reactivity measured using EMG during a startle task
 - Two identical 3-minute blocks in which six 40ms, 103dB acoustic startle probes were presented 15-20 seconds apart
 - Block 1 → no shock electrodes attached
 - Block 2 → shock electrodes attached
 - **Habituation** = slope of blink magnitude (square-root transformed) over time
 - **Initial reactivity** = the intercept of each subject's slope
- Pain threshold assessed using incremental increases in shock level until subject found it "highly annoying but not painful"
 - Pain threshold = shock level identified as 'highly annoying but not painful'

Results

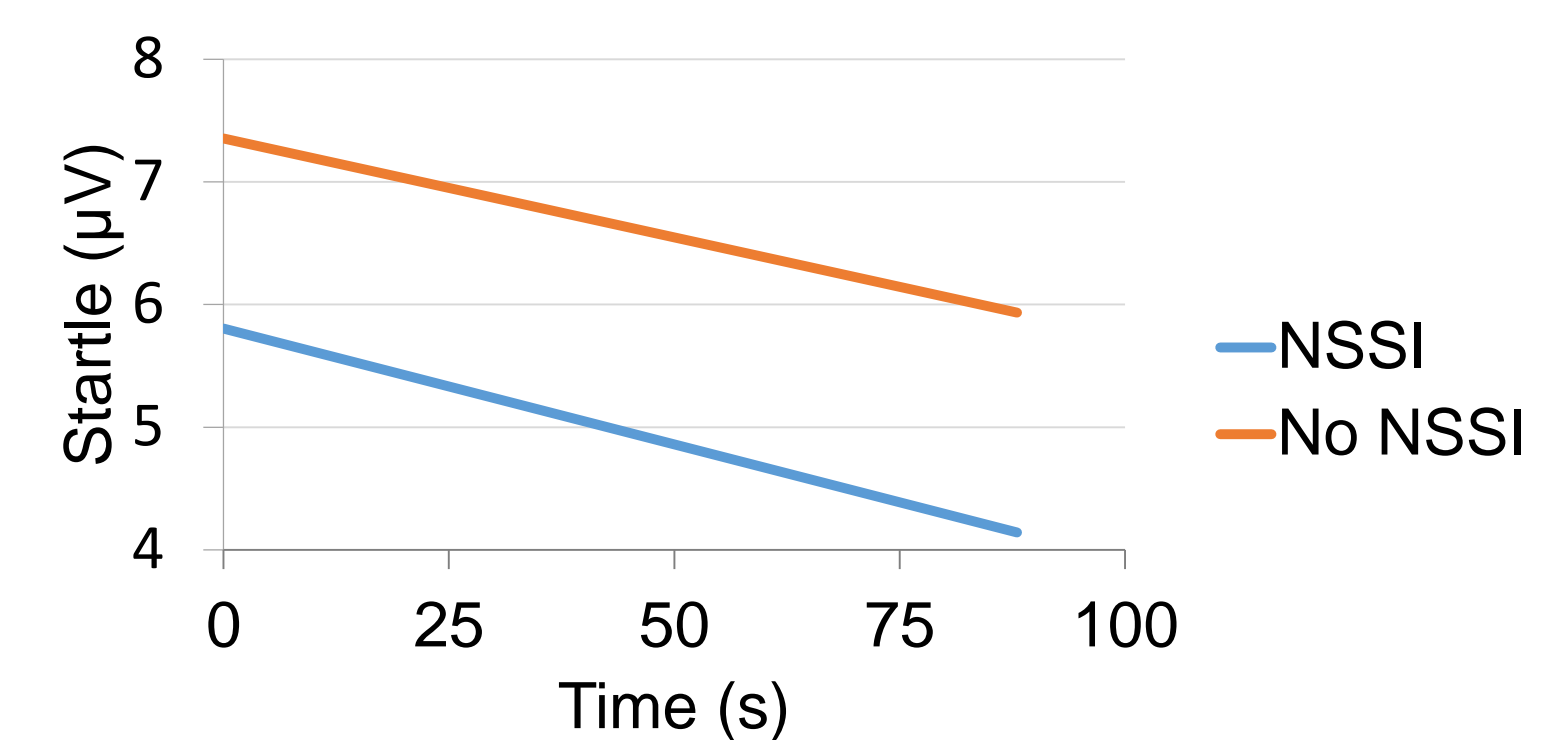
Habituation

- Mixed model with block, time, and NSSI history as fixed factors produced a significant **Block x Time x NSSI interaction** ($p = .031$)
- Block 1
 - Significant main effect for Time ($p < .001$) and **Time x NSSI interaction** ($p = .008$)



- Block 2

- Significant main effect for Time ($p = .002$), but not for NSSI and no Time x NSSI interaction



Initial Reactivity

- Block 1 → NSSI group had marginally lower initial reactivity compared to the control group ($p = .070$)
- Block 2 → No group difference in initial reactivity

Pain Threshold

- NSSI group evidenced higher pain threshold than controls ($p = .034$)

Discussion

- Individuals with a history of NSSI exhibited...
 - blunted initial reactivity in block 1
 - reduced habituation in block 1
 - The "stronger" situation in the block 2 may have inhibited group differences⁵
 - elevated pain threshold
 - Consistent with other studies of NSSI⁶
- The NSSI group's increased pain threshold suggests that block 1 may not have been subjectively aversive
- Strength → transdiagnostic sample matched on psychopathology and suicide attempt history
- Limitations
 - Unclear if results will generalize to males
 - Single item used to assess NSSI history
 - Groups matched on lifetime suicide attempts, but not other painful experiences
 - Acoustic startle probe may not be the best analogue of painful/aversive experiences
- Future Directions
 - Replicate in larger, more generalizable sample

References

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