Emotional Interference in Inhibitory Control among Violent Offenders

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INTRODUCTION

- Inhibitory control is a crucial element of executive function that involves controlling prepotent or inappropriate actions, while poor inhibition has been linked to several forms of social and developmental issues (e.g., decreased self-control).
- Violent behaviors are associated with:
  - Greater impulsivity (e.g., prolonged stop signal task reaction time);
  - Emotional dysregulation (e.g., positive relationship between difficulties in emotional regulation and aggression);
  - Altered neuroelectric responses during these cognitive processes (e.g., reduced N2 in the Stop Signal Task).
- However, the interaction between the impairments in inhibition and emotional regulation in violent individuals remains unclear.
- This study aimed to investigate behavioral performance and neuroelectric activities (i.e., event-related potentials, ERPs) of inhibitory control among violent offenders using an Emotional Stop Signal Task which consists of negative and neutral emotional conditions.

METHODS

- **Design:** between-subject, repeated measures (2 groups × 2 emotions).
- **Participants:**
  - Matched for age and intelligence.
  - 12 violent offenders (e.g., homicide and bodily harm).
  - 11 non-violent offenders (e.g., larceny and fraud).
- **Emotional Stop Signal Task:**
  - Including neutral and negative emotional conditions.
  - Images from the International Affective Picture System (IAPS).
  - Estimating go accuracy, go reaction time (RT), and stop signal reaction time (SSRT).
- **ERPs:** successful-stop N2 and P3 mean amplitudes.
- **Experiment locations:** Taipei and Tainan prisons, Taiwan.

Table 1. Comparisons in age and intelligence between groups.

	Violent group (*n* = 12)	Non-violent group (*n* = 11)	
	M (*SD*)	*M* (*SD*)	*t* (df)
Age (years)	29.33 (7.56)	30.55 (7.73)	-.38 (21)
Intelligence score (Raven's APM)	14.08 (5.44)	15.55 (6.38)	-.59 (21)

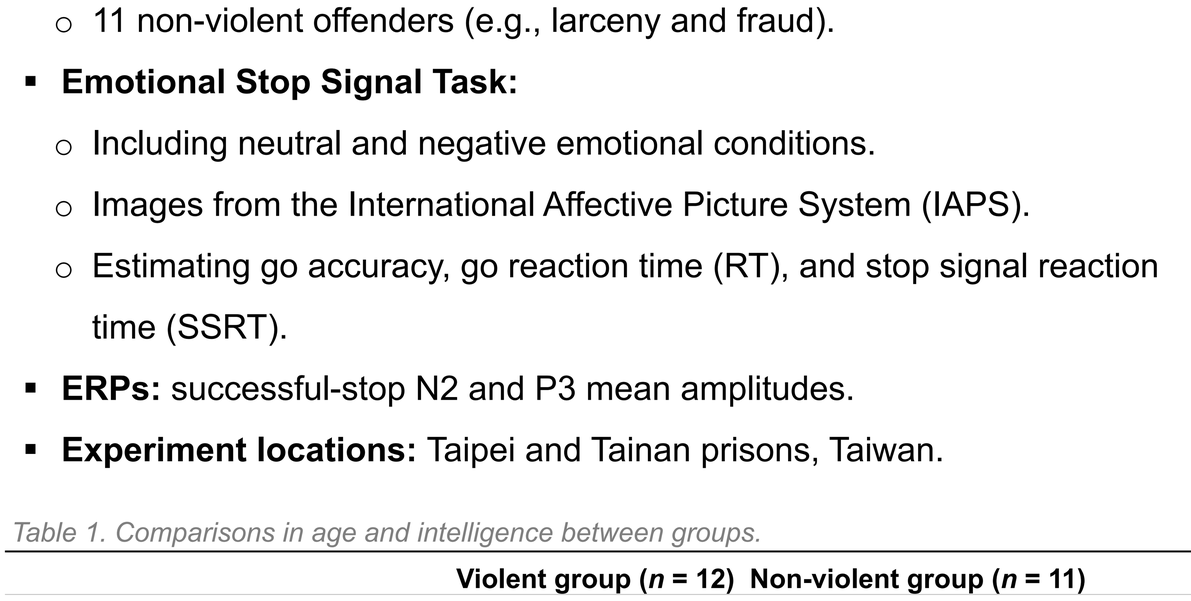

Figure 1. Schema of the Emotional Stop Signal Task.

RESULTS

- **Go accuracy and RT:** insignificant changes.
- **SSRT:** trend toward a significant interaction between group and emotional setting (p = .06, η_p^2 = .16).
  - The difference between emotional conditions was approaching significant for the non-violent group (p = .07, η_p^2 = .14; a faster SSRT in the negative condition than in the neutral condition).
  - Yet the SSRT for the violent offenders was unchanged (p = .36; η_p^2 = .04), although their pattern was reversed (i.e., a longer SSRT in the negative condition).
- **ERPs:** visual inspection indicated a greater P3 amplitude among violent offenders compared to the non-violent group in the neutral condition. However, statistics revealed no significant interaction and main effects of group and emotion on both ERPs components.

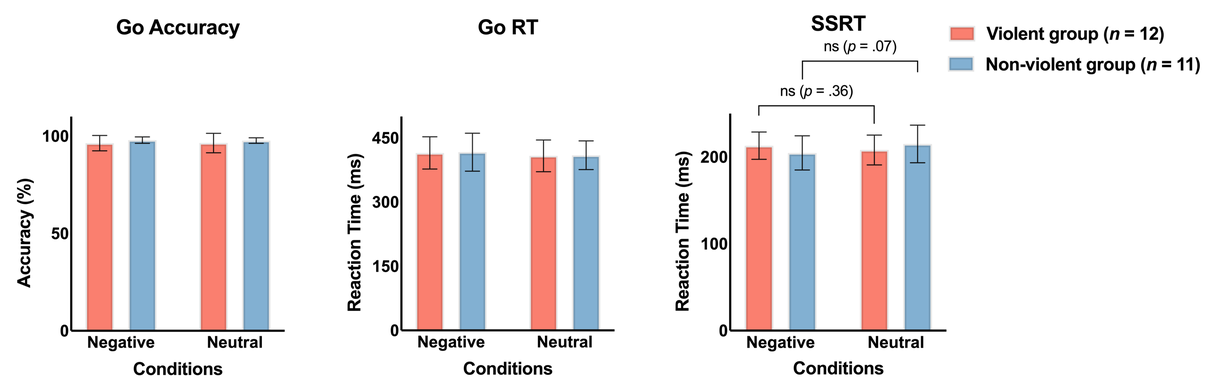

Figure 2. Behavioral performance in the Emotional Stop Signal Task among violent and non-violent offenders.

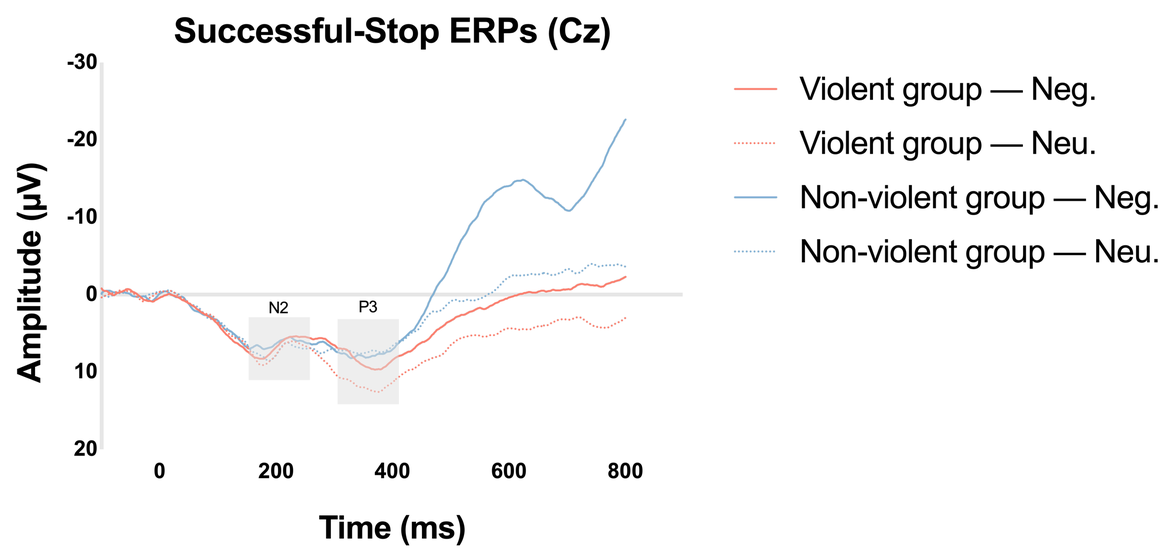

Figure 3. N2 (170-270 ms) and P3 (320-420 ms) amplitudes in the Emotional Stop Signal Task among violent and non-violent offenders (Neg: negative emotional condition; Neu: neutral emotional condition).

CONCLUSIONS

- The declined inhibition and altered ERPs in violent offenders were not found in this study.
- Given the high effect size for non-violent individuals, emotional interference may differ.
- The IAPS images used here are associated with several negative emotions (e.g., sadness, anger, and disgust). However, violent offenders might be more susceptible to specific emotional stimuli.
- Future works examining the respective effects of different negative emotions on inhibition with a larger sample size are warranted.

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