

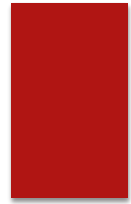


Social priming modulates the neural response to ostracism: a new exploratory approach

HUDAC, 2018

Introduction

- ▶ Ostracism – intensely negative social experience with consequences for social needs and affective well-being
- ▶ Previous research with Cyberball paradigm
 - ▶ Anterior cingulate cortex, anterior insula, and ventral prefrontal cortex
 - ▶ *Active* experience and processing of social pain?



Current Study

- ▶ Are neural correlates differentially engaged in response to social exclusion & inclusion when the amount of active involvement preceding ostracism is controlled?
- ▶ Lunchroom paradigm
 - ▶ Lunchroom table context – ostracism feedback presented as discrete event following a decision
 - ▶ Subjects make active decision and passively await ostracism outcome (inclusion or exclusion)
- ▶ Hypothesis – social exclusion outcomes would generate larger neural ostracism responses (N2 & P3 components)

Current Study

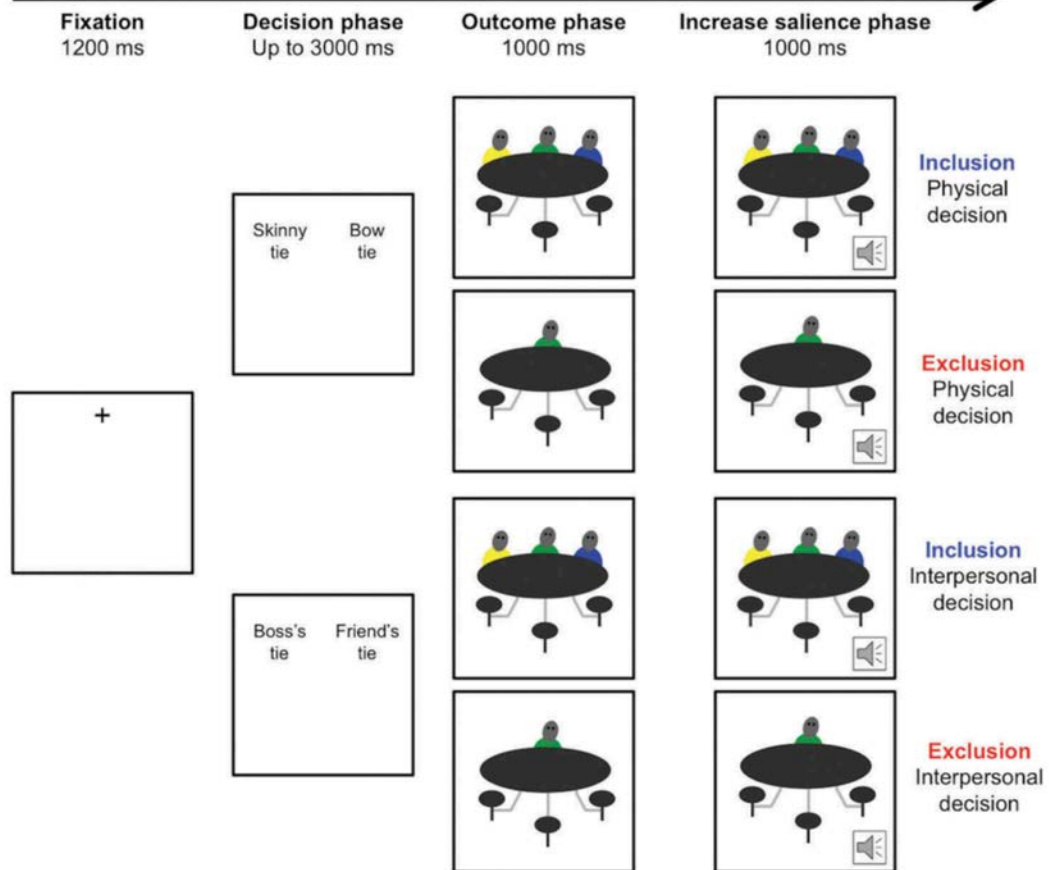
- ▶ Is it possible to be more or less affected by being ostracized?
 - ▶ How is the experience of ostracism influenced by everyday situations?
 - ▶ Testing whether engagement of social brain prior to being ostracized would modulate response to exclusion
- ▶ Hypothesis – Priming engagement of the social brain will increase salience of ostracism and the response to exclusion would be larger in the interpersonal condition.

Methods



- ▶ 28 adults (18-32 years old) – normal vision and screened for neurological and psychiatric disorders
- ▶ Given a choice between two options and this decision was the basis for whether or not their best friends would sit with them at lunch

Trial Procedures



Methods



- ▶ ERP extraction focused on two electrode regions (frontal and central) across hemispheres
 - ▶ Negative deflection (80-280ms) – resembled N2
 - ▶ P3 detected as most positive value (200-550ms) – consistent with beginning of positive deflection
 - ▶ Peak amplitude and latency extracted
- ▶ Source estimation – accurately compute the electrode locations in relation to brain tissue

Results

- ▶ N2 amplitude – marginal main effect of ostracism outcome (N2 amplitude estimated to be larger for exclusion compared to inclusion)
 - ▶ N2 estimated to be larger following physical decisions, only when the participant had been excluded
- ▶ N2 latency - significantly faster following interpersonal priming decisions
 - ▶ Evident for inclusion more so than exclusion outcomes
- ▶ P3 amplitude – marginal main effect of ostracism (larger for exclusion following interpersonal decisions)
 - ▶ Marginal effect across medial central electrodes – opposite pattern (larger for inclusion)
- ▶ P3 latency – slower for exclusion following physical but not interpersonal decisions

Results

- ▶ Source estimation
 - ▶ N2 – more engagement during exclusion outcomes within amygdala and anterior cingulate cortex
 - ▶ Significant following interpersonal decisions
 - ▶ P3 – more engagement during exclusion within amygdala and anterior cingulate cortex
 - ▶ Anterior cingulate cortex exhibited significant ostracism discrimination following physical decisions; reduced compared to interpersonal decisions

Discussion

- ▶ P3 was sensitive to ostracism (indicated by larger amplitude to exclusion) while N2 amplitudes and latencies were more sensitive to priming decision
- ▶ Source estimation indicated amygdala, anterior cingulate cortex, and superior temporal gyrus were engaged and discriminated between ostracism outcomes
- ▶ Data indicated faster N2 latencies and greater N2 amplitude for interpersonal decisions across medial frontal electrodes
- ▶ Results suggest when participant involvement is controlled, the P3 may be sensitive as both an ostracism and inclusion marker





Children's mu suppression is sensitive to witnessing others' social victimization

FRASER ET AL., 2020

Introduction

- ▶ Previous research using EEG has shown that mu suppression is linked to activation of the sensorimotor cortex
 - ▶ Specifically, a mirror neuron system that responds to action observation in the absence of motor activity
- ▶ Linked increases in mu suppression to experience of empathic sensorimotor resonance during observation of others
- ▶ Previous research of empathic responses in children has not paid attention to the recipient of empathy
 - ▶ Current study – mu suppression in response to injustices against racial ingroup vs racial outgroup

Methods

- ▶ 58 children (5-8 years old)
 - ▶ Parent education ranged from HS to PhD (most prevalent - bachelor's)
 - ▶ Family income ranged from less than \$30,000 (2%) to over \$100,000 (53%)
- ▶ EEG cap with 20 electrodes – analyses planned exclusively at central and parietal electrodes
- ▶ Four films depicting social injustice against child
 - ▶ Perpetrator was always White with either a White or Black victim

Results

- ▶ Significant main effect of electrode location – central sites showed greater mu suppression compared to parietal sites
 - ▶ Videos elicited activity specific to mu rhythms (separable from alpha oscillations)
- ▶ Main effect of victimization – mu suppression significantly increased while watching victimization
 - ▶ Significant interaction between victimization and location

Discussion

- ▶ Video depictions of social injustices DID evoke mu suppression responses
- ▶ NO differences in mu suppression in response to victimization as function of victim's racial ingroup
 - ▶ Developmental stages?
 - ▶ Different race for victimization targets?

Question Themes



- ▶ SES of sample & local diversity (Candice, Kelly)
- ▶ Ingroup vs Outgroup populations (Brandon, Shayne)
 - ▶ Diversity exposure (Sarah)
 - ▶ Historical injustice knowledge (Haley)