Investigating Differences Due to the Timing of Social Exclusion

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Introduction

Social Exclusion

When examining social exclusion, researchers typically focus on the end of the interaction. However, recent research examining patterns of neural activation during social interactions indicates that specific events throughout an interaction are related to perceptions of exclusion (Themanson et al., 2013). This leaves open the possibility that exclusion-related consequences may be present even if someone was fully included at the end of a social interaction. To address this issue, we varied the timing of similar durations of exclusion within social interactions to see the effects on exclusion-related neural activity and self-reported feeling states.

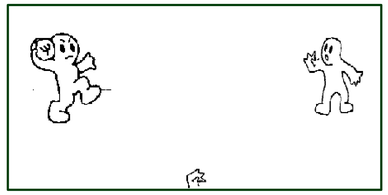
Current Study

To examine the potential impact of the timing of social exclusion on neural and self-reported indices of the consequences of exclusion, we utilized the Cyberball paradigm to assess participants' event-related brain potentials (ERPs) to both inclusionary and exclusionary events occurring within two social interaction blocks (inclusion, exclusion). Each event consisted of a series of throw frames that showed a ball moving across the screen from player to player.

Procedure

Cyberball Paradigm

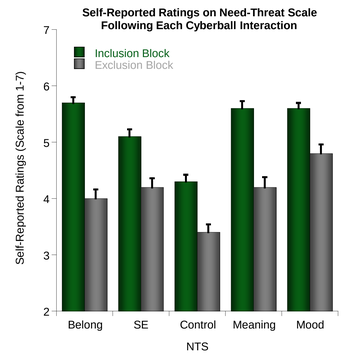
- Participants completed two blocks of the Cyberball paradigm, throwing the ball with the other players. In each interaction, the human participant was represented by the hand at the bottom of the screen (see below). Following each interaction, participants completed the Need-Threat Scale (NTS; Williams et al., 2000; Zadro et al., 2004), Positive and Negative Affect Schedule (PANAS), and the State-Trait Anxiety Inventory (STAI).
  - In the first block (inclusion), participants had an equal probability of receiving the ball as the other players throughout the interaction.
  - In the second block (exclusion), participants were randomly assigned to one of three groups. Each group was included for 50% of the interaction and excluded for the other 50% of the interaction, with the timing of the exclusion varying from group to group. One group was excluded for the first 50%, a second group for the middle 50%, and a third group was excluded for the last 50% of the social interaction.

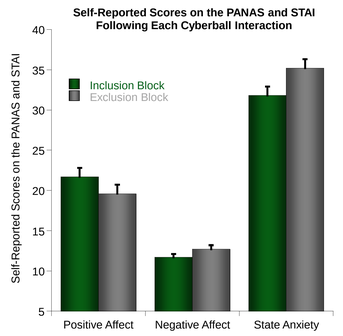


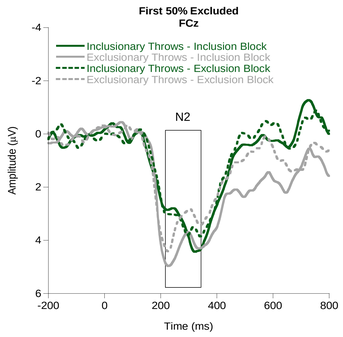
Neural Assessment – Informational Frame

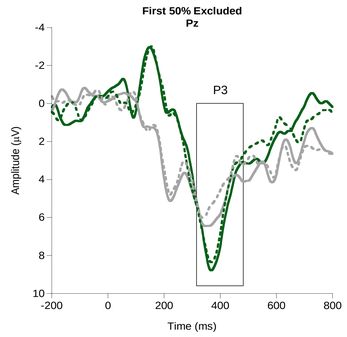
- EEG activity was measured from 64 midline and lateral sites.
- N2 was quantified as the average negative deflecting amplitude between 200-320 ms post-stimulus at the FCz electrode site.
- P3 was quantified as the average positive deflecting amplitude between 320-450 ms post-stimulus at the Pz electrode site.
- The stimulus was defined as the first informational frame in the ball toss that indicated where the ball was being thrown. Throws to the participant were defined as inclusionary throws and throws to the computerized players were defined as exclusionary throws.

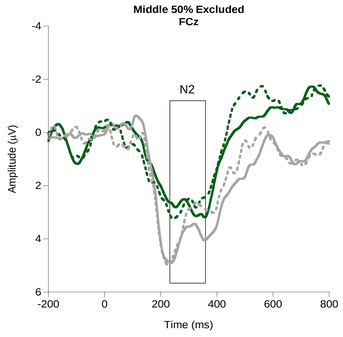
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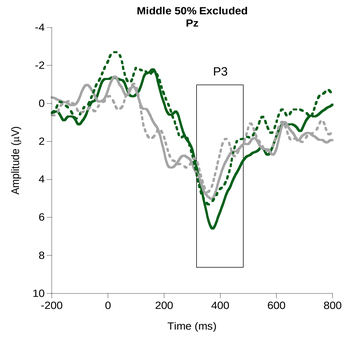


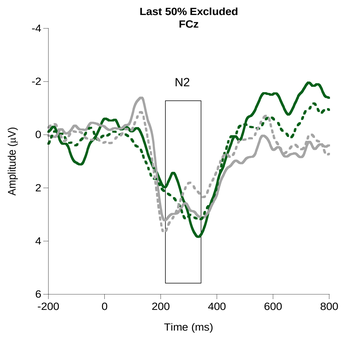


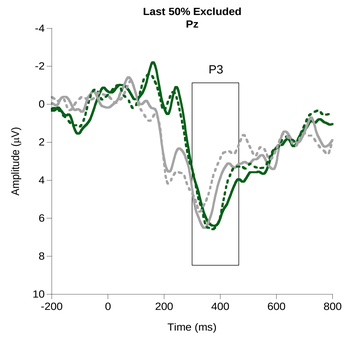












Results

Self-Report Measures

- Similar to previous research, all groups reported decreases in needs fulfillment as well as increases in state anxiety and negative affect following social exclusion.
- No differences were present between groups on the NTS, suggesting the timing of exclusion had no effect on self-reported needs fulfillment.
- Group differences were present in relation to self-reported anxiety after exclusion as the participants excluded in the middle 50% of the interaction reported less state anxiety than the other two groups, with the first-50% group and the last-50% group reporting similar levels of anxiety.

	Inclusion Block			Exclusion Block		
Group	EI	IEI	IE	EI	IEI	IE
Variable	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)
STAI	31.6(8.6)	30.8(7.8)	33.0(9.2)	36.1(7.1)	***31.3(7.2)***	38.3(9.9)

Neural Measures

- Replicating previous studies, exclusionary events were associated with larger N2 and smaller P3 amplitudes compared to inclusionary events, regardless of the nature of the social interaction.
- Analyses also revealed a smaller P3 amplitude to inclusionary events for participants excluded in the middle 50% of the interaction compared to the other two groups of participants.
- No differences were present in relation to the N2 component across groups or task blocks.

Conclusion

This study examined the relationship between social exclusion and event-related brain potentials across social interactions that varied on the timing of the exclusion within the interaction. Results replicated previous research indicating neural differences due to inclusionary and exclusionary events as well as behavioral differences due to the larger contexts (overall inclusion, overall exclusion) of the interactions.

- Additional findings related to the timing of social exclusion suggest that the self-reported consequences of exclusion are present even in interactions that do not end with exclusion.
- Further, a similar duration of exclusion was associated with similar patterns of neural activity present in response to discrete events within the social interactions as well as a similar decrease in the fulfillment of needs from inclusion to exclusion.
- However, prolonged exclusion at either the beginning or end of a social interaction was associated with enhanced state anxiety for targets of exclusion, suggesting anxiety may be more sensitive to the nature of how social interactions start or finish.

The present investigation provides evidence that exclusion exhibits a similar impact on neural indices of social exclusion as well as the fulfillment of needs regardless of when the exclusion exists within a larger interaction. However, interactions that either begin or end with social exclusion appear to elicit a greater degree of state anxiety when compared to interactions that begin or end with social inclusion, but have the same degree of exclusion contained within them.