Unpacking the cognitive dynamics of emotion regulation in autistic youth before and after mindfulness exercise

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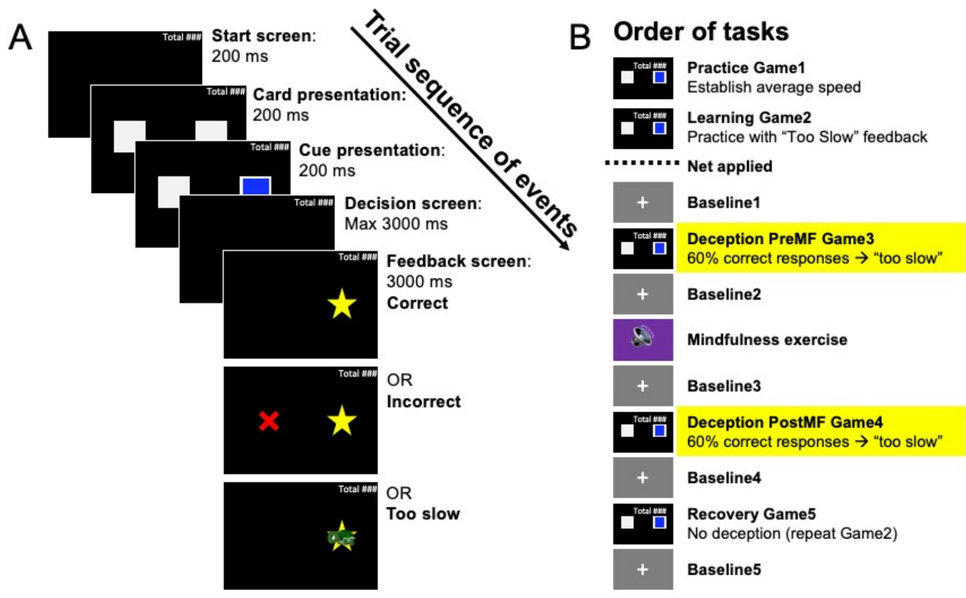
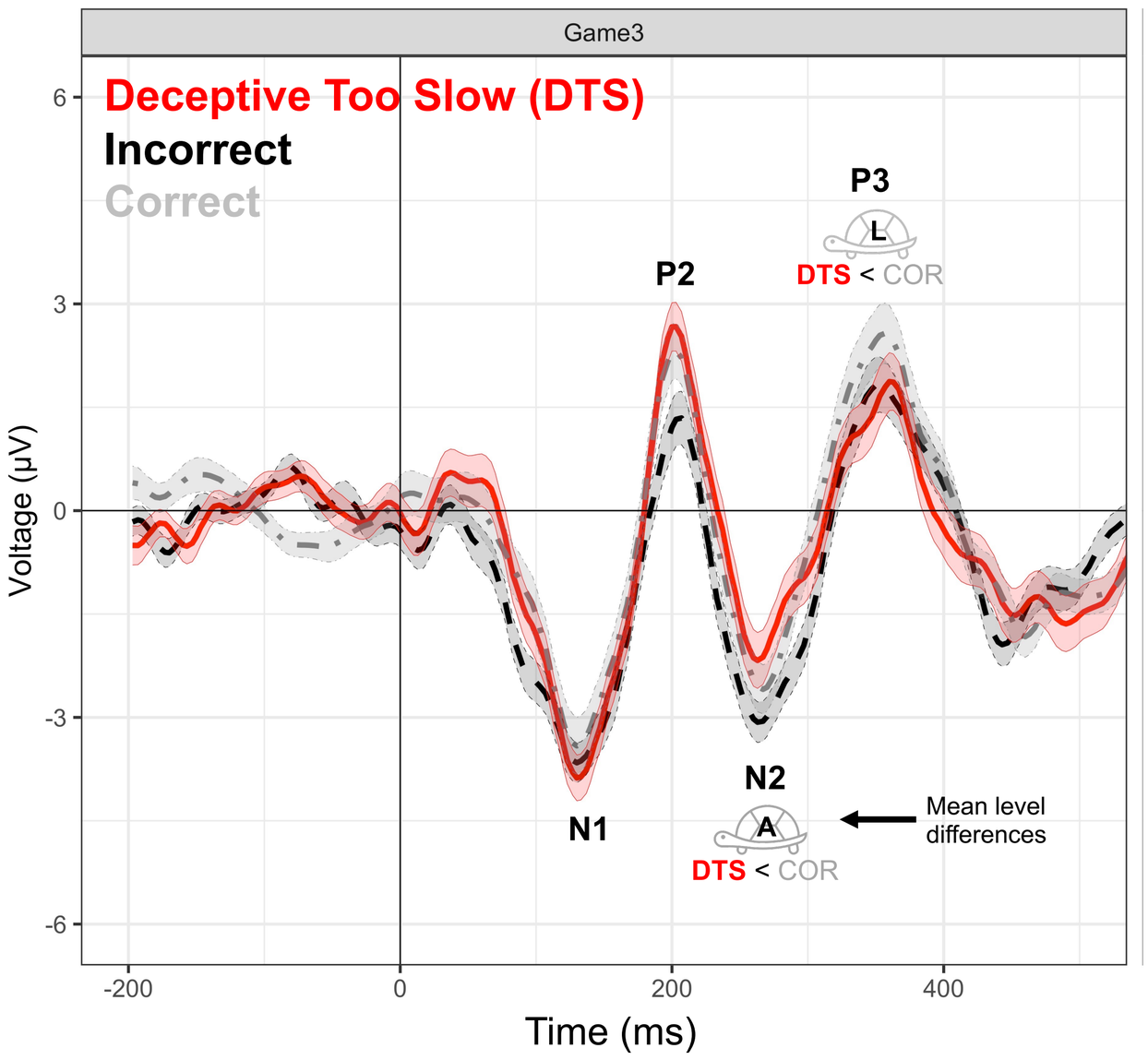
Core features of autism often manifest with emotion dysregulation. A balance between affective and cognitive processes are essential to shape behavior, yet there is limited understanding of what and how cognitive processes may dynamically change with successful emotion regulation strategies (e.g., mindfulness practice). Our objective here is to characterize shifts during a frustration task before and after a brief mindfulness exercise.

Conner et al., 2021; Samson et al., 2014; Hudac et al., 2021; 2022

Demographic and behavioral	Site 1	Site 2
N	40	17
Age M(SD)	14.47 (2.35)	14.59 (2.65)
Gender – M : F	34 : 6	13 : 4
Sex assigned at birth – M : F	33 : 7	13 : 4
FSIQ M(SD)	104.8 (16.9)	110.1 (19.7)
FSIQ Range	71-135	79-157
Emotion dysregulation (EDI)	**Site 1**	**Site 2**
Dysphoria T-score	52.3 (8.5)	50.9 (8.6)
Dysphoria Range	36.4-77.7	36.4-73.7
Reactivity T-score	50.4 (6.9)	48.6 (4.0)
Reactivity Range	30.1-62.9	43.7-56.9

Note: EDI T-scores above 46.4 are clinically elevated.

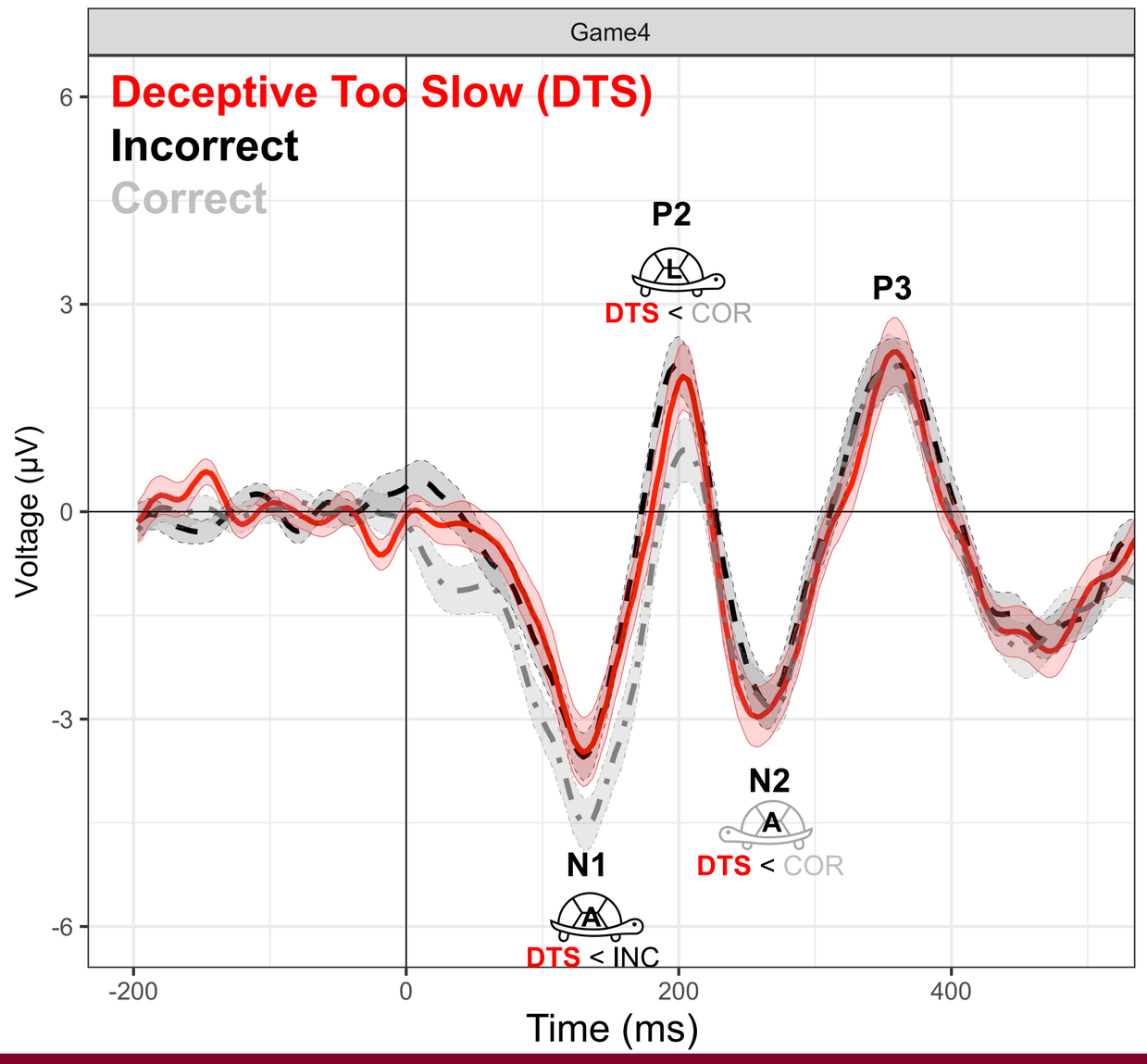




Before Mindfulness DTS dynamics	Amplitude	Latency
N1 Detection	Heightening	Heightening
P2 Encoding	ns	Heightening Heightening
N2 Cognitive control	**Lessening**	ns
P3 Evaluation	ns	ns

Mindfulness exercise:
2-minute guided (audio) awareness of breathing

After Mindfulness DTS dynamics	Amplitude	Latency
N1 Detection	**Lessening**	ns
P2 Encoding	ns	ns
N2 Cognitive control	ns	**Lessening**
P3 Evaluation	ns	ns



During the first deceptive game, low-level processes (detection, encoding) are becoming more heightened while capacity for cognitive control is lessening as youth become frustrated.

After mindfulness, cognitive control continues to lessen over the experiment, likely indicative of the effectiveness of the frustration induction.

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Funding: US Department of Defense W81XWH-18-1-0284