

The Effects of Social Isolation on Adolescent Threat Learning

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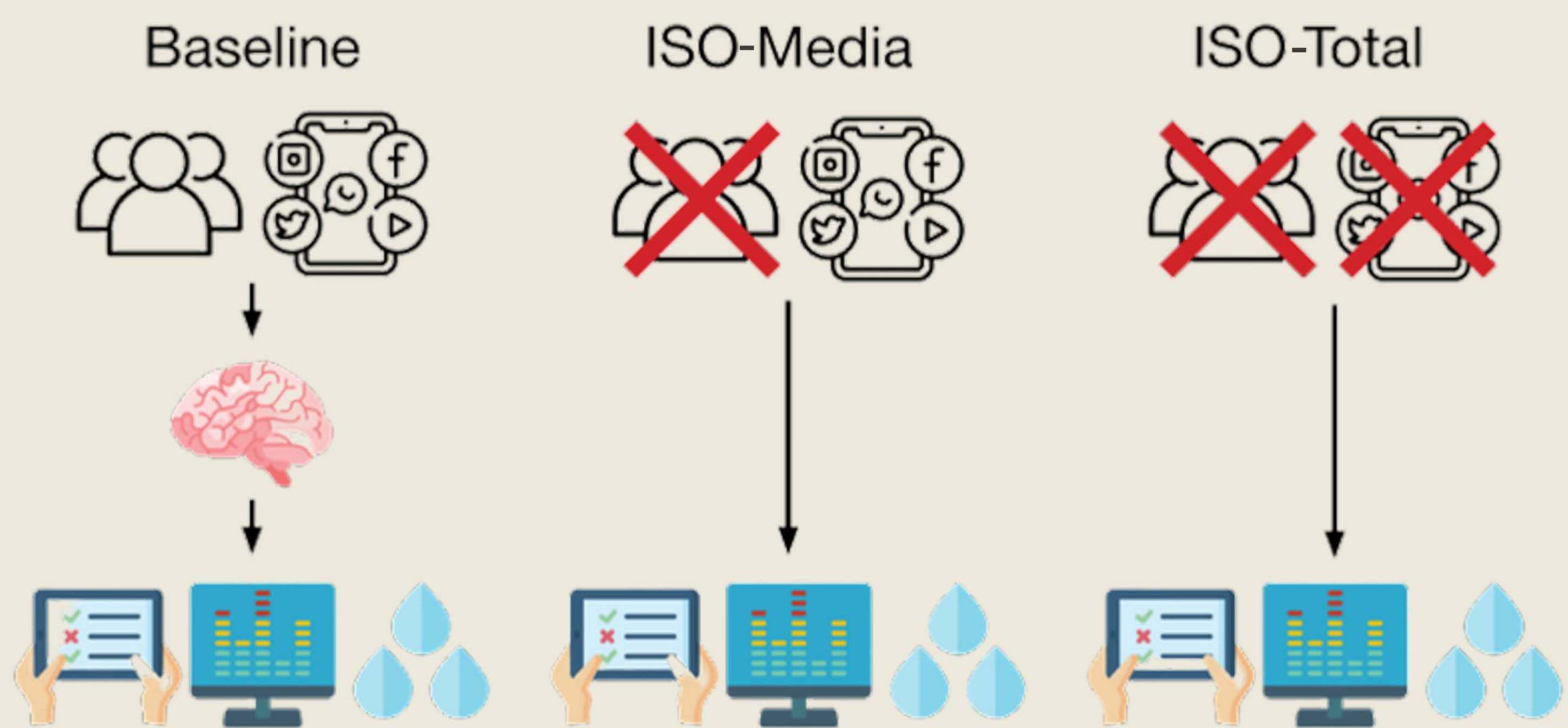
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03. Methods

Participants - 40 participants
(Age 16-19 years; 18 male)
Study Design - 3 experimental sessions
Manipulation - 3-4 hours in isolation

- **Threat Learning Task**
 - Arousal Rating
 - Valence Rating
 - Electrodermal Activity
- **Loneliness Rating**



04. Results

For **arousal** ratings there was a two-way interaction between session and cue for both isolation sessions compared to baseline (Figure 1).

ISO-Media Session * Threat Cue = 1.45, $\beta = 0.68$, SE = 0.49, $p = .003^{**}$
ISO-Total Session * Threat Cue = 1.53, $\beta = 0.72$, SE = 0.49, $p = .001^{**}$

For **valence** ratings, there was a two-way interaction between session and cue for both isolation sessions compared to baseline (Figure 1).

ISO-Media Session * Threat Cue = 1.83, $\beta = 0.97$, SE = 0.43, $p < .001^{***}$
ISO-Total Session * Threat Cue = 1.49, $\beta = 0.82$, SE = 0.44, $p < .001^{***}$

For **electrodermal activity**, there was a two-way interaction between session and phase for the iso-total session compared to baseline and this interaction was marginally significant for the iso-media session compared to baseline (Figure 1).

ISO-Total Session * Extinction Phase = 0.10, $\beta = 0.65$, SE = 0.04, $p = .015^{*}$
ISO-Media Session * Extinction Phase = 0.07, $\beta = 0.46$, SE = 0.04, $p = .084^{\wedge}$

01. Introduction

Social isolation and loneliness are increasing worldwide (particularly among adolescents)[1-4].

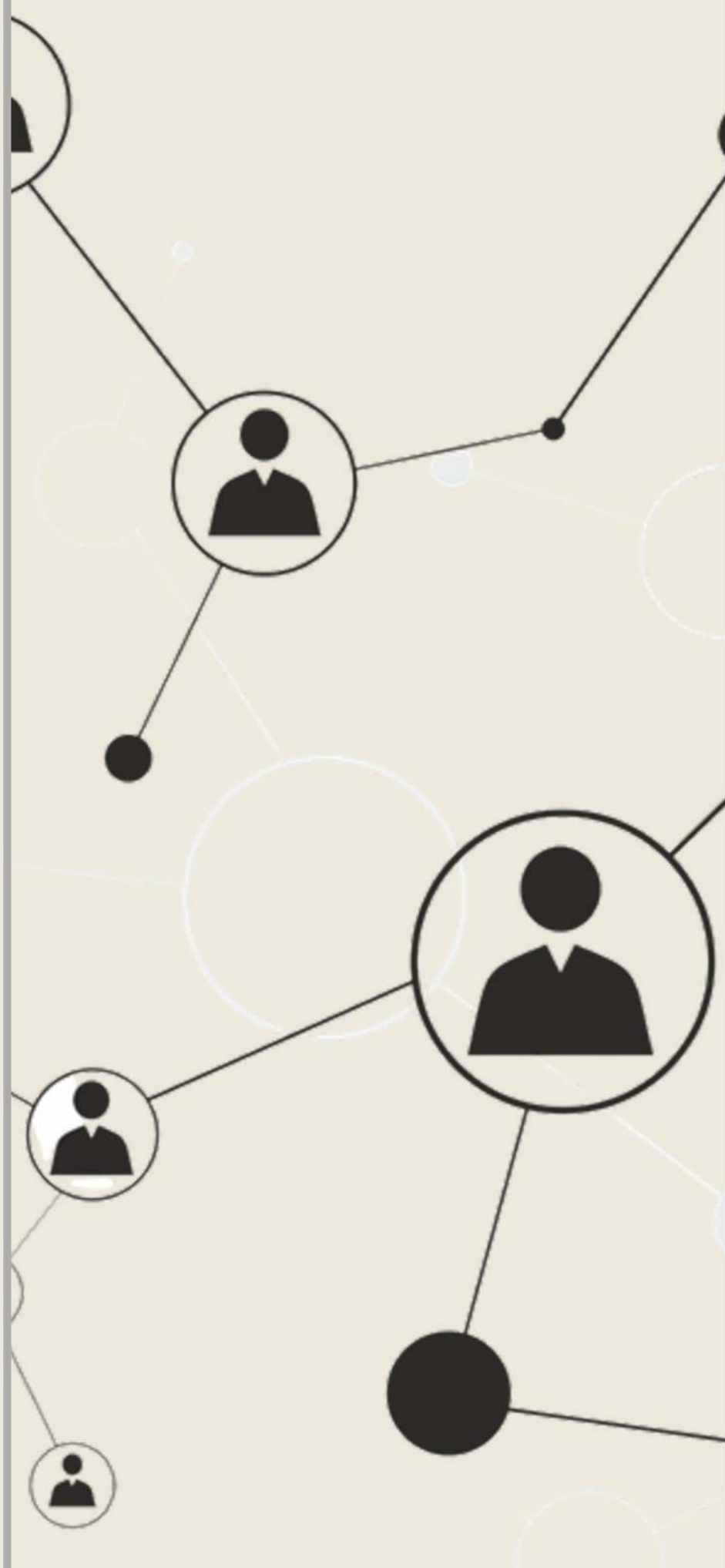
Loneliness is associated with a host of negative physical and psychological outcomes (including depression and anxiety)[5-7].

In animal models, social isolation has been shown to impact threat learning [8-11].

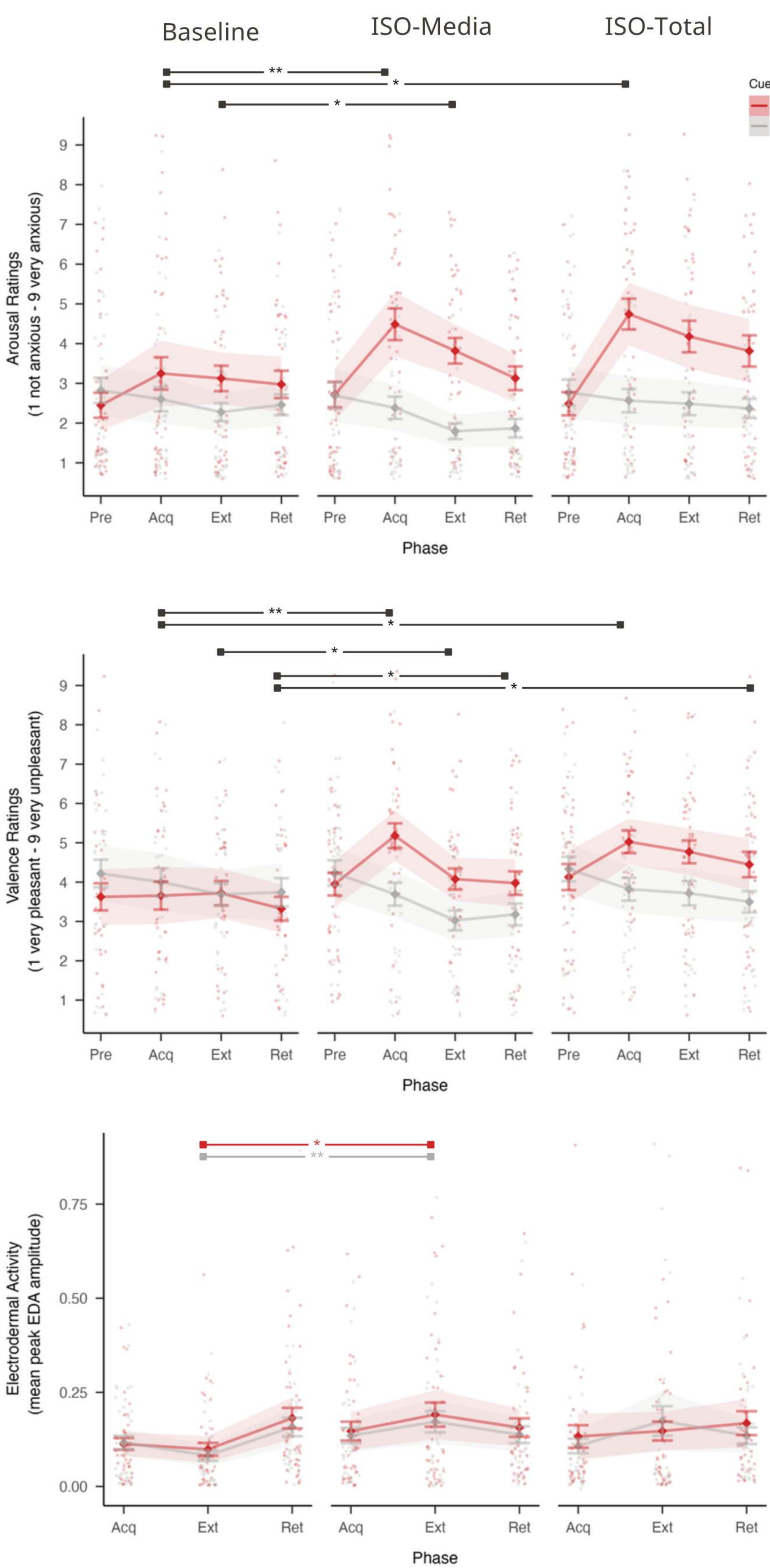
02. Research Questions

How does isolation impact threat learning in adolescent humans?

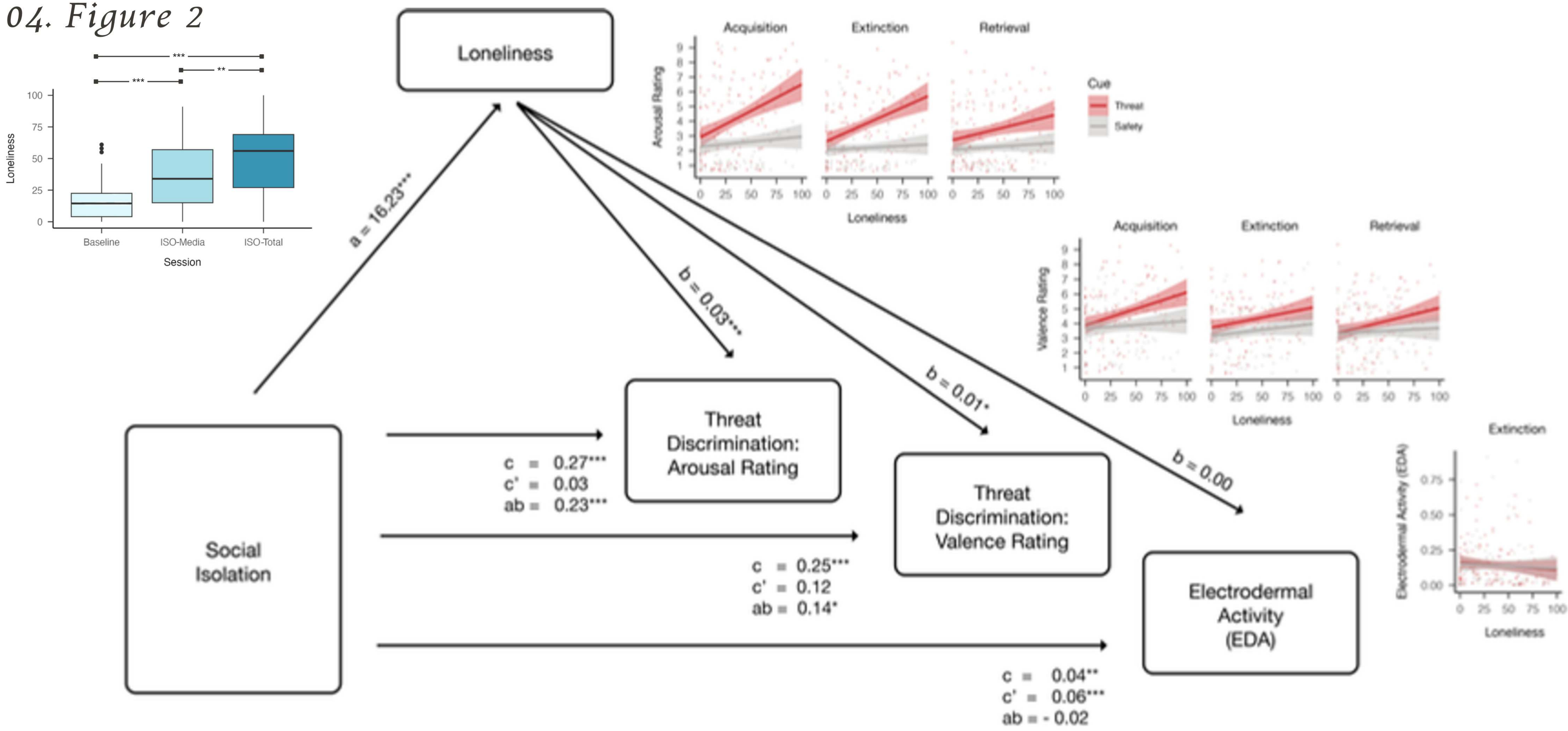
Do virtual social interactions remediate isolation effects?



04. Figure 1



04. Figure 2



05. Conclusions

Social isolation, with and without access to virtual social interactions lead to increased threat responding in a classical threat conditioning task.

Self-reported loneliness prior to testing fully mediated the effect of social isolation on increased threat discrimination (for arousal and valence ratings)(Figure 2).

Our findings help elucidate how isolation might give rise to mental illness. How we learn to anticipate future threats has implications for the emergence, maintenance and treatment of anxiety and other threat-related conditions.