How Pathology is Related to Costly Helping in Adolescents with Conduct Problems

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Background

• Prosocial, altruistic behavior is a core function of human society.

• Interactions where an individual decides to donate to charity, which involves a cost to themselves, reflects **altruism**.

• Altruism/Antisocial (AIAn) game was created to measure costly helping (Sakai et al., 2016).

• Sakai et al. (2016) found that participants with higher **callous-unemotional traits took the most** and did the **least costly helping**.

• A later study, Sakai et al. (2019) found that higher levels of **psychopathic traits** (callousness) were associated with **less costly helping**.

Hypotheses

• H[1]: **Likelihood of donating** is a function of how much is at stake for the participant and the Red Cross (RC).

• H[2]: **Callous-Unemotional (CU) traits** and **oppositional (OPP) traits** will **modulate** whether the participant donated as opposed to not donated.

Methods

Sample

• Secondary analysis of a clinical sample recruited by Sakai et al. (2016)

• N=66 adolescents; 21 with conduct problems and limited prosocial emotions (LPE), 21 with conduct problems without LPE, and 24 controls.

Measures

• The Child Behavior Checklist (CBCL) and Inventory of Callous and Unemotional Traits (ICU) were used to obtain scores for pathology (CU an OPP Traits).

Subject Grouping		Clinical Variables M (SD)	
Clinical Diagnosis	N(%)	CU Traits	OPP Traits
Subjects-LPE	21 (32%)	31.30 (6.11)	6.3 (2.83)
Subjects No-LPE	21(32%)	21.18 (5.36)	3.9 (3.16)
Controls	24 (36%)	17.89 (6.59)	0.4 (1.24)

Table 1. Demographic data for sample used in study.
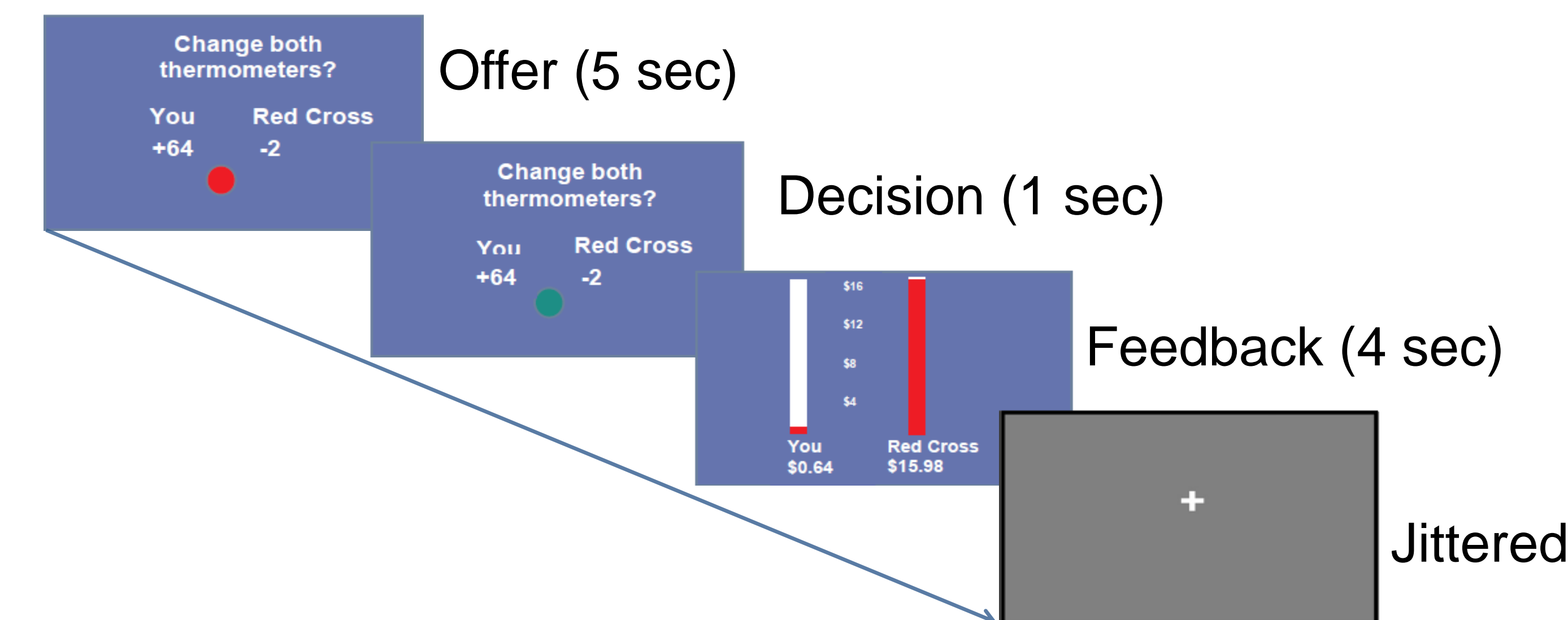
Task

Fig.1. **An AIAn trial**. Participant decides to adjust donation to the Red Cross with progressive offers. The offer shows how much money they might gain with a reduction to the donation. The participant decides whether to take the offer and reduce the overall donation or not.

Analysis

Generalized linear mixed effects regression used to analyze how pathology and ratio of amounts presented in the game's offers impacted whether offer was taken or not.

Results

Ratio

• Generally, participants were likely to donate to the Red Cross (Table 1)

• The **Ratio** of how much a participant would gain relative to how much the Red Cross lost affected their likelihood of donation, such that **all participants were unlikely to donate if they would gain much more than the RC lost** (Fig. 2, panel 1; Table 1).

Pathology

• Participants with higher **CU traits** do not donate when the **RC stands to lose as much, or more, than the participant stands to gain** (Fig.2, panels 2,3; Table 1).

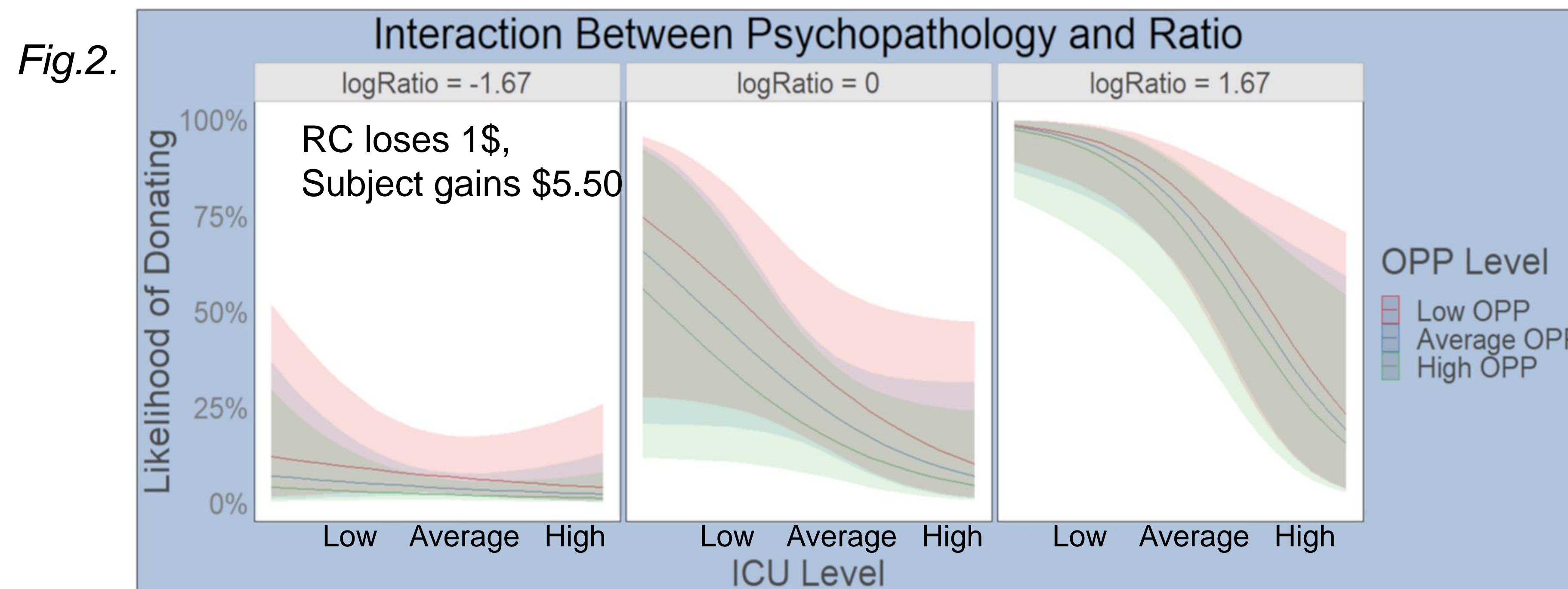• Overall, participants with **OPP traits** are **less likely** to donate (Fig.2, Table 1).

Fig.2. Interaction Between Psychopathology and Ratio

	Variable	Estimate	Standard Error	z	p-value
Table 2.	Intercept	-1.06	0.38	-2.82	0.00**
	Ratio	1.27	0.03	40.16	0.00***
	CU traits	-0.09	0.05	-1.80	0.07
	OPP traits	-0.04	0.04	-1.08	0.28
	logRatio x CU traits	-0.03	0.00	-8.98	0.00***
	logRatio x OPP traits	0.01	0.00	3.00	0.00**

*p≤0.05   **p≤0.01   ***p<0.001

Conclusions

• Main effect of ratio and the interaction between pathology and ratio were in line with our expectations.

• We disentangle the effects of Ratio, CU traits, and OPP traits on the likelihood of donation. Findings suggest **prosocial behaviors are impacted by pathology above and beyond the ratio** between how much the charity loses and how much the participant gains.

Future Directions

• First study to map the relative contributions of Ratio, CU, and OPP factors on altruistic decision making.

• AIAn was performed during neuroimaging; the behavioral model will allow us to partition signals specific to CU Traits during decision making while adjusting for normative (non-pathologic) effects from evaluating personal loss when donating.

• OPP Traits are a mixture of emotional and behavioral features. Findings suggest a modest effect of these and offer new analytic inroads.

Acknowledgments