



## HOT TOPICS

## “Next up for psychiatry: rejection sensitivity and the social brain”

David T. Hsu<sup>1</sup> and Johanna M. Jarcho<sup>2</sup>Neuropsychopharmacology (2021) 46:239–240; <https://doi.org/10.1038/s41386-020-00802-9>

There is an urgent need to utilize social neuroscience, the study of neural mechanisms that mediate social processes and behavior, to advance the understanding of psychiatric disorders. As social animals, we are hardwired to seek and maintain strong and stable relationships. Severe or repeated social rejection (being disliked or ostracized) and isolation are causal factors in the development, persistence, and severity of nearly all psychiatric disorders. Sensitivity to social rejection is a diagnostic criterion or feature of social anxiety, major depression, borderline personality, avoidant personality, premenstrual dysphoric, bulimia nervosa, body dysmorphic, acute suicidal ideation, and substance/alcohol use disorders. Despite this, fewer than 50 studies have examined neural responses to social rejection in psychiatric disorders [1]. Still fewer have examined neural responses to social acceptance, which may be critical for understanding the pathophysiology of disorders with social anhedonia and withdrawal.

Social rejection or acceptance elicit a negative or positive *view of the self*, which is critical to understanding mood, anxiety, and personality disorders. It is vital to implement a laboratory model of social feedback because the affective pictures, faces, or monetary incentives often used in research fail to impact this self-view. For example, using laboratory models of online dating and social media interactions, we found that being liked by others led to a *greater increase* in positive mood (instead of an anhedonic response that might be observed with non-social incentives) in depressed compared to healthy individuals [2] and that depressive symptoms are associated with greater neural sensitivity to social acceptance/rejection vs. monetary reward/loss in adults [3] and adolescents [4].

An important path forward is the systematic study of the neural mechanisms that subserve the response to rejection. Although rejection sensitivity is present in several psychiatric disorders, the specific behavioral, affective, and neural responses to rejection may differ across disorders [1]. For example, rejection-elicited fear and social withdrawal may increase vulnerability to anxiety and depressive symptoms, whereas rejection-elicited anger and impulsiveness may increase vulnerability for borderline personality disorder.

The degree of social connectedness may also play a key role in these relations. Poor social connectedness potentiates psychiatric symptoms, which may in turn reinforce rejection sensitivity. COVID-19 has resulted in unprecedented levels of isolation, and may exacerbate this vicious cycle. These effects may be particularly devastating among early adolescents who are isolated from peer support networks during a critical window that coincides with peak onset rates for many psychiatric disorders.

Indeed, we have shown greater differences in neural response to peer acceptance and rejection in socially anxious early adolescents relative to older adolescents [5] and adults [6]. Widespread isolation due to COVID-19 is an opportunity to track these changes and push the field of social neuroscience forward.

Reducing rejection sensitivity may be a novel and effective treatment strategy. Neurotransmitter systems involved in social cognition and behavior in animal models (e.g., opioid, oxytocin, vasopressin systems) have yet to be investigated for their role in rejection sensitivity and resilience in humans. Targeting these systems could break the vicious cycle of rejection and loneliness to accelerate recovery.

**FUNDING AND DISCLOSURE**

The authors have nothing to disclose. DTH was supported by R01 MH102264 and JMJ was supported by R21 HD093912.

**ACKNOWLEDGEMENTS**

The authors would like to thank Asha Job, MD, for discussions and feedback on this article.

**AUTHOR CONTRIBUTIONS**

DTH and JMJ wrote the article.

**ADDITIONAL INFORMATION**

**Publisher's note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

**REFERENCES**

1. Reinhard MA, Dewald-Kaufmann J, Wüstenberg T, Musil R, Barton BB, Jobst A, et al. The vicious circle of social exclusion and psychopathology: a systematic review of experimental ostracism research in psychiatric disorders. *Eur Arch Psychiatry Clin Neurosci*. 2019. <https://doi.org/10.1007/s00406-019-01074-1>.
2. Hsu DT, Sanford BJ, Meyers KK, Love TM, Hazlett KE, Walker SJ, et al. It still hurts: altered endogenous opioid activity in the brain during social rejection and acceptance in major depressive disorder. *Mol Psychiatry*. 2015;20:193–200. <https://doi.org/10.1038/mp.2014.185>.
3. Sankar A, Yttredahl AA, Fourcade EW, Mickey BJ, Love TM, Langenecker SA, et al. Dissociable neural responses to monetary and social gain and loss in women with major depressive disorder. *Front Behav Neurosci*. 2019;13:149. <https://doi.org/10.3389/fnbeh.2019.00149>.

<sup>1</sup>Department of Psychiatry and Behavioral Health, Stony Brook University, Stony Brook, NY 11794, USA and <sup>2</sup>Department of Psychology, Temple University, Philadelphia, PA 19122, USA

Correspondence: David T. Hsu ([david.hsu@stonybrookmedicine.edu](mailto:david.hsu@stonybrookmedicine.edu))

4. Quarmley ME, Nelson BD, Clarkson T, White LK, Jarcho JM. I Knew you weren't going to like me! neural response to accurately predicting rejection is associated with anxiety and depression. *Front Behav Neurosci.* 2019;13:219. <https://doi.org/10.3389/fnbeh.2019.00219>.
5. Smith AR, Nelson EE, Kircanski K, Rappaport BI, Do QB, Leibenluft E, et al. Social anxiety and age are associated with neural response to social evaluation during adolescence. *Dev Cogn Neurosci.* 2020;42:100768. <https://doi.org/10.1016/j.dcn.2020.100768>.
6. Jarcho JM, Romer AL, Shechner T, Galvan A, Guyer AE, Leibenluft E, et al. Forgetting the best when predicting the worst: preliminary observations on neural circuit function in adolescent social anxiety. *Dev Cogn Neurosci.* 2015;13:21–31. <https://doi.org/10.1016/j.dcn.2015.03.002>.