Dr. Kenneth S. Kendler

Dr. Robin M. Murray

Editors-in-Chief

Psychological Medicine

Dear Dr. Kendler and Dr. Murray,

Please find enclosed a copy of our manuscript entitled “*Impact of Contextual Learning on Reinforcement Learning Performance in Anorexia Nervosa*” by Caudek, Colpizzi, Guidi, Danti, Lucchesi, Giusti, Di Meglio, Ballardini, Mazzoni, Pieraccioli, Schumann, and Sica, which we would like to submit for publication as an article in the Psychological Medicine.

The study of Anorexia Nervosa has often explored the potential role of maladaptive associative learning as a mechanism contributing to the disorder's maintenance. However, the existing evidence has yielded mixed and contradictory findings. Researchers have typically assumed that a single, unitary mechanism might be compromised. Consequently, associative learning tasks predominantly involved AN patients making choices unrelated to their disorder.

Recently, there has been a growing emphasis on the idea that learning is contextual and leads to the activation of specific memories linked to rewards and punishments associated with specific choice contexts. Studies have demonstrated significant differences in learning properties across different contexts.

In light of these recent theoretical developments on learning processes, we applied this concept to the specific learning patterns in individuals with AN. Therefore, we conducted an experiment involving individuals with R-AN, healthy controls, and healthy controls at risk of eating disorders. We used a modified version of the Probabilistic Reversal Learning task, asking participants to make choices in two distinct contexts: one related to food choices and the other unrelated to food choices.

Our results are very clear and shed light on the contradictions found in previous literature. In a within-subject design, we discovered that individuals with R-AN demonstrated conservative learning when making choices associated with the disorder but exhibited normal learning rates when making choices unrelated to the disorder.

Our findings strongly support the idea that reinforcement learning deficits in AN are domain-specific. By demonstrating that the context in which participants make their choices significantly influences reinforcement learning performance in R-AN, our results have important implications for treatment strategies.

We confirm that this manuscript has not been published elsewhere and is not under consideration by another journal.

All authors have approved the manuscript and agree with its submission to Psychological Medicine.

Please note that our submission includes a Supplementary Materials file, which provides additional information about data analysis code and results.

With kind regards,



Corrado Caudek, Ph.D.