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# Disruptive Mood Dysregulation Disorder: a polyvagal perspective

**Leal, Michelle**

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Abstract

The present study was designed to contribute to the existing body of knowledge on Disruptive Mood Dysregulation Disorder (DMDD) by exploring the potential association between heart rate variability and the externalising symptoms (i.e. frequent temper tantrums and irritable or angry moods between outbursts) of the disorder. The overarching goal was to establish whether the emotion dysregulation and compromised social behaviour associated with DMDD are a function of a compromised social engagement system, as proposed by the polyvagal theory. This study compared data from a group of children ($n$ = 15) who were diagnosed with DMDD to that of a group of typically developing controls ($n$ = 15) to test four hypotheses derived from the polyvagal theory: 1) Children with DMDD would have significantly lower RSA amplitude than controls; 2) RSA amplitude would be significantly related to speed and accuracy of attention shifting (Affective Posner Cueing Task) and emotion recognition (Dynamic Affect Recognition Evaluation) tasks – lower RSA amplitude was expected to be associated with more errors and reduced reaction time during emotional, frustrating and emotion recognition tasks in children with DMDD; 3) RSA amplitude would be significantly related to attachment style (as measured by the Attachment Style Classification Questionnaire) – lower amplitude RSA was anticipated to be related to anxious/ambivalent or avoidant attachment styles; and 4) RSA amplitude would be significantly related to prosody – reduced RSA amplitude was predicted to be correlated with reduced acoustic modulation in children with DMDD. Results did not fully confirm the hypothesis that children who have been diagnosed with DMDD exhibit lower baseline RSA and excessive reductions in RSA in response to emotionally evocative stimuli compared to healthy controls. Although not statistically significant, dissimilar trends emerged for the two groups in terms of RSA trajectories, and warrant further investigation. Results partially supported the hypothesis that participants in the DMDD group would exhibit reduced speed and accuracy during the Affective Posner Cueing Task and the DARE emotion

recognition task. Children in the DMDD group were significantly slower ($p$ = .002) to respond during all three conditions of the Affective Posner Cueing Task and had significantly impaired ability ($p$ = .032) to accurately recognise fear during the DARE task, in comparison with healthy controls. Participants in the DMDD group were found to largely have an avoidant attachment style. Respiratory sinus arrhythmia was, however, related to anxious ambivalent attachment in general. Statistically significant ($p$ = .044) differences also emerged in terms of prosody, with participants in the DMDD group exhibiting more modulation, or instability, than those in the control group. Finally, the number of social interaction problems reported by parents of participants in the DMDD group significantly correlated with vagal tone during the frustration condition ($p$ = .049) of the Affective Posner Cueing Task. These findings are discussed in terms of their implications and relation to findings of other studies. In conclusion, the limitations of the current study are addressed and recommendations for future research are made.

**Keywords:** Disruptive Mood Dysregulation Disorder, DMDD, RSA, vagal tone, polyvagal