Heart Rate Variability Following Treatment for PTSD: Testing the Polyvagal Theory

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Abstract
Posttraumatic stress disorder has been linked to lower heart rate variability (HRV), including measures of vagal tone. Treatments targeting the autonomic nervous system (ANS) have demonstrated efficacy in improving vagal tone, but it is less clear whether similar effects can also be achieved with cognitive therapies. The polyvagal theory has suggested that symptoms of social dysfunction are linked to vagal tone through a phylogenetically organized response to stress. HRV was collected during rest, reactivity (exposure to personalized trauma scripts), and recovery using a scripted imagery paradigm in female PTSD positive physical and sexual assault survivors (N = 41) prior to and following completion of cognitive processing therapy (CPT). Effects of treatment response and a supplementary deep relaxation treatment were also assessed. To test the premise that vagal tone is related to social functioning, regressions predicting scores on Social Adjustment Scale (SAS) with high frequency (HF) HRV were completed. Vagal tone during trauma cue exposure improved following CPT, but only in treatment responders; during all other assessment periods it decreased posttreatment and there was no effect of treatment response. However, including depression symptoms as a covariate rendered all previously significant effects non-significant. The supplementary treatment had no effect on HRV during any of the measurement periods. Findings indicate the potential for cognitive therapies to impact vagal tone, despite not directly targeting the ANS. Minimal support for the polyvagal theory was found in the extended family subscale of the SAS, which was the only domain to demonstrate a significant relationship to vagal tone.

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