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Motor System Markers of Depression Severity

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Abstract

Physiological health has been linked to increased complexity in the output of physiological systems. For example, as the severity of cardiac disease increases, EKG time series show reduced complexity. The present study investigated the relation between mental health and complexity in motor output. In particular, we tested the hypothesis that depression severity—as measured by the Symptom Checklist-90-R (SCL-90-R)—should be negatively correlated with motor output complexity. Measurements of motor output were obtained when participants generated long sequences of movements in a cyclical aiming task. The resultant movement amplitude time series were submitted to spectral analysis, from which an index of motor output complexity was derived. According to the results, low levels of depression severity were associated with power spectra tending toward *white noise* (high complexity) and high levels of depression severity were associated with power spectra tending towards *pink noise* (low complexity). The results appear to support the hypothesis that depression severity and motor output complexity are negatively correlated.