

REACTION TO MENTAL STRESS IN ADOLESCENTS AND YOUNG ADULTS WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER

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INTRODUCTION

Attention Deficit Hyperactivity Disorder is affecting both adolescents and adults. Attention and mental work require appropriate activation of the Autonomic nervous system, which plays part in regulation of reaction to physical and mental stress.

METHODOLOGY

33 subjects (9 adults and 7 adolescents with DSM-IV ADHD diagnosis; 9 adults, 8 adolescents healthy controls) underwent an orthostatic test and standardised mental stress test (Stroop test). After resting in the supine position 12 min ECG was recorded with a PolarH10 device and EliteHRV software during the orthostatic test and another 3.5 min record during the Stroop test. The reactivity of the autonomic nervous systems were evaluated in the following intervals: 5 min lying down, 2 min transition to standing position, 5 min in standing position, and 3.5 min Stroop test.

Aim of study

To determine peculiarities of the reaction to mental stress in adolescents and young adults with ADHD.

RESULTS

In the supine position, adolescents with ADHD were characterised by significantly higher heart rates (82.7 vs 76.6) compared to the control group; the same tendency was seen between adult groups (84.3 vs 73 bpm). PNS and SNS indexes in the supine position had higher absolute values in ADHD groups (2.15, 1.85, respectively) compared to the control (1.07, 1.24).

During the transition phase from supine to standing position, the control group showed typical SNS activation followed by PNS responses and a rapid return of the heart rate to the supine position value. The ADHD group showed atypical responses with various patterns (prolonged SNS activation, absent SNS activation, rapid PNS activation) to the orthostatic test.

In the mental test, the control group showed a rise in absolute values of both PNS (25%) and SNS (44.8%) indexes, while the ADHD group showed opposite reaction – PNS index decreased (-31.9%) and almost no SNS reaction (-2.2%). Young adults with ADHD also had lower reactivity to mental stress in comparison to control group (mean RR duration 11.4% vs. 20.6%, maximum HR 14.1% vs 24%, but higher SDNN reaction 17.5% vs -5%).

CONCLUSIONS

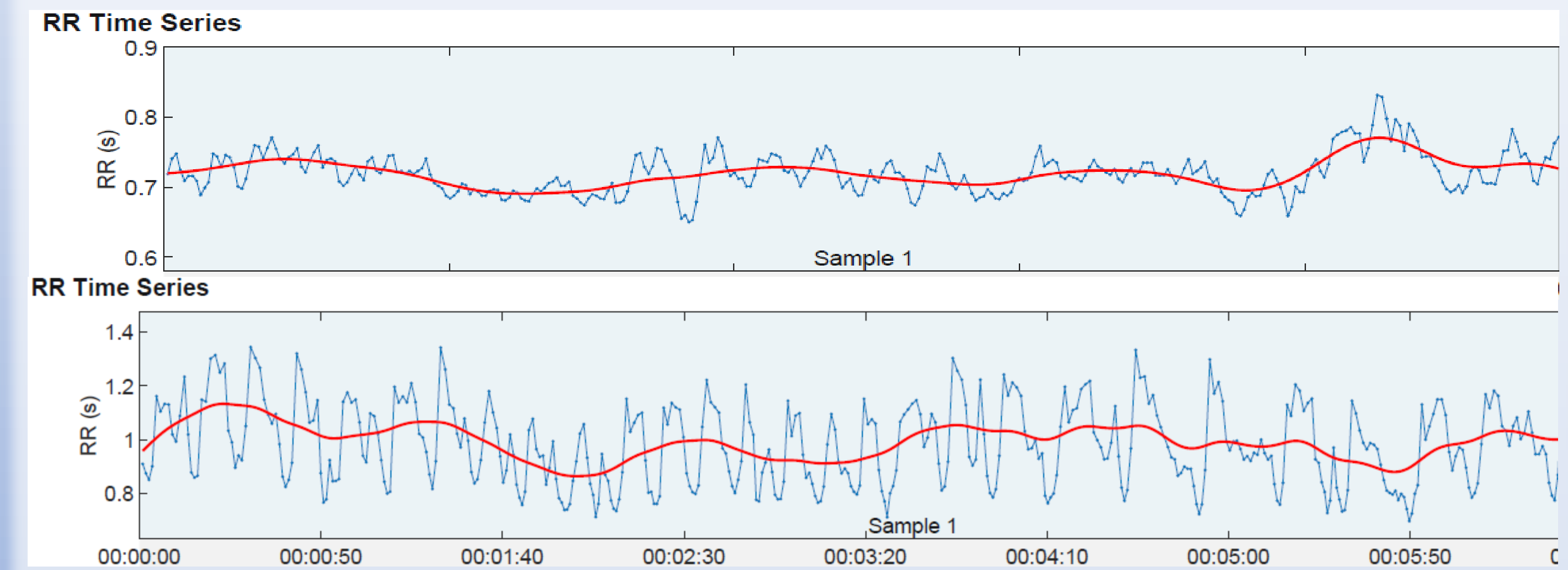
ADHD patients of different ages might be characterised by a different pattern of ANS activation in reaction to mental stress with different atypical responses. The age of patients and the severity of the disease can also affect these patterns. Increased reactivity at rest affects reactivity to other activities (e.g., mental stress). Additional research is needed to analyse the peculiarities of the ANS response to orthostatic tests and mental stress tests in ADHD.

ACKNOWLEDGMENT

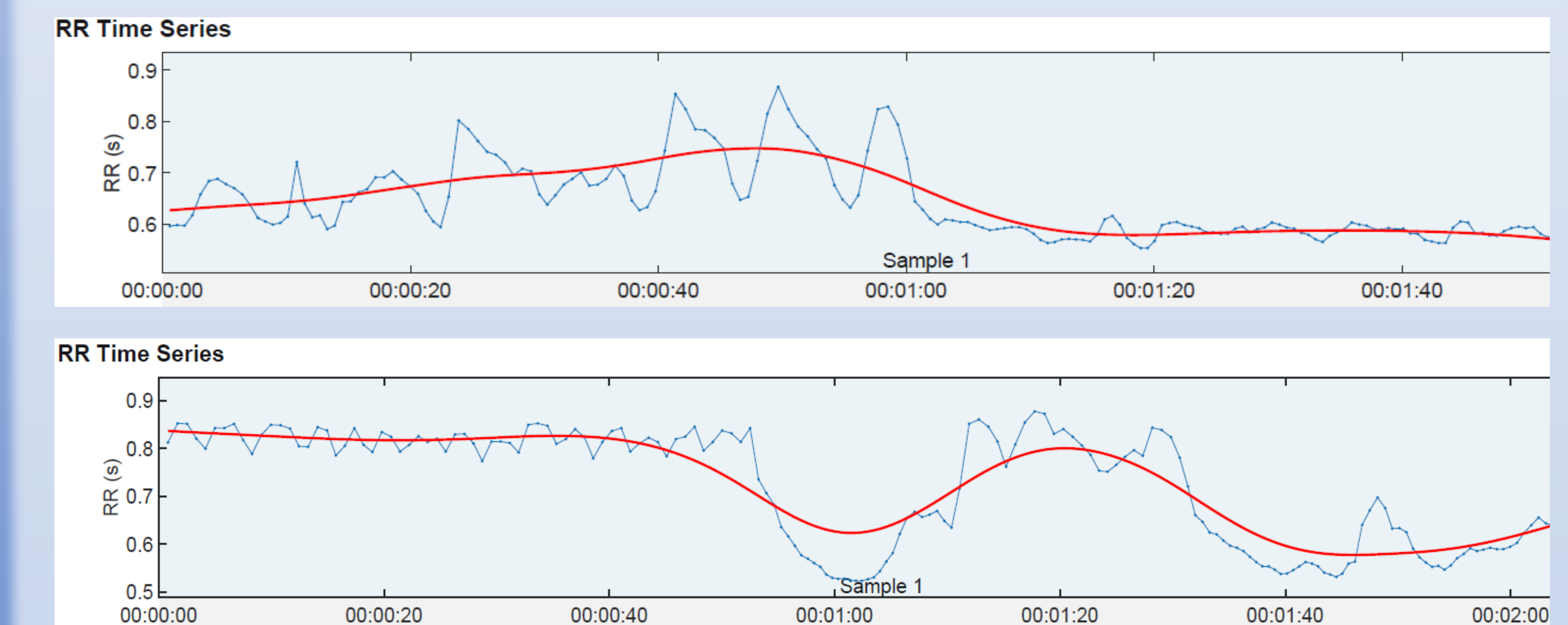
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A- Supine position

ADHD group (upper) and control (lower)



B- Transition from supine to standing position



C- Stroop test

