The correlations of early maladaptive schemas and psychophysiological response to stress

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Objective

Early maladaptive schemas (EMS) have been developed primary in childhood through the interaction between youngster disposition and the early experiences of stress, deprivation or frustration of the basic needs. Distressing situations have also been connected with the increased risk of cardiovascular disease (CVD). Emotional distress stimulates sympathetic activity producing the fluctuations in cardiovascular system – tachycardia and an increase in blood pressure. The connection between early maladaptive schemas and physiological parameters of autonomous nervous system is unknown yet.

Aims of the study

The aim is to search for the relationship between early maladaptive schemas and physiological parameters of autonomous nervous system (ANS) measurements in rest and during mental stress.

Methods

The research sample consists of 227 adult participants without clinical diagnose. Females 137 (60,4 %), males 90 (39,6 %), age (39,57; SD=12,89). After heart rate variability (HRV) analysis 20 women and 10 men were excluded due enormous artefacts in EKG datas. Young Schema Questionnaire (YSQ-S3), demographic questionnaire and psychophysiological measures of ANS (heart rate variability (HRV), electrodermal activity (EDA) and respiration rate (RR)) were used. Parameters were assessed 6 minutes in each period of measurement (baseline, mental arithmetic, recovery, stress memory, recovery). HRV activity were measured using the time analysis. and frequency spectral analysis of the beat-to-beat interval (R-R interval). The following ANS parameters were chosen: **HR** – heart rate (mean); **SDNN** – standard deviation of R – R intervals; the total amount of HRV; **LF rel.** – the percentage amount of LF part of HRV, mostly sympathetic activity of ANS; **HF rel.** – the percentage amount of HRV, variable of parasympathetic activity of ANS; **EDA** – variable of sympathetic activity. Participants were examined on standard conditions. Then they fulfilled the inventories in separate room and were measured on biofeedback device Procomp Infinity. The results were statistically calculated by correlation analyze with age control and multiple linear regression analyze using .SPSS for Windows.

Results

The women and men sample was calculated separately
Graph 1. Correlation between EMS and HF rel

In **women subgroup** the most important parameter correlated with EMS was HF relative. We found weak and moderate strong significant correlation between HF relative and Social isolation, Vulnerability to harm and Illnesses and Self-sacrifice (graph 1).

In **men subgroup** the most important parameter correlated with EMS was heart rate. We found weak and moderate strong negative correlation between three EMS (primary schema Vulnerability to harm and illnesses and two secondary schemas Enmeshment and Subjugation) and HR mean, as it is shown in graph bellow (graph 2). Graph 2.

As a second step the multiple linear correlation analyze was made, to find factors behind the secondary schemas.

Diskusion

We suppose that in **women sample** schema Vulnerability to harm and illness is connected with behavioral – inhibition system and passive avoidance behavior. Women with higher Social isolation schema shows higher activity of behavioral activation system (Gray 1982). High sympathetic modulation and its reactivity could represent important risk factor of cardiovascular diseases We think, in **subgroup of men**, that positive relationship between primary Mistrust/abuse schema and LF rel. in condition of mental load could be explained as vigilant phenotypes described in the adaptive calibration model of stress responsivity (Giudice, Ellis, Shirtcliff, 2011). Because higher HR is connected with higher risk of cardiac mortality, we see schema Mistrust/abuse as risk factor to CVD.

Limitation of the study

The limitations of the study could be different number of participants in men and women groups due potential gender differences. Also the educational level does not reflect the distribution of education in general population.

Conclusions

This study could illuminate sophisticated pathway linking psychological and physiological parameters with possible link to CVD.

Bibliography

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