PARALLEL SESSION 6 – SATURDAY JUNE 22nd 2019, 08h00 – 09h30
Combined symposium 1: International symposium on psycho-cardiology

- M. Beresnevaite, et al.: Sympathovagal heart rate control and depression during mental arithmetic stress in cardiac surgery patients
- N. Hamieh, et al.: Hostility, depression and incident cardiac events in the GAZEL cohort
- M. Zhang, J. Li: Burnout is associated with lower heart rate variability in patients following acute coronary syndrome: A one-year follow-up study
- St. Duijndam, J. Denollet: Social Inhibition and Internalizing Problems in Adults: Inhibition, Sensitivity and Withdrawal as Distinct Vulnerability Facets
- P. Lodder: Type D personality predicts the occurrence of major cardiac events in patients with coronary artery disease: A multi-method analysis
Sympathovagal heart rate control and depression during mental arithmetic stress in cardiac surgery patients

Aim
The purpose of this study was to test the hypothesis that depression is related to sympathovagal activity during short-term psychological stress.

Methods
At 1.5 months after cardiac surgery (CS), 157 depressed pts (mean age – 62.0±10.4 yrs, 71.6% males, SCL-90R depression subscale score >60T) were investigated before psychological rehabilitation at an outpatient Clinic. Heart rate variability (HRV) parameters were measured using short-term ECG 5-minute recordings at rest and during the mental arithmetic test (MAT). P value <0.05 was considered to be statistically significant.

Results
Significant changes between parameters at rest and during MAT were found in interbeat interval (NN) in ms (t = 5.21, p <.001), low frequency component (LFCnu) of HRV in normal units (t = -2.9, p <.01), high frequency component (HFCnu, t = 3.62, p <.001), and the low/high frequencies ratio (LF/HF, p <.001, Z = -3.69). The depression score was significantly related to the following parameters: 1) NN at rest (p = .028, ß = -4.657) and during MAT (p = .038, ß = -4.328); 2) HFCnu during MAT (p = .015, ß = -4.37); and 3) the LF/HF ratio during MAT (p = .001, ß = .063).

Conclusion
The results of this study showed that in depressed post-cardiac surgery patients, the depression score was associated with a poorer sympathovagal control of the heart rate during mental stress. Such findings show that depressed CS patients may be at higher risk of rhythm disorders or sudden cardiac death.

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Hostility, depression and incident cardiac events in the GAZEL cohort

Aim
Beside the traditional cardiovascular risk factors, psychological factors such as hostility and depression have been associated with incident cardiovascular disease. However, most studies considered depression as a time-independent trait. We aimed to study the association between hostility and incident cardiac events in a middle-aged working population, comparing models considering depression as either time-independent or time-dependent.

Methods
We followed 10,541 GAZEL workers free of cardiovascular diseases in 1993 for validated incident cardiac events from 1994-2014 and 592 new events were identified. Hostile traits (cognitive hostility, behavioral hostility, irritability and negativism) were assessed in 1993 using The Buss and Durkee Hostility Inventory. We used Cox proportional hazards models to calculate hazard ratios (HR) of cardiac events in relation to hostility subscales 1) adjusting for socio-demographics and family history of coronary heart diseases, 2) additionally adjusting for depression and 3) additionally adjusting for classical modifiable cardiovascular risk factors. Models 2 and 3 were computed considering variables as either time-independent or time-dependent.

Results
In the time-independent Model 2, total hostility was associated with incident cardiac events (HR for one interquartile range [95% confidence interval]: 1.14 [1.01-1.29]), as was the irritability subscale (1.19 [1.04-1.37]). However, when depression was considered as a time-dependent state, these associations were no longer significant. In contrast, depression remained a significant predictor in the time-dependent Model 3 (1.40 [1.04-1.90]).

Conclusion
The association between hostility and cardiac events might be explained by incident depressive symptoms. These results may constitute an impetus for reanalyzing old datasets considering depression as a time-varying state.

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Burnout is associated with lower heart rate variability in patients following acute coronary syndrome: a one-year follow-up study

Aim
Burnout has been identified as a risk factor of initial and recurrent coronary heart disease, however, the mechanism is largely unknown. The aim of this study was to investigate longitudinal associations of burnout with heart rate variability (HRV), an essential autonomic function linking psychological state and physical disease, in patients after their first acute coronary syndrome (ACS).

Methods
Two hundred eight patients participated in this one-year follow-up study. On the day before discharge, their personal burnout level was assessed by the Copenhagen Burnout Inventory. HRV signals were collected at four time points: the day before discharge, one month, six month and one year after discharge. HRV was measured by 24-hour ambulatory electrocardiography and modelled in time and frequency domains. Sociodemographic information and clinical data were collected during hospitalization. Generalized estimating equations were applied to model the associations of burnout at baseline with longitudinal tracking of HRV during follow-up.

Results
After adjusting for relevant confounding factors, it was found that high burnout at baseline was significantly associated with low SDNN, a time domain measure of HRV [regression coefficient=-0.087, 95% CI=(-0.136, -0.038) by an increase per SD in burnout score, p=0.001]. Also, baseline burnout was inversely associated with five frequency domain measures, i.e., HF [coefficient=-0.179, 95% CI=(-0.352, -0.006), p=0.043], LF [coefficient=-0.171, 95% CI=(-0.319, -0.023), p=0.024], VLF [coefficient=-0.367, 95% CI=(-0.483, -0.250), p<0.001], ULF [coefficient=-0.268, 95% CI=(-0.351, -0.184), p<0.001], and TP [coefficient=-0.283, 95% CI=(-0.340, -0.165), p<0.001].

Conclusion
Personal burnout is longitudinally associated with decreased HRV during one-year period among patients after first ACS.

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Social Inhibition and Internalizing Problems in Adults: Inhibition, Sensitivity and Withdrawal as Distinct Vulnerability Facets

Aim
Inhibition plays a key role in animal stress research and developmental research in children, but may also contribute to internalizing problems in adults. Therefore, we examined the robustness of our multifaceted model of adult social inhibition (Denollet & Duijndam, 2019) that comprises inhibition, interpersonal sensitivity, and social withdrawal facets.

Methods
A total of 899 adults completed the 15-item Social Inhibition Questionnaire (SIQ15) and measures of emotional distress. Confirmatory Factor Analysis (CFA), reliability estimates, and correlational and second-order factor analyses were used to examine our model.

Results
CFA (RMSEA=.052; NFI=0.938; CFI=0.957) and Cronbach’s α estimates ≥.87 confirmed the robustness of our multi-facet social inhibition model based on three correlated inhibition, sensitivity, and withdrawal factors in 560 adults from the general population and in 194 undergraduate students. Inhibition, sensitivity, and withdrawal were stable over time (3-month test-retest correlations ≥.78), and were closely related to the Gest Behavioral Inhibition and PID-5 Withdrawal measures in a clinical sample of 145 cardiac patients. Of note, male cardiac patients reported more inhibition and withdrawal than female patients. Across samples, social inhibition was distinctly different from negative affectivity, and may provide additional explanatory and predictive power regarding internalizing problems.

Conclusion
Our 3-facet model of inhibition, interpersonal sensitivity, and social withdrawal was robust across different adult samples. Inclusion of the SIQ15 in population-based and clinical studies may improve our understanding of internalizing problems in adults.

Reference

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Type D personality predicts the occurrence of major cardiac events in patients with coronary artery disease: A multi-method analysis

Aim
Previous studies have shown that cardiovascular patients with a Type D personality (a combination of having high negative affectivity and high social inhibition), are at increased risk of recurring major cardiac events. However, some have criticized the methods used to arrive at this conclusion. This study aims to replicate earlier findings by assessing the robustness of the effect of Type D personality on cardiac outcomes using three commonly used statistical models.

Methods
In a sample of 541 patients with coronary artery disease, Type D personality was measured using the DS14 questionnaire and cardiac events were registered at a 5-year follow-up. Type D personality was modelled statistically as an interaction between its two subcomponents NA and SI. The effect of this interaction on cardiac events was modelled using three different logistic regression analyses: (1) logistic regression using the observed NA and SI scores, (2) logistic regression using the NA and SI factor scores, and (3) logistic regression using Structural Equation Modeling (SEM).

Results
The interaction between NA and SI significantly predicted the occurrence of cardiac events in each of the three logistic regression models, but the methods differed in the size of the estimated interaction, with odds ratio’s varying from 2.47 (method 1), to 2.65 (method 2) and 3.71 (method 3). These differences reflect the assumptions underlying each of these statistical models.

Conclusion
The association between Type D personality and cardiac events appears robust across three commonly used statistical models to assess interaction effects on dichotomous outcomes.

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