

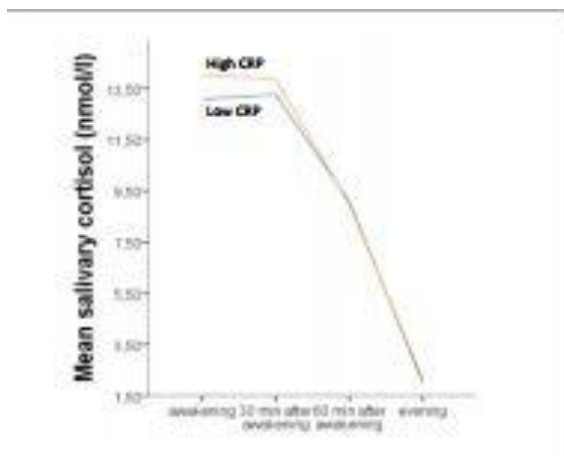
records. Severity of sleep impairment was captured by the Pittsburgh Sleep Quality Index (PSQI; Buysse et al., 1989). Smoking history (Yes/No) was assessed by participant self-report. Serum IL-6 concentrations were collected immediately prior to surgery and assayed via ELISA. Results: Hierarchical regression analyses controlling for age and presence of poor prognosis gynecologic cancers (ovarian/fallopian tube cancers) revealed IL-6 was not significantly related to severity of sleep impairment ( $\beta = -.10, p=ns$ ). However, as hypothesized, greater IL-6 was related to current/past smoking ( $\beta = .27, p = .024$ ) and greater BMI ( $\beta = .25, p = .033$ ). The equation accounted for 40% of the variance in IL-6 levels. Conclusions: Modifiable lifestyle factors such as BMI and smoking status are associated with higher concentrations of pro-inflammatory cytokine IL-6 in women undergoing surgery for suspected gynecologic cancer. Future research should seek to identify how lifestyle interventions may be associated with changes in IL-6 concentrations in gynecologic cancer patients as well as how these relationships may be related to clinical outcomes in gynecologic cancer care.

182) Abstract 2882

**INFLAMMATION: A MEDIATOR IN THE EFFECTS OF ADIPOSITY ON PSYCHOSOCIAL STRESS?**

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**INTRODUCTION** Stress and obesity are two public health threats that have been bidirectionally related to each other. To start therapeutic and preventive actions, underlying mechanisms should be elucidated. One of the possible mediators might be inflammation: obesity is a well-known inflammatory situation and this inflammation might increase stress levels since cytokines can reach the brain and hence impair neuroendocrine activity, neurotransmitter function and neurocircuitry. In the current study, we want to test whether inflammation was related to stress and adiposity and consequently might act as a mediator in the adiposity-stress relation that we have previously observed in our childhood sample. **METHODS** For the Childrens Body composition and Stress (ChiBS) study, 330 Belgian primary school children were followed-up during 2 years on their stress levels and adiposity. Stress was measured by parental-reported behavioral and emotional problems (Strengths and Difficulties Questionnaire), three child-reported emotions (anger, anxiety and sadness) and salivary cortisol (4 samples over the day). C-reactive protein (CRP) was measured only at baseline as indicator of overall inflammation. Multilevel regressions were used to test the CRP-cortisol relation cross-sectionally and the CRP-stress relation longitudinally. The cross-sectional obesity-CRP relation was tested with multiple regression. Mediation was tested cross-sectionally with bootstrapping. **RESULTS** Two subscales of the SDQ i.e. conduct problems and emotional problems were positively associated with CRP cross-sectionally ( $p=0.030, p=0.009$ ) and longitudinally ( $p=0.046, p=0.038$ ). As shown in the figure, CRP was also related to a lower cortisol awakening response ( $p=0.002$ ) and a steeper diurnal cortisol slope ( $p=0.047$ ) but no relations with overall cortisol output were detected. Finally, CRP was associated with higher adiposity (BMI, fat% and waist-to-height ratio  $p<0.001$ , beta up to 0.3) but it did not mediate the adiposity-stress relation. **CONCLUSION** Inflammation could predict the biological stress measure cortisol cross-sectionally and could predict some reported stress measures both cross-sectionally and longitudinally. This supports the hypothesized link between psychology and inflammation. Although this inflammation marker was also related to adiposity, it was no mediator in the adiposity-stress relation. Consequently, future research should look for other mediators that could explain the adiposity-stress relation in non-clinical childhood populations. Self-esteem is one of the mediators that we will test in the upcoming months (to potentially show results at the conference) since it can easily inspire preventive actions e.g. by increasing self-esteem in obese children.



183) Abstract 2847

**CORRELATION BETWEEN HEART RATE VARIABILITY AND HEART RATE RECOVERY IN HEALTHY, SEDENTARY INDIVIDUALS**

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**Objective:** Substantial evidence suggests that high frequency heart rate variability (HF-HRV) is a noninvasive index of cardiac vagal regulation. Evidence also suggests that heart rate recovery (HRR) from cardiopulmonary exercise testing also is vagally mediated. Both indices are inversely associated with the prevalence of cardiovascular disease, further supporting their vagal origins. Some studies have investigated whether these two indices are related to each other but are limited because of small sample size and reliance on largely male subjects. The main objective of this study is to analyse the relationship between HRR and HF-HRV.

**Method:** In 98 healthy, sedentary participants, male and females age 20-45, HF-HRV was measured during a resting baseline while seated on a cycle ergometer and prior to a cardiopulmonary exercise test (CPET). Following the CPET and achievement of VO2max, HRR was measured at 60 (HRR60) and 120 (HRR120) seconds of recovery. On another occasion, HRV was measured in the supine position as part of a psychophysiological test.

**Results:** There was no significant correlation between HRR60 ( $r=-.0074, r=-.039, p=NS$ ), HRR120 ( $r=-.021, r=-.049, p=NS$ ) and HRV in either the seated or supine positions respectively.

**Conclusion:** Both HF-HRV and HRR are associated with cardiovascular health and are thought to index cardiac vagal regulation. Contrary to expectation, they were unrelated to each other in young, healthy, sedentary participants. HF-HRV, especially when measured at rest, reflects tonic vagal regulation of the heart whereas HRR, while also an index of vagal activity, may be a more reflexive vagal response after physical challenge. Therefore, they may be independent of each other. Replication of this finding in a larger sample is required.

**Keywords:** Parasympathetic nervous system, autonomic cardiac control, high frequency heart rate variability, heart rate recovery, observational study, cardiopulmonary exercise, VO2max, vagal cardiac regulation

184) Abstract 2980

**ANXIETY, BUT NOT DEPRESSION, MEDIATES STRESS AND SOMATIC SYMPTOMS IN CHINESE**

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**Introduction:** Symptoms reflect perception and interpretation of bodily state and somatic symptoms are physical symptoms induced by psychological distress. The literature has stipulated that stress causes somatic symptoms, and both anxiety and depression are more prevalent in patients with somatic symptoms. However, the pathway of stress leading to anxiety, depression, and somatic symptoms has not been empirically examined.

**Objectives:** This study examines the relationship between stress, anxiety, depression, and somatic symptoms in the general Chinese population and the mediating role of anxiety and depression in the effect of stress on somatic symptoms.

**Methods:** Data were collected from 202 Chinese participants in a household survey in Hong Kong. Psychosomatic symptoms were measured by the Chinese version of Patient Health Questionnaire. Perceived stress was measured by Perceived Stress Scale. Anxiety and depression were measured by Hospital Anxiety and Depression Scale. Sociodemographics information was also asked. The mediating relationships were examined by using structural equation modelling. Bootstrapping was performed for enhancing the normality of the sampling distribution of the total and specific indirect effects. Adequacy of the all models was assessed by examining the model fit indexes.

**Results:** Among the participants, 106 (52%) are female, 128 (63.4) are married and 131 (64.9%) are employed. Based on the PHQ-15 scores, 33 (16.3%) participants had a mild level of somatic symptoms, and 7 (3.5%) participants had a moderate-to-high severity level of somatic symptoms. Anxiety was a significant mediator of the effect of stress on psychosomatic symptoms ( $Z = 4.328, p < .001, 95\% CI = .061, .152$ ), even after adjusting for sociodemographic variables. Contrary to some earlier studies, depression was not a mediator of somatic symptoms in this study.

Conclusions: Anxiety mediated the influence of stress on psychosomatic symptoms. The findings informed the health care professionals in primary care of the importance in diagnosing anxiety. When considering prevention and treatment for somatic symptoms, reducing both stress and anxiety is considered important.

185) Abstract 3092

**MINDFULNESS AS A PREDICTOR OF MEMORY SKILLS IN PREGNANT WOMEN**

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Pregnancy is a condition that is known to negatively impact a woman's cognitive functioning, including memory skills. Research has shown that mindfulness plays a protective role in individuals' health outcomes, including memory capacity. Mindfulness is understood as a loving, nonjudgmental, and curious approach to present moment experience. The current study focused on the effect of mindfulness, along with several stress measures, on the memory skills of a group of urban, low-income, pregnant African American women. A total of 65 individuals participated in the study. It was predicted that mindfulness positively predicted the participants' memory skills, controlling stress- and pregnancy-related covariates. Stepwise linear regressions were used to analyze the results. Findings support that levels of mindfulness significantly predicted memory skills, including both logic memory and rote memory. The results demonstrated the healthy effect of mindfulness on low-income, pregnant minority women and encourage mindfulness-based interventional effort to enhance the health outcomes of this population.

186) Abstract 2772

**FAMILISM PROTECTS PSYCHOLOGICAL WELL-BEING AND PHYSICAL HEALTH**

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Familism is one way of valuing family relationships that emphasizes warm, close, and supportive relationships and prioritizes the family before the self. While familism has been associated with positive psychological and physical health outcomes, the circumstances under which familism is linked with well-being and health are not well understood. The aim of this study was to examine the extent to which familism is generally beneficial (i.e., a main effect) or beneficial under stressful situations (i.e., stress-buffering model) for psychological well-being and physical health in a culturally diverse sample.

Latino American (n = 171), European American (n = 225), and East Asian American (n = 415) university students (ages = 18-45) completed measures of familism, stress, psychological well-being (i.e., self-esteem, depression, loneliness), and physical health (i.e., subjective health and physical symptoms). Regression analyses revealed both general and stress-buffering benefits. In terms of general benefit, familism was found to be negatively associated with loneliness,  $t(768) = -6.23, p < .001$ , depression,  $t(768) = -2.29, p = .022$ , and physical symptoms,  $t(768) = -2.86, p = .004$ . In terms of stress-buffering benefits, participants with high familism and high levels of stress reported higher self-esteem,  $t(769) = -4.55, p < .001$ , and subjective health,  $t(765) = -3.92, p < .001$ , than participants with low familism and high levels of stress. There was indication that the patterns applied equally well across groups; only Latinos had a stronger negative association between familism and loneliness when compared to European Americans.

The findings suggest that individuals can obtain psychological well-being and physical health benefits from familism through two distinct pathways: general and stress-buffering effects. Familism's main effects and stress-buffering effects are consistent with the growing line of research indicating that familism makes it easier for individuals to benefit from closeness and warmth from family relationships. Familism makes individuals feel less isolated, less depressed, and attenuates the negative effects of stress. This is important because persistent stressors can eventually lead to detrimental changes in mood and well-being. Researchers should continue to examine variables that can maximize the benefits family relationship values provide for people from all backgrounds.

187) Abstract 2601

**FAKE SMILES = WORSE HEALTH: THE CONNECTION BETWEEN SMILE TYPE IN STUDENT PHOTOS AND PHYSICAL HEALTH**

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Smiles are thought to be indicative of positive affect, and this may be the reason why research has begun to tie them to various positive outcomes. For example, smile intensity in photographs has been connected with greater longevity, life satisfaction, and marital stability. However, no studies have investigated the

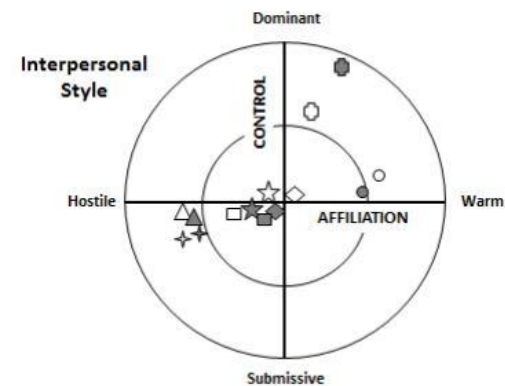
connections between smile intensity in photographs and current physical health. Participants (N=251) completed an online survey asking about various physical health indicators such as frequency of visits to physicians or health care centers and self-rated health. Participant student ID photos were coded for degree of smile: no smile (11.6%), "standard" non-Duchenne smile (those involving the cheek muscles but not the muscles around the eyes; 18.3%), or "genuine" Duchenne smile (those involving both the cheek muscles and the muscles around the eyes; 70.1%). Contrary to hypotheses, greater smile intensity was positively correlated with the number of times participants visited a medical practitioner in the past year ( $r = .125$ ). Results from a Bonferroni multiple comparison test indicated that students who displayed standard (often deemed "fake") smiles were significantly more likely to have visited a medical practitioner in the past year ( $M = 3.27$  visits,  $SD = 4.27$ ) as compared with those who displayed no smile ( $M = .59$  visits,  $SD = 1.38$ ) or sincere Duchenne smiles ( $M = 1.74$  visits,  $SD = 3.2$ ),  $F(2, 248) = 6.24, p = .002$ . No connections were found between smiling and self-rated health. This study provides further evidence that coding smiling in photographs can provide useful information, and expands on the current literature by demonstrating that this information can include indicators of current health. Future studies should investigate the mechanisms underlying these findings, such as emotional expression norms.

188) Abstract 2790

**INTERPERSONAL DISTINCTIONS AMONG HYPOCHONDRIACAL TRAIT COMPONENTS: STYLES, GOALS, VULNERABILITIES, AND PERCEPTIONS OF HEALTH CARE PROVIDERS**

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Objective: Hypochondriasis leads to excessive healthcare utilization and costs. The prevailing perspective on hypochondriasis and health anxiety is based largely on cognitive-behavioral models. Recent research by Noyes and colleagues (2003) suggests the value of an interpersonal perspective, but has not addressed the multi-faceted nature of hypochondriacal traits. Methods: Two samples of undergraduates (n = 165, 102 women; n = 129, 62 women; 75% Caucasian; age = 21.5 years) completed self-report measures of: multiple hypochondriacal traits; adult attachment styles; interpersonal style (i.e., trait affiliation and control), goals (i.e., communal and agentic goals), and vulnerabilities (i.e., social support, loneliness, interpersonal stressors); and perceptions of physician behavior. Results: The tendency to see family members and health care providers as failing to appreciate the seriousness of ones health problems and to express appropriate concern and support (i.e., health-related alienation, illness conviction) was unique among hypochondriacal traits in its association with an anxious attachment style, hostile interpersonal style and goals, the full set of interpersonal vulnerabilities, and perceptions of physicians as hostile. Health anxiety (i.e., somatic worry, illness phobia) was associated with an anxious attachment style, high levels of interpersonal stress, and perceptions of physicians as hostile, but not with hostile interpersonal style or goals, social support or loneliness. Conclusions: Results support the interpersonal perspective, but suggest specificity among hypochondriacal traits. Implications are discussed in regard to how hypochondriasis develops and is maintained.



MIHT	Sample 1	2	Whiteley	Sample 1	2
Behavioral (Reassurance)	○	●		☆	★
Cognitive (Alienation)	△	▲		□	■
Perceptual (Absorption)	◇	◆		+	+
Affective (Worry)	◇	◆		+	+
			IllnessPhobia		
			Somatic Focus		
			IllnessConviction		