How stressed do you get?

A negative personality constellation is associated with higher feelings of stress but lower blood pressure, heart rate, and hormone responses to stressful experiences

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Introduction

➢Acute mental stress, such as job interviews

Activation of

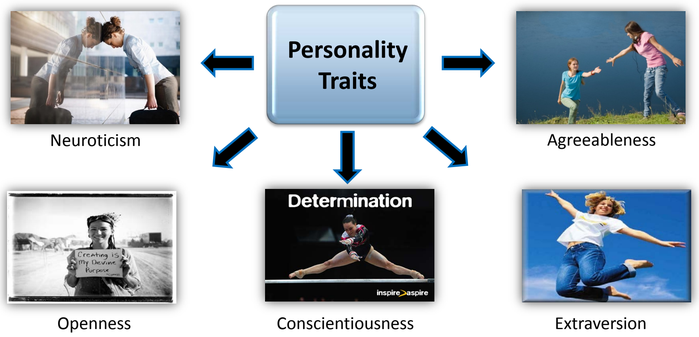
•Cardiovascular system : ↑ **heart rate** (**HR**) & ↑**blood pressure** (**BP**)

•Stress hormone release: ↑**cortisol**[1]

➢Large cardiovascular reactions to stress have been linked to **high blood pressure** and **cardiovascular disease** development [2]

➢Low cardiovascular and cortisol reactivity also linked to a range of adverse health & behavioural outcomes. e.g. **depression** & **addiction**[3]

Fig 1. Humans vary on their levels of the Big 5 Personality characteristics



➢Personality traits proposed to affect how we perceive stress and have physical components. But . . .

Previous evidence = Inconclusive

Aims

➢Examine in a large sample the association between the Big 5 personality traits and self report, cardiovascular and cortisol responses to stress.

Method

352 Dutch participants

	Mean (SD)/N (%)
Age (years)	58.2 (0.95)
Gender (females)	190 (52.5)

Big 5 Personality Inventory

44 items

1----------*5*

Strongly disagree Strongly agree

3 Stress Tasks + Stress Task Ratings

Stressfulness, Control

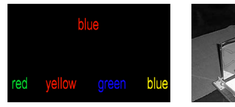
1----------*7*

Not at all Very much

3 Stress Tasks

(separated by 5 min)

Baseline (20 min) → Stroop → Mirror tracing → Speech → Recovery (30 min)



Measures

= HR & BP =Salivary cortisol

Statistics

Linear regression controlling age, sex, alcohol, smoking, medication, commitment, baseline levels

Results

➢Stress tasks significantly increased cortisol, HR, and BP

Table 1. Personality and biological responses

	β	*p*	R^2
Cortisol reactivity			
Neuroticism	-.14	.02	.016
Agreeableness	.16	.007	.023
Openness	.13	.03	.015
Heart rate reactivity			
Neuroticism	-.15	.008	.019
Agreeableness	.11	.04	.012
Openness	.11	.05	.011
Blood pressure reactivity			
Neuroticism and SBP	-.15	.008	.019
Neuroticism and DBP	-.11	.04	.012

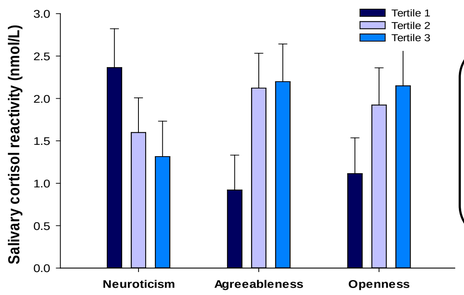


Fig 2. Individuals high on neuroticism, and low on agreeableness and openness demonstrated blunted cortisol responses

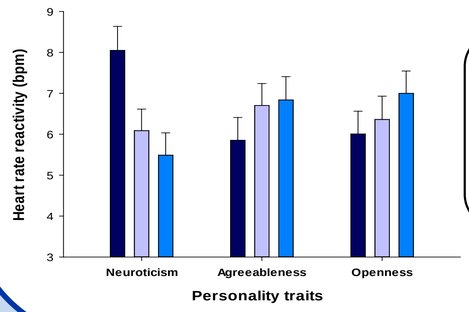


Fig 3. Individuals high on neuroticism, and low on agreeableness and openness also had blunted heart rate responses

Fig 4. Individuals high on neuroticism demonstrated lower blood pressure reactivity

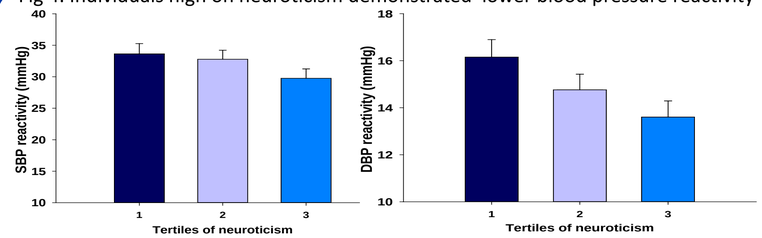


Table 2. Personality and stress task ratings

	Stressfulness		Control	
Mean (SD)	11.09 (4.05)		10.20 (3.51)	
	r	*p*	*r*	*p*
Neuroticism	.27	<.001	-.30	<.001
Openness	-.14	0.1	.25	<.001

Interestingly, high neuroticism and low openness were associated with higher reported stress, and lower reported control following stress exposure

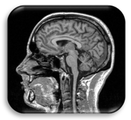
Discussion

➢**Negative constellation** of **personality traits** associated with **smaller** cortisol, HR, and BP reactions to stress

The adverse health and behavioural outcomes identified with blunted reactivity are also associated with this negative personality profile

Depression Obesity Addiction Eating Disorders

This may reflect **dysregulation** in the **brain areas** involved with **emotion** and **motivation**



➢**Feelings during stress** ≠ **Physical responses**

Higher neuroticism:
↑ Stress + ↓Control
BUT smaller physical responses
WHY? Repeated stress exposure

Higher openness:
↓ Stress + ↑ Control
BUT greater physical responses
WHY? Suppress emotions, Variety

➢**Future research**: Assess Type D personality and behaviours of individuals with blunted stress responses.

References

1. Turner, J. R. (1994). Cardiovascular Reactivity and Stress. NY: Plenum Press.
2. Obrist, P. (1981). Cardiovascular Psychophysiology. NY: Plenum Press
3. Carroll et al, 2009. Social and Personality Compass, 3, 725-743

Acknowledgements

Personal thanks to Anna Phillips and Doug Carroll for their guidance and support, and the ESRC for funding.