

The change tendency of Personality in Stress Response during Personality rating.

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Performance and Stress

Performance such as work or study increases physiological or mental arousal, stress. People with certain personality traits may feel some stressed, when performing personality self-rating. As the brain under stress conditions is secreted high levels of cortisol, salivary amylase are measured as stress indicators in this experiment.

Performance and personality

This study measure that changes in cerebral blood flow in the prefrontal cortex indicate degree of concentration in learning and performance.

Hemencephalography(HEG) is a method of measuring cerebral blood flow and used as an indicator of brain activity by a type of functional near infrared imaging that measures the level of neural activity in the brain. Although there are individual differences frontal blood flow, it is possible to appear personality traits that appear during performance.

And, we measure Reaction Time(RT) as the decision to press the response key to personality self-rating, when performing personality self-rating. RT can examine individual differences in response to stimuli and each individual's response to specific personality traits.

Thus, we measure stress responses with three indicators in personality self-rating, and examine the relationship between performance and personality trait.

Purpose

Our hypothesis is that there is a specific personality traits which becomes a stress factor during of personality rating.

Methods

Participants The participants were 21 graduate students, aged 18 to 30 years.

Experiment period May-December 2014

Equipment ProComp TM7500(Thought Technology Ltd, Canada), a laptop computer (Dell-Vostro 3360), E-prime 2.0 (psychology software tool), and Saliva amylase (NIPRO;27B1X00045000073), *Helectroencephalography (HEG)*.

Inventory Big5, BIS/BAS, Lie scale for Japanese.

Procedure

We measured the cerebral blood flow by HEG and reaction time in each Personality self-rating condition.

1. Saliva amylase 1
2. Questioner-condition1: Big5
3. PC condition1: Simple response session.

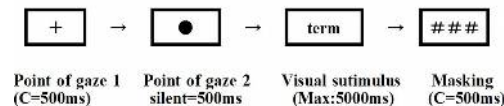


Fig. 1. The sequence of stimulation in the simple-response session (session 1).

4. PC condition2: Personality self-rating session by trait term.
5. PC condition3: Personality self-rating session by sentence.
6. Questioner-condition2: BIS/BAS and Lie scale by MMPI.

Saliva amylase 2

Table 1. Stimulus terms of personality traits used in experiment.

Traits Factors		Stimuli Terms			
Big Five	Extroversion	active	sociable	passive	restrained
	Agreeableness	kindly	affable	headstrong	tightwad
	Conscientiousness	capable	conscientious	sloppy	unreliable
	Neuroticism	easygoing	sedate	irasciblenss	worrier
	Openness to experience	intelligent	clever	conservative	naivete
Practice Stimuli Terms		sincere	amenable	philosophical	

Result and Discussion

Cluster Analysis and ANOVA in salivary amylase and Reaction Time

To examine the change in RT of simple response session by amylase, we performed non-hierarchical cluster analysis with the value of salivary amylases1 and Amylases2 by k-means method. As a result, we obtained three clusters. And results of ANOVA in these three clusters and questionnaire scores, a significant difference was found in Extraversion in Big Five ($F(2,20)=5.93, p < .01$) (Fig2). A significant difference was observed in BAS-Drive in BIS/BAS ($F(2,20)=2.47, p < .10$) (Fig3).

• Cluster1(N=6) was the value of amylase1 was 64, the value of Amylase2 decreased to 33. Results of ANOVA, the Means of Neuroticism, Conscientiousness and Openness to experience scores were higher than those of other clusters, and BAS-Drive was higher than those of 13.65 and other clusters.

• Cluster2(N=11) was the value of Amylase1 was 14, and Amylase2 was 11. It was suggested that people in this cluster was not stressed in the personality rating. Results of ANOVA, the Means of the Agreeableness scores was higher than the other clusters.

• Cluster3(N=4) was the value of Amylase1 value was 40, and Amylase2 increased to 173. Results of ANOVA, the Means of Extroversion,

Conscientiousness, and Openness to experience scores were extremely low compared to other clusters. It was suggested that people in this cluster were extremely introverted, low in openness, and low in the motivation to follow one's goals.

Conclusions

This experiment was found that stress responses during personality rating were related to the personality traits of Extroversion, Agreeableness, and attitude scale. This study was suggested that performance was not good when you were conscious of yourself too much, and that you could get good performance results by focusing on tasks, when doing some kind of performance.

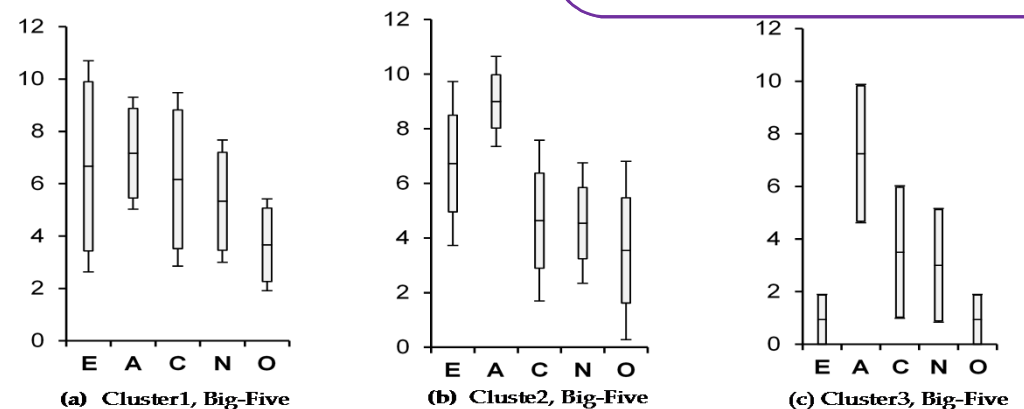


Figure 2. Three clusters according to amylase value and Big-Five questionnaires

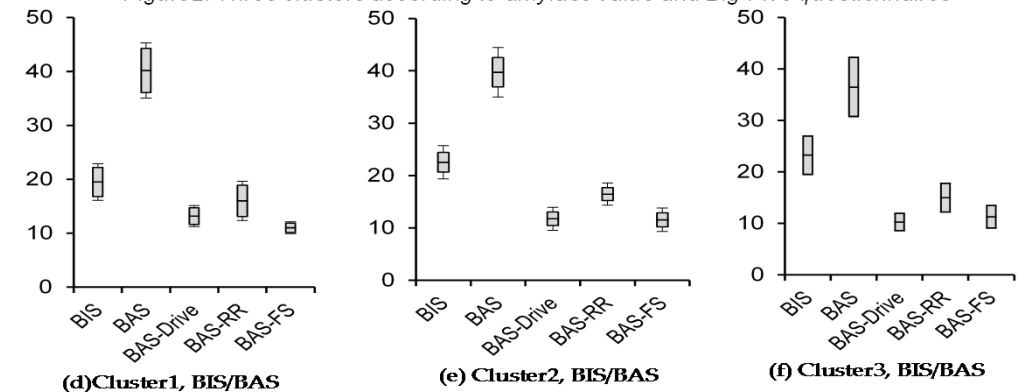


Figure 3. Three clusters according to amylase value and BIS/BAS questionnaire