PSIHOLOGIJA, 2021, Vol. 54(3), 243–267

UDC 159.923.072.59(497.11)
159.937.51.072
DOI: https://doi.org/10.2298/PSI200517029S

Relationship between Emotional Reactivity to Visual Stimuli and Basic Personality Traits*

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Two studies with the same goal, but different instruments, investigated the correlation between basic personality traits and electrodermal reactivity to aversive visual stimuli. Study 1 focused on the Five Factor Model traits, while in Study 2, we investigated the HEXACO model, and an additional trait, Disintegration. In Study 1, emotional reactivity was expressed using Polyscore, a composite polygraph measure in which electrodermal response (EDR) had the largest weight, and it was measured with respect to stimuli with positive, neutral, and negative valences. In Study 2, we employed several measures of EDR to stimuli with negative valence. In both experiments, Conscientiousness correlated positively with EDR to aversive stimuli. Additionally, in Study 2, there was a negative correlation between Disintegration and EDR to aversive stimuli. Other traits were not related to EDR to aversive stimuli, and, in Study 1, we found no relationship between personality traits and reactivity to stimuli with positive or neutral valence.

Keywords: Five Factor model, HEXACO, Disintegration, electrodermal reaction, polygraph

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Acknowledgment. This paper was supported by projects OI179018 (GO) and OI179033 (AŠ), funded by the Ministry of Education, Science and Technological Development of the Republic of Serbia.

Author Note. This paper presents results from the doctoral thesis of B. Đ. and the master thesis of A. Š., both of whom are first authors. B. Đ. conducted the Experiment Study 1, while A. Š. conducted the Experiment Study 2. G. O. mentored both theses, and he guided the study design and results interpretation of both Experiment Study 1 and Experiment Study 2. All authors took part in writing the paper and approved its final version. The authors thank Kristina Valjarević for proofreading an earlier version of this manuscript and two anonymous reviewers for their thorough and helpful comments.

* Please cite as: Šoškić, A., Đurović, B., & Opačić, G. (2021). Relationship between emotional reactivity to visual stimuli and basic personality traits. *Psihologija, 54*(3), 243–267. https://doi.org/10.2298/PSI200517029S

Highlights:

- Conscientiousness was linked to higher electrodermal reactivity to aversive stimuli.
- Conscientiousness may also be linked to higher EDR to neutral & positive stimuli.
- Disintegration was linked to lower EDR to aversive stimuli in Study 2.
- Other traits did not reliably correlate with electrodermal reactivity.
- Two studies produced consistent results despite using different instruments.

Electrodermal activity – A Physiological Correlate of Personality?

Electrodermal activity (EDA) is an umbrella term for a variety of electrical properties of the skin, which are influenced primarily by the activity of the skin's sweat glands (Braithwaite et al., 2015). Unlike in the case of many other parts of the skin, the activity of sweat glands on palms is more related to emotional arousal and less to physical and biological factors, such as temperature (Zuckerman, 2005). Thanks to this property, EDA has been long used in psychophysiology, psychopathology, social and forensic psychology (Dawson et al., 2016).

In line with this trend, numerous studies have investigated the relationship between various personality traits and EDA measures (e.g., Brumbaugh et al., 2013; Naveteur et al., 1986; Smith, 1983). However, the attempts to summarize the results in this field have encountered two main obstacles. The first is inconsistency of findings (Crider, 1993; Zuckerman, 2005), which has led some researchers to conclude that there is little chance that a stable correlation between the two domains can be found (Crider, 1993). Another problem is inconsistency of methods – various personality inventories have been used, some of which measure traits which have the identical names, but do not refer to the same concepts. In addition, a variety of different EDA measures have been used, and they have been taken on different skin parts and obtained in diverse experimental paradigms.

A variety of EDA measures have been used in these studies, but two main groups can be differentiated: tonic level and short-term changes in time (EDR – electrodermal response) (Boucsein et al., 2012). When it comes to EDR to stimuli, the most common measures are response latency, amplitude, rise time (the time period between reaction onset and its peak), and half-recovery time (the period it takes for the amplitude to return from the peak half-way to the baseline level) (Braithwaite et al., 2015).

The relationship between EDA and Models of Basic Personality Traits

We have focused here on two influential personality models – the Five Factor Model (FFM) and the HEXACO with an additional candidate for a basic

personality trait – *Disintegration.* Five factor personality model or the Big Five (Tupes & Christal, 1961; Costa & McCrae, 1985; Goldberg, 1990) is one of the most influential models in psychology of individual differences. It is based on the work of several independent groups of researchers, who have all concluded that personality structure can be described using five similar basic factors, which are mutually independent: Extraversion, Neuroticism, Conscientiousness, Agreeableness, and Openness. HEXACO (Lee & Ashton, 2004), sometimes also called the Big Six, adds the sixth factor, Honesty–Humility, to the above-mentioned Big Five. Ashton and Lee argue that this factor explains additional variance in human behaviour, as well as that understanding it is relevant to the society, given that its extremes are linked to socially malign behaviour and qualities such as sincerity, modesty or fairness (Ashton & Lee, 2008). In addition, the HEXACO model reassigns some of the subdomains resulting in a reconceptualization of Agreeableness and Emotionality/Neuroticism (Ashton & Lee, 2008). Finally, we studied an additional, seventh, candidate for a basic trait – Disintegration. This dimension refers to schizotypy seen as a personality trait, and it is an attempt to reconceptualize Eysenck's Psychoticism (Knezevic et al., 2017). Although Disintegration shares a sizable portion of its variance with HEXACO factors, some studies suggest that it represents a separate personality dimension (Međedović, 2014).

Even though the correlation between personality traits and EDA measures has been subject of numerous studies, only a handful of them have investigated how EDA relates to influential models of basic personality traits. Bollmer, Harris, and Milich (2006) investigated the increase of children's EDA levels while they talked about bullying/victimization experiences compared to neutral narratives, as well as correlations between this increase and the Big Five. Binboga et al. (2012) studied the relationship between the Big Five and the EDA tonic level variability in a group of competitors in a sports event, one day and one hour prior to its beginning. To examine the relationship between the Big Five and the electrodermal response to emotionally charged stimuli, Brumbaugh et al. (2013) measured EDR to four video recordings which induced different negative emotions. Finally, one recent study (Knežević et al., 2014) investigated electrodermal reactions to two types of arousing stimuli (aversive and images showing homosexual couples) and their relationship with the Five Factor Model, Amorality (similar to Honesty–Humility) and Disintegration. These studies resulted in inconsistent findings. Neuroticism was not related to an increase in the EDA level in the study by Bollmer et al. (2006), but it correlated with some of the measures of higher reactivity in the other three studies. High Conscientiousness and Agreeableness were related to lower EDA variability in the study by Binboga et al. (2012) and with a smaller EDA increase in the study by Bollmer et al. (2006), but with higher reactivity to arousing images (of homosexual couples), and not aversive images, in the study by Knežević et al. (2014). Other traits were related to EDR in some studies, but not in others.

It is likely that these inconsistences are partly the result of the discrepancies in methods and measures, but they could also be related to replicability of results – each study was characterised with many comparisons, small effects and post hoc interpretations of the significant results, which could all contribute to inflating Type I error rate.

The Relationship Between the EDR to Stimuli and Individual Traits from Basic Personality Models

In addition to studies exploring the relationship between electrodermal measures and basic trait models, individual traits from these models have also been studied, either in studies focusing on selected traits, or within similar basic personality trait models, such as Eysenck's PEN model (Eysenck & Eysenck, 1993). Related concepts, such as trait anxiety, psychopathy, psychoticism, and others, have also been the subject of researchers' interest. Like in the case of studies focusing on basic personality trait models, a variety of different measures and experimental paradigms have been employed, making summarizing results challenging. We will mention only studies in which differences in EDR to stimuli were examined.

Some of the studies that focused on Neuroticism showed higher reactivity to aversive stimuli (Reynaud et al., 2012; Norris et al., 2007), but others did not find this effect (Clark et al., 1987), and one paper reported correlation in the opposite direction between trait anxiety, related to Neuroticism, and EDR to aversive stimuli (Naveteur et al., 1986).

As opposed to the results obtained by Brumbaugh et al. (2013), others did not find correlation between extraversion and reaction to aversive stimuli (Norris et al., 2007; Gilbert & Hagen, 1985).

To our knowledge, the correlation between Openness, Conscientiousness, Agreeableness, and Honesty–Humility and electrodermal response has not been studied outside of the Big Five/FFM, and HEXACO models. However, some related concepts, such as aggression, anger, psychoticism, and psychopathy have gained more attention from researchers.

One of the most extensively documented relationships with EDA is the relationship with psychopathy. The papers that summarize these findings conclude that psychopathy has been linked to various EDA measures (Fowles, 1983; Lorber, 2004; Scarpa & Raine, 1997), including lower reactivity to aversive stimuli (Lorber, 2004; Scarpa & Raine, 1997). These results are thought to concur with lower reactivity to punishment in behavioural studies, and Fowles suggests that they should generalize to high psychopathy-related personality traits given that psychopathy can be seen as an extreme end of the continuum of personality traits present in general population (Fowles, 1983). Consistent with this suggestion, the Psychoticism trait has been linked to lower EDR to imagined unpleasant situations (Clark et al., 1987), but also to images with

neutral emotional valence (Stelmack et al., 1983). Initially, it had been suggested that the relationship between psychopathy and electrodermal reactivity may be explained by low anxiety/neuroticism, but empirical findings point towards traits related to impulse control, or, possibly, a broader phenomenon of executive functioning instead (Fowles, 2000). In line with this hypothesis, Raine and colleagues (Raine et al., 2000) have found the relationship between reduced EDA in response to social stressors and reduced prefrontal grey-matter volume in persons with antisocial personality disorder, indicating a relationship between deficits in autonomic arousal regulation, related to EDR, and impulse regulation, related to the prefrontal cortex activity. A recent meta-analysis has not supported the relationship between neuroticism and psychopathy, and it has instead shown that the traits that share variance with psychopathy are Agreeableness, Honesty–Humility, and Conscientiousness (Muris et al., 2017). The relationship with Conscientiousness is especially relevant given that this trait encompasses self-discipline, planning and other behaviours that are related to prefrontal cortex functions.

Conversely to the negative relationship between psychopathy and electrodermal reactivity, aggression conducted in affect was found to correlate positively with reactivity to stimuli with negative emotional valence, although the evidence is scarcer than in the case of psychopathy (Lorber, 2004; Scarpa & Raine, 1997). This is consistent with the differentiation that is made between non-aggressive antisocial behaviour and instrumental aggression, on the one hand, and antisocial behaviour linked to anger and high arousal (reactive aggression), on the other hand (Lorber, 2004). When it comes to the basic personality traits in our focus, anger-induced aggression may be linked to low Agreeableness.

Present Studies

In summary, there were few studies that systematically examined the relationship between EDA and basic personality trait models. Studies that focused on individual traits produced mixed results, and some of the basic personality traits were not in the researchers' focus, even though the relationship between EDA and related concepts has been documented in previous research.

We present two studies which set out to examine these relationships. Both studies were conducted with the same goal to explore the relationship between psychophysiological response to emotionally charged stimuli and personality traits, but using different instruments and experimental procedures for eliciting electrodermal response. Study 1 focused on the Five Factor Model traits, while in Study 2, we investigated the HEXACO model, and an additional trait, Disintegration. In Study 1, emotional reactivity was expressed using Polyscore, a composite polygraph measure in which electrodermal response (EDR) had the largest weight, and it was measured with respect to stimuli with positive, neutral, and negative valences. In Study 2, we employed several measures of EDR to stimuli with negative valence.

Study 1

The goal of this study was to examine the relationship between basic personality traits defined by the Five Factor Model and emotional reactivity. Additionally, the study investigated whether emotional reactivity would be a uniform factor, or whether reactions and correlations would differ depending on the type of stimulus.

Method

Participants

In this experiment, participants were 120 students at the University of Belgrade Faculty of Philosophy (109 female and 11 male, aged 18–25), chosen by convenience sampling. Participation in the study was on voluntary basis, without compensation, and the study design was approved by a thesis approval committee. Six participants were excluded due to technical issues during polygraph recording, leaving a total of 114 participants.

Instruments and Apparatus

The Serbian adaptation (Knežević et al., 2004) of the NEO–PI–R inventory (Costa, 1992) was used to assess personality traits. The inventory is a self-report measure with five domains: Neuroticism, Extraversion, Conscientiousness, Agreeableness, and Openness, each with six subdomains. There are 240 items (48 per domain), each with a five-level Likert-type scale. Scores are calculated by adding up appropriate responses. Cronbach's alpha reliabilities of the domains are in .86–.92 range.

LAFAYETTE-4000 (Lafayette Instrument Company, Lafayette, IN, USA) polygraph was used to measure physiological variables: heart rate, breathing, electrodermal activity and muscle tension. Latency, amplitude, and recovery of a reaction were recorded and processed using the Polyscore software (Lafayette Instrument Company, Lafayette, IN, USA). Polyscore is a composite combination of all measurements. The calculation is a trade secret, but it is known that the largest weight is attributed to the electrodermal response (Slavkovic, 2002).

Stimuli

Stimuli in this study were colour photographs taken from the IAPS (International Affective Picture System) database (Lang et al., 2008), 40 inch in diagonal, presented on a projector. IAPS contains photographs with different contents, which are accompanied by normative information about affective valence and arousal. The norms are based on a US sample, but research has demonstrated their intercultural stability. We used 22 photographs, 18 stimuli, and 4 fillers, divided into three categories: (1) neutral: neutral valence and low arousal; (2) unpleasant: negative valence and high arousal; and (3) pleasant: positive valence and high arousal. Fillers were all neutral stimuli.

Procedure

The study was conducted at the Laboratory for Research of Individual Differences LIRA at the University of Belgrade Faculty of Philosophy. The personality data was acquired from a separate study in which the subjects had participated earlier, up to several months before the polygraph measurement.

The polygraph data was collected in an experimental room in which only the experimenter and the participant were present. At the beginning, the participants were given information about the experimental procedure and the study in general, and they signed informed consent forms. They were asked about factors relevant for physiological recordings, such as the use of psychoactive substances or medication, and medical conditions. Afterwards, the participants were comfortably seated, and the experimenter set up the recording equipment. The participants were then shown a series of photographs. Each stimulus lasted 25 s, with a 3 s interstimulus interval. Two fillers were presented at the beginning to allow adaptation to the experimental procedure, and another

two were presented in the end, lowering the participants' arousal if the stimuli sequence ended with an aversive image. All other stimuli were presented in a randomised order. After the task, the participants were offered to talk to the experimenter if they felt disturbed by the stimuli. None of the participants said that this was the case. The procedure took about 20 minutes.

Variables

The independent variable was *stimulus type.* NEO–PI–R scores and Polyscore were non-manipulated variables. For the analysis purposes, we treated psychophysiological variables as predictors and personality traits as criteria in both Study 1 and Study 2. This choice was made in line with the general assumption that physiological properties influence personality traits. Given the non-manipulated nature of the variables, the relationships between the two domains are correlational and do not reveal the direction of causal influence. Therefore, the predictor variable was Polyscore, while NEO–PI–R scores were criterion variables.

Data Analysis

A repeated measures analysis of variance was used to compare the intensity of Polyscore reaction to the three categories of stimuli (positive, negative and neutral emotional valence). To examine the relationship between personality traits and the physiological response to different types of stimuli, direct Pearson bivariate correlations were calculated, and we also employed canonical covariance analysis (Momirović et al., 1983), implemented in QCCR (Knežević & Momirović, 1996). Similar to canonical correlation analysis (CCA), canonical analysis of covariance allows comparing two sets of multiple continuous variables. However, while CCA is based on the maximization of correlations of orthogonal linear combinations of the two sets of variables whose relationships are analyzed, canonical covariance analysis is based on the maximal covariances of linear combinations of variables which do not have to be orthogonal. The advantage of this approach is that the canonical covariance analysis is more robust, less sensitive to outliers, there are fewer assumptions for its use, and it does not require samples as large as the more widely used CCA (Knežević & Momirović, 1996). In this study, we examined the relationship between the following two sets of variables: (1) EDR to stimuli with positive, negative, and neutral valence and (2) personality traits. To test for individual univariate relationships and due to concerns with the interpretation of canonical analysis approach results, on the suggestion of one of the reviewers, we also conducted a GLM analysis in which stimulus valence was a predictor, Polyscore response a dependent variable, and personality traits were covariates. Bonferroni correction was used to adjust for Type I error rate when conducting post hoc tests and tests of GLM relationships.

Results

Descriptive Measures

Table 1 shows descriptive statistics for all measures. Negative stimuli resulted in the largest Polyscore response, while neutral ones produced the smallest reaction. When it came to personality, Neuroticism, Agreeableness and Conscientiousness mean scores and their distributions were comparable to the Serbian normative data (Knežević et al., 2004). On the other hand, Openness (M = 133.57, SD = 19.64, $M_{normative}$ = 109.09, $SD_{normative}$ = 20.09, $t(592) = 11.74$, $p < .001$, Cohen's d = 1.20, post hoc power estimate 1-β = 1.00[1]) and Extraversion (M = 113.82, SD = 21.28, $M_{normative}$ = 102.96, $SD_{normative}$ = 19.92, $t(592) = 5.26$, $p < .001$, Cohen's d = 0.53, post hoc power estimate 1-β = 1.00) were notably higher on average than it would be expected based on the normative data. All distributions were negatively skewed, except for Neuroticism, which was positively skewed.

1 Post hoc power estimates were calculated in GPower 3.1.9.2 (Faul et al., 2007, 2009).

Table 1
Distribution of scores on all variables

Measure	*Minimum*	*Maximum*	*Mean*	*SD*	*Sk*	*Ku*
Neuroticism	40	174	89.10	31.14	.5	-.52
Extraversion	54	155	113.82	21.28	-.34	-.26
Openness	65	177	133.57	19.64	-.57	.7
Agreeableness	63	163	119.10	21.94	-.32	-.36
Conscientiousness	64	171	129.65	24.65	-.53	-.18
Polyscore SD	0	4.38	2.95	1.05	-2.04	3.43
Polyscore M neutral	0	7.3	4.66	1.85	-1.41	1.48
Polyscore M positive	0	9.42	5.43	2.43	-.93	.17
Polyscore M negative	0	9.85	6.25	2.71	-1.13	.40

Note. *SD* = standard deviation; *M* = mean; *Sk* = skewness; *Ku* = kurtosis (*N* = 114).

Comparison of Reactions to Different Types of Stimuli

Repeated-measures ANOVA showed that there were statistically significant differences in Polyscore reaction to stimuli with neutral, positive and negative emotional valence ($F(2, 111) = 37.05$, partial $\eta^2 = .44$, $p < .001$, post hoc power estimate 1-β = 1.00). Post-hoc comparisons (Bonferroni correction) revealed that the difference was significant between neutral ($M_{neutral} = 4.66$, $SD = 1.86$) and both types of arousing stimuli, while there was no difference between stimuli with positive ($M_{positive} = 5.43$, $SD = 2.47$) and negative valence ($M_{negative} = 6.25$, $SD = 2.73$).

Correlations within the same Domain

Table 2 shows correlations between personality traits and Polyscore. Extraversion ($r = –.35$, $p < .01$, post hoc power estimate 1-β = .98) and Conscientiousness ($r = –.52$, $p < .01$, post hoc power estimate 1-β = 1.00) correlated negatively with Neuroticism. As expected, Polyscore reactions to the three types of stimuli correlated positively with each other (all $r > .63$, all $p < .01$, post hoc power estimate 1-β = 1.00), and all three variables also correlated positively with Polyscore variability (all $r > .59$, all $p < .01$, post hoc power estimate 1-β = 1.00).

Table 2
Intercorrelations between basic personality traits and Polyscore

Measure	N	E	O	A	C	PS *SD*	PS *M* neutral	PS *M* positive
Extraversion	**-.35****							
Openness	-.12	.14						
Agreeableness	-.10	-.06	.13					
Conscientiousness	**-.52****	.16	-.12	.14				
Polyscore SD	.00	.01	.03	-.04	**.21***			
PS M neutral	-.09	-.01	.14	.02	.14	**.62****		
PS M positive	-.11	-.07	.11	.02	.17	**.59****	**.67****	
PS M negative	-.14	-.10	.18	.08	**.20***	**.61****	**.73****	**.63****

Note. $^{*}p < .05$; $^{**}p < .01$; N = Neuroticism; E = Extraversion; O = Openness; A = Agreeableness; C= Conscientiousness; PS = Polyscore; *SD* = standard deviation; *M* = mean (*N* = 114).

Relationship between Personality traits and Polyscore

As it can be seen in Table 2, higher Conscientiousness was related to stronger reaction to stimuli with negative valence (r = .20, p < .05, post hoc power estimate 1-β = .58). In addition, Conscientiousness was correlated with larger variability in reaction to different types of stimuli (r = .21, p < .05, post hoc power estimate 1-β = .62). In other words, the reaction of more conscientious participants was more discriminative concerning emotional valence.

The canonical analysis of covariance between Polyscore to stimuli with positive, negative and neutral valence and personality traits showed that one quasi-canonical correlation was significant, although low: R = .26 (p < .01). Examination of coefficient values (Table 3) showed that there was a relationship between weaker Polyscore response to all types of stimuli and lower Conscientiousness and Openness, although Openness does not meet the conventional .45 threshold for structure coefficient magnitude (Sherry & Henson, 2005). The structure coefficient was also relatively high for Neuroticism (indicating correlation between a weaker response and higher Neuroticism), but the lower standardised quasi-canonical coefficient indicates that the variance Neuroticism shares with Polyscore responses may be explained by its correlation with Conscientiousness. Such interpretation is supported by the results of GLM (see Supplementary Material). Table 4 shows that neither quasi-canonical variable accounted for a substantial proportion of the variance in the opposite set.

Table 3
Coefficients of canonical covariance analysis

Variable sets	Standardised quasi-canonical coefficient	Structure coefficient	Cross-structure coefficient
Polyscore – neutral valence	-.47	-.89	-.19
Polyscore – negative valence	-.69	-.91	-.27
Polyscore – positive valence	-.55	-.86	-.22
Neuroticism	.39	.72	.11
Extraversion	.14	-.14	.04
Openness	-.50	-.42	-.15
Agreeableness	-.15	-.34	-.04
Conscientiousness	-.74	-.79	-.22

Table 4
Redundancy analysis

Variable sets	% variance explained in own set	% redundancy
EDR measures	79%	5%
Personality traits	29%	2%

As described in the Methods section, we conducted a GLM analysis in which stimulus valence was an independent variable, Polyscore response a dependent variable, and personality traits were covariates, to examine univariate relationships and verify the results of the canonical analysis approach. The results of this analysis are available in Supplement A. They are in line with the findings of the canonical covariance analysis, but it is noteworthy that the significance of relationships between individual traits and Polyscore response to different stimulus types does not survive Bonferroni correction for multiple comparisons.

Discussion

The results of the first study showed that the participants with higher Conscientiousness scores had stronger Polyscore reactions to photographs with unpleasant arousing contents. Higher reactivity of more conscientious participants in response to aversive stimuli is in line with findings by Brumbaugh et al. (2013) about the correlation between larger EDR to aversive videos and higher Conscientiousness. Similar findings have been reported in psychopathy (Lorber, 2004; Scarpa & Raine, 1997) and Psychoticism (Clark et al., 1987) research, which will be discussed in more detail below. On the other hand, Knežević et al. (2014) did not find the correlation between EDR to aversive images and Conscientiousness. In studies of Bollmer et al. (2006) and Binboga et al. (2012) higher Conscientiousness was related to smaller increase in EDA level and less EDA variability, but these were measures of EDA level variations over time, not electrodermal response.

In addition, canonical covariance analysis has shown that higher Conscientiousness may be related to more reactivity to all types of stimuli, regardless of their valence, but the correlations between Conscientiousness and Polyscore reaction to neutral and positive stimuli were not strong enough to reach statistical significance. Similar findings in studies by Knežević et al. (2014) and Stelmack et al. (1983) corroborate these effects.

A surprising finding was the relationship between generally higher EDR to stimuli and higher Openness which was revealed by canonical covariance analysis. The relationship between Openness and EDR has not been reported in earlier papers, except for the study by Knežević et al. (2014).

There were no correlations between Polyscore reactivity and other personality traits, which was not unexpected given the mixed results or insignificant correlations reported by previous studies. The only correlation that could be expected, but was not found, was the correlation between Agreeableness and Polyscore reactivity.

There was a significant difference in psychophysiological reactions between neutral and emotionally charged stimuli, which demonstrated that experimental manipulation was successful.

There were two main limitations of this study. Firstly, the correlations which were detected were low ($r = .2$) and the power to detect them was not very high ($1-\beta = .6$), so it would be beneficial to replicate these results. Secondly, we used a Polyscore measure, which was a composite variable consisting of several physiological measures, some of which may not be related to Conscientiousness.

Study 2

The second study also examined the relationship between personality traits and psychophysiological reactivity, but only in response to aversive stimuli. We examined the HEXACO traits, and additionally included Disintegration, another measure related to Psychoticism (Knezevic et al., 2017).

Additionally, this study addressed some of the issues present in Study 1. Unlike in Study 1, an instrument measuring only electrodermal response was used. The sample in Study 2 was balanced by gender and more heterogeneous.

Method

Participants

The second study included a convenience sample of 99 participants (50 female, 49 male), students of various study programs at the University of Belgrade. Three additional participants were excluded from the study – one reported using medication that could influence physiological arousal, one was excluded due to technical problems during recording, and one because the electrodermal measurement process was too long (see Procedure for more details). Participation in this study was voluntary without compensation, and its design was approved by a thesis approval committee.

Instruments and apparatus

The Serbian adaptation (Međedović et al., 2017) of HEXACO–100 (Lee & Ashton, 2018) was used to assess HEXACO traits. It assesses six domains: Honesty–Humility, Emotionality (equivalent to Neuroticism), Extraversion (X), Agreeableness, Conscientiousness, and Openness to Experience. The inventory consists of 100 items with 5-point Likert-type scales: 16 for each domain and 4 additional items that measure Altruism, an inter-trait facet. Scores are calculated by averaging responses to all items measuring the same construct. The domains have Cronbach α reliability between .78–.84.

DELTA–30 is a short version of the DELTA self-report inventory (Knezevic et al., 2017) designed to assess predisposition towards psychotic experiences as a personality trait, called Disintegration. It has 30 items, each self-rated on a 5-point Likert-type scale. The final score is the average of all items. The reliability of this measure is $\alpha = .89$.

EDA was measured using the LieScanner LS351 (ArtMedico d.o.o., Niš, Serbia) recording system. The recording system consists of a large electrode which is held in hand, and a software package for stimuli presentation, recording and electrodermal response analysis. The software transforms raw recordings from the electrode into its own measure of electrodermal arousal, which is not expressed in standard physical units.

Stimuli

Two arousing images with negative valence, which were used for reaction measurement, and 16 neutral photographs of everyday objects (14 fillers and 2 control stimuli) were used in this study. All images were selected from the IAPS database (Lang et al., 2008), similarly to the first study, and the original (US) normative data was used.

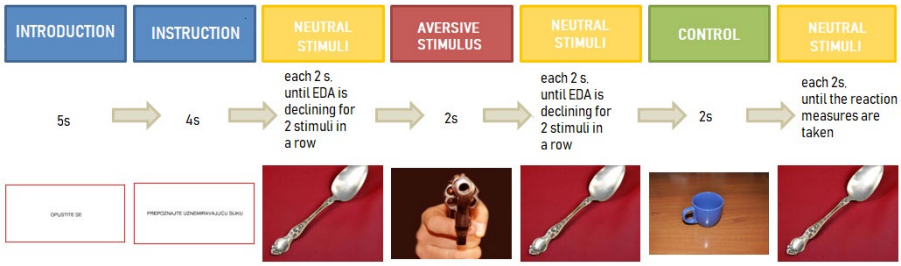
Procedure

The data for this study was collected at the University of Belgrade Faculty of Philosophy and in a student dormitory in Belgrade. Up to two participants were tested at the same time, without mutual interference. As in Study 1, before the experiment, the participants were provided the information about the study and their rights, and their eligibility for participation was checked. They were seated comfortably in front of a laptop, informed about the procedure, and instructed how to help minimise noise during recording.

The stimuli presentation was based on the Adaptive Stimulation Method, ASM (Ranđelović, 2012, 2016), an integral part of the LieScanner software package. At the beginning, two screens with instructions in Serbian were presented: "Relax" (5 s duration), and "Note a disturbing stimulus" (4 s). Following the instructions, a series of fillers (images of everyday objects) were shown, each lasting 2 s, in a randomized order, until EDA level started to decline (i.e., habituation to the experimental context had started). At this moment, an aversive photo was shown, followed again by fillers until the reaction to the aversive stimulus had started to subside. This sequence of events ensured that the change in EDA level which was registered after the aversive stimulus was not the result of a spontaneous fluctuation. Next, a control stimulus was presented, in keeping with the ASM paradigm. It was another image of an everyday object, but it was presented using the same procedure as the aversive stimulus. This allowed using the control stimulus for the reaction presence judgment provided by LieScanner, manipulation check or monitoring spontaneous changes in EDA level. While control neutral stimuli were presented in an analogous way to aversive stimuli, we did not analyse reactions to these stimuli due to differences in the procedure between aversive and control stimuli. Namely, all stimuli were embedded within a series of other neutral stimuli (fillers), and the participants were asked to pay attention to aversive stimuli at the beginning of stimuli presentation. When LieScanner could not decide whether a reaction was reliably present, it presented the aversive or control stimulus again, following the same procedure. If the stimulus was shown more than thrice, the experiment was terminated by the experimenter, and the data of this participant were not included in the analysis. As mentioned in the Sample section, one participant was excluded due to this issue. In addition, to handle cases where optimal conditions for presenting the aversive stimulus could not be reached, maximal duration of neutral stimuli presentation before terminating the experiment early was set to 150 s, but this limit was not exceeded by any participant. The procedure is shown in Figure 1. This procedure was repeated twice, once for each aversive stimulus.

Figure 1

Procedure for electrodermal response measurement in Study 2. The images shown are not the original stimuli, but similar photographs, due to the IAPS database use regulations



For students of psychology, the experiment ended here, as they were asked to allow us to use personality trait information from a separate study. Other participants filled in personality inventories on a computer after the electrodermal task.

Variables

Predictors were four measures, three of them numerical: *latency, rise time*, and *amplitude*. Since latency was practically infinite and it could not be calculated when there was no response at all, a value 3 *SD* larger than the mean latency was used as an approximation for these situations. Given that either of the two aversive stimuli could be presented more than once, each numerical measure had two values: (1) average reaction to the first presentation or

(2) average reaction to the last presentation of stimuli. The first presentation had the advantage of being the first encounter with a stimulus (and not repeated), and the last presentation was a more reliable estimate according to LieScanner. If a stimulus was presented only once, these two values were equal.

In addition, *reaction presence* was based on a categorical yes/no judgment of whether a reliable electrodermal reaction to an aversive stimulus was detected, provided by the LieScanner.[2] It had three levels: (1) no reaction to either of the two aversive stimuli; (2) reaction to one of them; (3) reaction to both stimuli. Reaction presence data was available only for the last presentation of a stimulus.

Criterion variables were scores on HEXACO-PI-R and DELTA-30 inventories.

Data Analysis

First, to confirm that the participants indeed responded to aversive stimuli and that the ASM paradigm produced responses to aversive stimuli, we used repeated measures ANOVA to compare the reaction between aversive images and control images of everyday objects. To investigate the relationship between reaction presence and personality traits, one-way ANOVAs were conducted with the reaction presence as factor, and basic personality traits as dependent variables. Finally, like in Study 1, we used canonical covariance analysis, implemented in QCCR, to analyse the relationships between EDR and personality traits, and the significance of univariate relationships was tested using GLM approach in addition to examining bivariate Pearson correlations. The two sets of variables in canonical covariance analysis included: (1) latency, amplitude, and rise time of EDR and (2) personality traits. In GLM models, traits were covariates and measures of EDR response (latency, amplitude, rise time) were criteria. Both analyses were conducted twice, separately for the average reaction to the first presentation and the average reaction to the last presentation of aversive stimuli. Bonferroni correction was used to adjust for Type I error rate when conducting post hoc tests and tests of GLM relationships.

Results

Descriptive Statistics

Table 5 shows descriptive properties of the continuous variables. Personality trait distributions were mostly normal, with mild negative skewness in the case of Extraversion and Openness, and positive skewness in the case of Disintegration. The highest average scores were registered for Honesty–Humility, Extraversion and Conscientiousness, all of them about 3.5. Normative data for HEXACO or Disintegration was not available for the Serbian population. Comparison of HEXACO results to data from the inventory validation study (Međedović et al., 2017) showed that the data from the two studies were comparable, except in the case of Openness to Experience, which was somewhat higher and less variable in our sample compared to the inventory validation study ($M = 3.61$, $SD = .48$; $M_{normative} = 3.42$, $SD_{normative} = .68$, $t(1314) = 2.58$, $p < .01$, Cohen's $d = 0.31$, post hoc power estimate $1\text{-}\beta = .95$).

When it comes to measures of electrodermal reaction, log transformations were applied to amplitude and rise time due to the high skewness of these variables.[3] Distributions of latency and log-transformed rise time were close to normal, while

2 The formula used to make this judgment is not publicly available, but, according to the manufacturer, it relies on criteria such as the timeliness of the reaction, whether the amplitude of the reaction is above a threshold and whether the reaction can be clearly distinguished from other EDA level variations.

3 The transformation function was log10(x+1).

log-transformed amplitude was mildly, but still significantly skewed (*Sk* = .78 for the first presentation, *Sk* = .68 for the last presentation of an aversive stimulus).

Table 5
Score distributions on personality inventories

Measure	*Minimum*	*Maximum*	*M*	*SD*	*Sk*	*Ku*
Personality traits						
Honesty–Humility	1.69	4.75	3.43	.72	-.25	-.83
Emotionality	1.88	4.81	3.14	.62	.31	-.25
eXtraversion	1.50	4.88	3.57	.71	**-.62***	.17
Agreeableness	1.38	4.31	2.97	.62	-.08	.08
Conscientiousness	2.13	4.81	3.65	.53	-.04	-.17
Openness to Experience	2.13	4.56	3.61	.48	**-.48***	-.09
Disintegration	1.10	3.53	1.97	.46	**.54***	-.10
EDR to the first stimulus presentation						
latency	.95	4.98	3.21	1.07	.12	-.93
log(rise time)	0	1.28	.48	.28	.002	-.07
log(amplitude)	0	1.32	.39	.32	**.78***	.16
EDR to the last stimulus presentation						
latency	.95	4.98	3.10	1.03	.24	-.83
log(rise time)	0	1.28	.51	.28	-.14	-.08
log(amplitude)	0	1.32	.42	.32	**.68***	.06

Note. *significant at $p < .05$; *M* = Mean; *SD* = standard deviation; Sk = skewness; Ku = kurtosis.

When it comes to presence of an electrodermal reaction, 19% of participants did not react to aversive stimuli, 39% reacted to one of them, and 41% reacted to both.

Manipulation Check: Comparison of Reactions to Aversive and Control Stimuli

The participants reacted more frequently and considerably stronger to aversive stimuli compared to control stimuli on all measures (all $p < .001$, partial $\eta^2 = .26–.67$, post hoc power estimate 1-β = 1.00 for all tests).

Continuous Measures within the same Domain

Inter- and cross-correlations of all continuous variables are provided in Table 6. When it comes to personality trait scores, most inter-correlations were close to zero and nonsignificant, but Disintegration correlated with Honesty–Humility, Extraversion, and Conscientiousness, and there was a positive correlation between Honesty–Humility and Agreeableness.

As expected, all three numerical measures of EDR correlated strongly with each other, both in the case of reaction to the first and the last presentation of aversive stimuli. Latency correlated negatively with rise time and amplitude (all Pearson $r < -.6$, $p < .01$, post hoc power estimate 1-β = 1.00), while amplitude and rise time were positively correlated (both $r > .8$, $p < .01$, post hoc power estimate 1-β = 1.00).

Table 6
Inter- and cross-correlations between personality traits and measures of EDR in response to the first and last stimulus presentation

Measure		Personality							EDR to the first stimulus presentation			EDR to the last stimulus presentation	
		H	E	X	A	C	O	D	LAT	RIS	AMP	LAT	RIS
Personality	E	.19	1										
	X	-.04	-.09	1									
	A	.29**	-.05	.07	1								
	C	.04	-.07	.06	.16	1							
	O	.04	-.007	.1	.09	.09	1						
	D	-.30**	.16	-.28**	-.2	-.29**	-.08	1					
EDR first	LAT	**.08**	**.23***	**-.01**	**.06**	**-.13**	**.06**	**-.07**	1				
	RIS	**.01**	**-.03**	**-.05**	**-.11**	**.12**	**-.06**	**-.01**	-.67**	1			
	AMP	**-.00**	**-.05**	**-.03**	**-.10**	**.09**	**-.12**	**-.06**	-.63**	.86***	1		
EDR last	LAT	**.07**	**.16**	**-.04**	**.11**	**-.14**	**.11**	**-.07**	.92**	-.60***	-.58***	1	
	RIS	**.01**	**.02**	**-.01**	**-.11**	**.12**	**-.11**	**-.05**	-.52**	.88***	.76***	-.63***	1
	AMP	**-.01**	**-.01**	**.00**	**-.10**	**-.08**	**-.17**	**-.07**	-.54**	.77***	.93***	-.62***	.84***

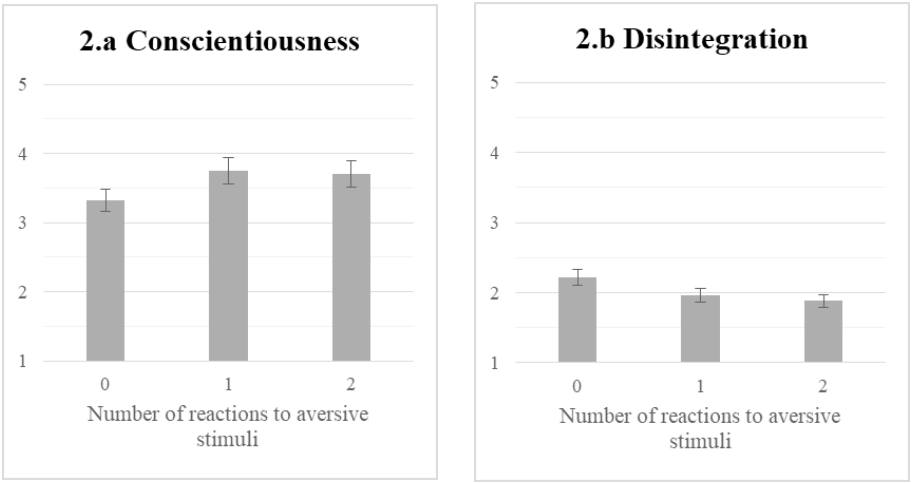
Note. * $p < .05$; ** $p < .01$; *** $p < .001$; H = Honesty–Humility; E = Emotionality; X = Extraversion; A = Agreeableness; C = Conscientiousness; O = Openness to Experience; EDR first = electrodermal response to the first presentation of a stimulus, EDR last = electrodermal response to the last presentation of a stimulus; LAT = latency, RIS = log(rise time), AMP = log(amplitude). Cross-correlations are bolded.

The relationship between Reaction Presence and Basic Personality Traits

Two one-way ANOVA effects of reaction presence on personality traits were significant: on Disintegration ($F(2, 96) = 3.34$, $p < .05$, $\eta^2 = .06$, post hoc power estimate 1-β = .59) and Conscientiousness ($F(2, 96) = 4.81$, $p < .05$, $\eta^2 = .09$, post hoc power estimate 1-β = .79), both of them with low effect sizes. As can be seen in Figure 2a, Bonferroni post hoc comparisons showed that the participants who did not react to either aversive stimulus had significantly higher Disintegration scores ($M0 = 2.22$, $SD = .50$) than the participants who reacted to both stimuli ($M2 = 1.87$, $SD = .48$) ($p < .05$). Participants who reacted to one stimulus were in the middle, and not significantly different from the other two groups ($M1 = 1.96$, $SD = .50$). Post hoc analyses for Conscientiousness (Figure 2b) revealed that participants who reacted to one ($M1 = 3.75$, $SD = .44$) or both stimuli ($M2 = 3.70$, $SD = .58$) had significantly higher ($p < .05$) scores on this trait in comparison to the group that did not react to either aversive stimulus ($M0 = 3.33$, $SD = .48$).

Figure 2

Relationship between the number of reactions to an aversive stimulus and (2a) Disintegration and (2b) Conscientiousness. Lines mark significantly different pairs (Bonferroni post hoc). Error bars represent 95% confidence intervals



The relationship between Continuous EDR Measures and Personality Traits

Reaction to the last presentation of an aversive stimulus. The first canonical covariance analysis included the following two sets of variables: (1) latency, amplitude and rise time of EDR to the last presentation of a stimulus and (2) personality traits. One quasi-canonical correlation was significant, although low: $R = .25$ ($p < .05$). It showed a relationship between generally weaker reaction (longer latency, shorter rise time, lower amplitude) and a personality profile characterised by higher Agreeableness and Openness to Experience, and

lower Conscientiousness (Table 7). However, both quasi-canonical variables accounted only for a small percentage of variance in the opposite set (Table 8). Additionally, direct Pearson cross-correlations were examined, and there were no significant relationships (the results are shown in Table 6).

Table 7
Coefficients of canonical covariance analysis – reaction to the last presentation of stimuli and personality traits

Variable sets	Standardised quasi-canonical coefficient	Structure coefficient	Cross-structure coefficient
latency	.68	.87	.26
log(rise time)	-.48	-.9	-.18
log(amplitude)	-.54	-.9	-.2
Honesty–Humility	.13	.34	.03
Emotionality	.29	.31	.07
eXtraversion	.06	-.04	-.02
Agreeableness	.50	.50	.12
Conscientiousness	-.53	-.44	-.13
Openness to Experience	.6	.58	.14
Disintegration	.04	.08	.01

Table 8
Redundancy analysis – reaction to the last presentation of stimuli and personality traits

Variable sets	% variance explained in own set	% redundancy
EDR measures	79%	5%
Personality traits	14%	1%

Reaction to the first presentation of an aversive stimulus. The second canonical covariance analysis was analogous to the first one, but with EDR reaction in response to the first presentations of aversive stimuli. There was one significant, albeit low, quasi-canonical correlation: $Rc = .24$ ($p < .05$). The investigation of quasi-canonical coefficients (Table 9) suggested correlation between generally weaker reaction to aversive stimuli and a personality structure defined by higher Emotionality and lower Conscientiousness. However, redundancy was again low in both sets of variables (Table 10). When it came to cross-correlations, there was only one significant Pearson correlation: between EDR latency and Emotionality ($r = .23$, $p < .05$, post hoc power estimate $1\text{-}\beta = .64$) (see Table 6).

Table 9
Coefficients in canonical covariance analysis – reaction to the first presentation of an aversive stimulus and personality traits

Variable sets	Standardised quasi-canonical coefficient	Structure coefficient	Cross-structure coefficient
latency	77	.9	.28
log(rise time)	-.44	-.9	-.16
log(amplitude)	-.46	-.89	-.17
Honesty-Humility	.17	.42	.04
Emotionality	.6	.61	.14
eXtraversion	.08	.07	.02
Agreeableness	.41	.39	.01
Conscientiousness	-.55	-.48	-.13
Openness to Experience	.37	.34	.08
Disintegration	-.06	.01	-.01

Table 10
Redundancy analysis – reaction to the first presentation of stimuli and personality traits

Variable sets	% variance explained in own set	% redundancy
EDR measures	80%	4%
Personality traits	15%	1%

GLM Models

The results of these analyses are shown in Supplement B. The only statistically significant predictor, like in the case of bivariate correlations, was Emotionality as a predictor of latency of electrodermal response to the first (but not the last) presentation of an aversive stimulus, and this relationship was not significant after Bonferroni correction for multiple comparisons.

Discussion

The results of the second study are in line with those of the first experiment. The relationship between Conscientiousness and EDR to aversive stimuli was in the first place confirmed when it came to the categorical estimate of the presence of a reaction, rather than the more fine-grained numerical measures of its intensity. The examination of the relationship between continuous EDR measures and personality traits showed low quasi-canonical correlations and redundancies. However, in both analyses, lower Conscientiousness was related to generally weaker EDR, which, together with the ANOVA results, suggested that this relationship was not spurious. Unlike the results examining the overall response (reaction presence, canonical covariance analysis), examination of bivariate correlations and regression coefficients for prediction of individual measures of response (latency, rise time, amplitude) were not significant,

indicating that a combination of different measures of response may be needed to predict Conscientiousness.

Additionally, canonical covariance analyses pointed to three additional variables – Agreeableness, Openness to Experience, and Emotionality, although these results showed up only in one of the two canonical covariance analyses, while the appropriate quasi-canonical, coefficients of structure and cross-structure were lower in the other analysis. Moreover, all three relationships were found in analyses with low quasi-canonical correlations and redundancies, and, unlike Conscientiousness, neither trait was related to the categorical measure of the presence of a reaction. Furthermore, these relationships were not registered in Study 1, except in the case of Openness to Experience, and in this case the relationship was in the opposite direction compared to the results of Study 2.

Categorical measure of EDR was also related to Disintegration: participants were more likely to react to aversive stimuli if they had lower scores on this trait. This provides further support to the suggestion about the relationship between this trait and Psychoticism (Knezevic et al., 2017).

General Discussion and Conclusion

The main question of this study was the relationship between basic personality traits and emotional reactivity measured by electrodermal response. To answer this question, two experiments were conducted, which encompassed two influential basic personality trait models – the FFM (Costa & McCrae, 1985) and HEXACO (Lee & Ashton, 2004), and an additional trait – Disintegration (Knezevic et al., 2017). In Study 1, emotional reactivity was expressed using Polyscore, a composite polygraph measure in which EDR had dominant influence, and response was measured with respect to stimuli with positive, neutral, and negative valences. In Study 2, we employed several measures of electrodermal response to stimuli with negative valence, both continuous and categorical.

In both experiments, we recorded a relationship between higher Conscientiousness and stronger electrodermal response to aversive stimuli. While the effects were low in all cases, they were consistently found in most analyses that were conducted. The effects were found when the relationships between traits and composite measures of reaction (Polyscore, reaction presence, canonical covariance analysis) were examined, indicating that a combination of different aspects of response may be needed to predict Conscientiousness.

These results concur with the previous findings of Brumbaugh et al. (2013), but not with the findings of Knežević et al. (2014), who did not find the correlation between EDR to aversive images and Conscientiousness. In studies of Bollmer et al. (2006) and Binboga et al. (2012) higher Conscientiousness was related to a smaller increase in EDA level and less EDA variability, but these were measures of EDA level variations over time, not electrodermal response. The link between Conscientiousness and EDR to aversive stimuli may be related to the more established effect found in psychopathy research (Fowles, 2000;

Lorber, 2004; Scarpa & Raine, 1997), given that Conscientiousness is one of the traits which correlate with psychopathy (Muris et al., 2017). The proposed link between autonomic response regulation and the prefrontal cortex in antisocial disorder (Fowles, 2000; Raine et al., 2000) may be the common mechanism which explains why the effect on EDR to aversive stimuli is found in the case of Conscientiousness, and not other psychopathy-related traits (Agreeableness, Honesty–Humility).

In Study 1, GLM and canonical covariance analysis suggested that the relationship between Conscientiousness and EDR may be broader and generalize also to neutral and stimuli with positive valence. However, the evidence for these findings is not as strong, and data on EDA reactivity to neutral and positive stimuli was only available in Study 1.

We did not find reliable evidence of a relationship between EDR measures and Emotionality/Neuroticism. Only one correlation was significant – between Emotionality and one measure of latency of response to aversive stimuli in Study 2. These findings are not in line with the previous studies in which the relationship between Neuroticisim/Emotionality and larger EDR to various types of, mostly aversive, stimuli was found (Brumbaugh et al., 2013; Knežević et al., 2014; Norris et al., 2007; Reynaud et al., 2012) or the theoretical expectations that low fear/anxiety explains the link between psychopathy and lower electrodermal responsivity (see Fowles, 2000). Conversely, in some of the studies in which Neuroticism/Emotionality was related to EDR, this relationship was registered only to response to some of the measures (Brumbaugh et al., 2013; Knežević et al., 2014), and other studies have not found a relationship (Bollmer et al., 2005; Clark et al., 1987) or they found a correlation in the opposite direction (Naveteur 1986). Taken together, all these results do not provide evidence for the proposed correlation between higher Emotionality/Neuroticism and higher EDR to stimuli.

Similarly, we did not find reliable indicators of a relationship between EDR reactivity and Honesty–Humility or Agreeableness (the latter found only in Study 2 in one canonical covariance analysis with low redundancy), even though this could be expected based on previous literature (Brumbaugh et al., 2013; Clark et al., 1987; Lorber, 2004; Scarpa & Raine, 1997). This can be in part attributed to participant selection. The results indicating the existence of these relationships mainly come from studies on extremes on these measures – psychopathy and reactive aggression, while both of our samples were limited to university students, which could affect trait variability. Additionally, the relationship registered between EDR and psychopathy or reactive aggression may rely on mechanisms which Agreeableness and Honesty–Humility do not share with these concepts. For example, it has been suggested that the relationship between psychopathy and EDA reactivity is related to low fear/anxiety or prefrontal emotional regulation, as noted above (see Fowles, 2000).

In addition to Conscientiousness, in Study 2, we found a relationship between the presence of an electrodermal response to aversive stimuli and

Disintegration, a proposed basic personality trait reflecting psychosis proneness. Participants with higher scores on this trait were less reactive to aversive stimuli, which could be expected based on the relationship of Disintegration with Psychoticism. It is noteworthy that this relationship was found in a sample of university students, in which the variability on this trait was expected to be lower than in the general population (normative data for the measure of this trait was not available). Still, these results were obtained only in Study 2, and only when it comes to the presence of a reaction, and not when it comes to its intensity.

Finally, we did not find evidence of the relationship between Extraversion or Openness to Experience and psychophysiological measures. When it comes to Openness to Experience, some evidence in favour of the relationship between this trait and EDA reactivity was found in both studies, but the relationships were not found in all analyses and they were in the opposite direction in the two studies. These results concur with generally contradictory or negative findings about these traits.

Our experiments had some noteworthy limitations. In the first place, both studies relied on multiple comparisons, the resulting significant effects in all analyses were small and the post hoc estimates of power to detect these effects were not large (1-β varied between .58 and .79 for the relationships for which the estimate of power could be made). The consistency of the findings between Study 1 and Study 2 partly alleviates these concerns, but they remain in place, especially for relationships which have not been examined by both studies (relationship between personality traits and Polyscore reaction to neutral or positive stimuli, relationship between Disintegration and EDR). Second, as noted above, both experiments were conducted with university students as participants. While the descriptive measures of personality traits conformed relatively well to normative data for most traits, it would be valuable to replicate these results on a sample which is more representative of the general population or in groups expected to have more extreme personality trait scores, e.g. convicts or psychiatric patients. Third, weak relationships could potentially be attributed to noise in EDR recordings, especially in Study 2. Namely, the device used in this experiment had a large handheld electrode, unlike typical electrodermal measurement systems, which rely on a more stable solution – electrodes attached to fingertips. Additionally, the number of aversive stimuli in Study 2 was low (participants were shown two aversive stimuli) due to time constraints and the duration of the Adaptive Stimulation Method procedure, and future studies should include more stimuli. Finally, both systems provided their own measures of response (Polyscore and LieScanner EDR measures), whose compositions were trade secrets, and which could not be translated into standard units – this limits our interpretation of results and comparison to previous research.

Altogether, although the effects were low, most of them were consistent between the two experiments, despite using different methods for measuring both electrodermal activity and personality traits, which lends additional credibility to our findings.

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Povezanost između emocionalne reaktivnosti na vizuelne stimuluse i bazičnih crta ličnosti

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U dve studije sa istim ciljem, ali uz primenu različitih instrumenata, ispitivali smo povezanost između bazičnih crta ličnosti i elektrodermalne reaktivnosti na averzivne vizuelne stimuluse. U prvoj studiji je fokus bio na crtama iz modela Velikih pet, a u drugoj je istraživan HEXACO model i dodatna crta – Dezintegracija. U prvoj studiji emocionalna reaktivnost je izražena preko Poliskora (eng. Polyscore), kompozitne mere na poligrafu gde elektrodermalni odgovor ima najveći ponder, i merena je u odnosu na stimuluse sa pozitivnom, neutralnom i negativnom valencom. U drugoj studiji smo koristili nekoliko mera za elektrodermalni odgovor na stimuluse sa negativnom valencom. U oba eksperimenta Savesnost je bila pozitivno povezana sa elektrodermalnim odgovorom na averzivne stimuluse. Takođe, u drugoj studiji je utvrđena negativna povezanost između Dezintegracije i elektodermalnog odgovora na averzivne stimuluse. Druge crte nisu bile povezane sa elektrodermalnim odgovorom na averzivne stimuluse, a u prvoj studiji nije utvrđena povezanost između crta ličnosti i reaktivnosti na stimuluse sa pozitivnom ili neutralnom valencom.

Ključne reči: model Velikih pet, HEXACO, Dezintegracija, elektrodermalna reakcija, poligraf

RECEIVED: 17.05.2020.
REVISION RECEIVED: 31.07.2020.
ACCEPTED: 06.08.2020.

Supplementary Material

Univariate analyses of data from Study 1 and 2, as well as the data from this study, are available on this study's Open Science Foundation project page (https://osf.io/f4ky7/).