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### Personality predictors of anger. The role of FFM traits, shyness, and self-esteem

**Abstract:** The present study was designed to verify hypothesized predictor effects for five anger-related variables, i.e. trait anger, anger expression-out, anger expression-in, anger control-out, and anger-control-in. A sample of 138 students completed measures for FFM personality traits (NEO-FFI), self-esteem (SES), shyness (RCBS), and anger (STAXI-2). The study confirmed the effects of neuroticism and agreeableness as being the chief personality predictors of anger; however, for the domain of anger expression-in, an unexpected role of extraversion was revealed. Furthermore, introducing self-esteem and shyness changed some effects of FFM traits. Entering self-esteem as an additional predictor improved the predictability of anger control-in. Additionally, a mediation effect of shyness was revealed for the relation between extraversion and anger expression-in.

**Key words:** anger, FFM traits, shyness, self-esteem

Anger is usually regarded as a negative emotion, which refers to both the subjective experience of one's own aversive emotional state as well as a negative social judgement of anger expressed towards others (Averill, 1983). Such a negative evaluation may result in a defensive denial of emotions; thus, some authors suggest that anger should not be called a negative, but rather an unpleasant emotion (e.g. Smith, Glazer, Ruiz, & Gallo, 2004). However, besides its aversive aspects, the experience of anger is related to a strong surge of energy and feelings of power and personal agency that may be experienced as a pleasant feelings (Tibubos, Schnell & Rohrmann, 2013). Consistent with this are empirical studies suggesting that, rather than being avoidance-related, anger is an approach-related affect that triggers the appetitive motivational system (Carver & Harmon-Jones, 2009). Furthermore, while experiencing anger, brain activity is similar to that of positive rather than negative emotions (Harmon-Jones & Sigelman, 2001). Anger is then an ambiguous and controversial phenomenon, making it a fascinating subject for psychological research.

One of the strands of anger-related research concerns the personality predictors of anger; most current studies point to neuroticism and agreeableness as the two most important factors. These personality traits, however, refer to very broad, nonconditional and decontextualised general dispositions. Therefore, it seems reasonable that some additional, more specific personality variables should

also be taken into account when looking for predictors of anger. Two such variables are proposed in the present paper: I suggest that shyness and self-esteem can add to the predictive value of neuroticism and agreeableness for anger-related phenomena.

#### Anger, aggression and hostility

The present paper follows Spielberger's conceptualisation of anger and diversity of anger-related phenomena (e.g. Moscoso & Spielberger, 2011; Spielberger, 1999). When defining anger, it should be differentiated from aggression and hostility; although they are related constructs, they refer to distinct aspects of human activity, that is, to affective, behavioural and cognitive aspects, respectively (e.g. Martin, Watson, & Wan, 2000; Moscoso & Spielberger, 2011; Smith et al., 2004). The concept of anger captures the affective component. It refers to the experience of a specific type of emotion, to which the state-trait distinction (Steyer, Mayer, Geiser, & Cole, 2015) can be applied. Spielberger defines the state aspect of anger as "an emotional state that consists of feelings that vary in intensity, from mild irritation or annoyance to intense fury and rage" (Moscoso & Spielberger, 2011, p. 349). It is a "psychobiological emotional state" that "is generally accompanied by muscular tension and by arousal of the neuroendocrine and autonomic nervous systems" (Spielberger, 1999, p. 1). State anger is a highly contextualised construct, since it refers to the intensity of

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angry feelings at a specified moment of time. In contrast, the trait aspect of anger is defined as a generalised tendency to experience anger across many contexts. Trait anger is conceptualised “in terms of individual differences in the disposition to perceive a wide range of situations as annoying or frustrating and by the tendency to respond to such situations with elevations in state anger” (Spielberger, 1999, p. 1).

In contrast to angry emotions, aggression refers to “destructive or punitive behavior directed towards other persons or objects in the environment” (Spielberger & Reheiser, 2009, p. 281). Even though trait anger is one of the most important predictors of aggression (e.g. Hosie, Gilbert, Simpson, & Daffern 2014), the two constructs remain conceptually and empirically distinct (Averill, 1983; Cocco, Lee, & McCloskey, 2014). In this context, hostility is “a complex set of attitudes that motivate aggressive behaviors directed toward destroying objects or injuring other people” (Moscoso & Spielberger, 2011, p. 349).

The present paper does not deal with hostility, and considers aggressive behaviours only to a limited extent. Instead, it focuses on the experience of anger, as well as its expression and control (Spielberger & Reheiser, 2009). With regard to both expression and control, two modes, an out- and in-mode, can be distinguished. Anger expression-out refers to a poorly controlled, outward expression of anger “toward other persons or objects in the environment” (Spielberger, 1999, p. 1). It “generally involves both the frequent experience of intense feelings of anger as an emotional state and the expression of anger in aggressive behavior” (Spielberger, 1999, p. 20). In contrast, anger expression-in is defined as anger directed inward, and refers to a tendency to suppress angry feelings and to hold them in (Vagg & Spielberger, 2013).

Analogously, two modes of anger control are distinguished by Spielberger (1999). Anger control-out refers to “control of angry feelings by preventing the expression of anger toward other persons or objects in the environment” (Spielberger, 1999, p. 1), which “involves the expenditure of energy to monitor and control the physical or verbal expressions of anger” (Vagg & Spielberger, 2013, p. 12). The second mode, anger control-in, “is related to the control of suppressed angry feelings by calming down or cooling off when angered” (Spielberger, 1999, p. 1). It involves the “attempts to relax, calm down, and reduce angry feelings before they get out of control” (Vagg & Spielberger, 2013, p. 12). It should be emphasised here that both the out- and the in- aspects of controlling anger are distinct from anger suppression (Bak, 2016). For example, the tendency to suppress anger is related to elevated blood pressure and hypertension, while the control of anger is not (Spielberger, 1999). Moreover, the patterns of relationships with negative emotions are substantially different. Anger expression-in correlates positively with anxiety and depression. In contrast, for both modes of anger control, the correlations with anxiety and depression are negative (Bak, 2016; Krohne, Schmukle, Spaderna, & Spielberger, 2002).

### Personality Predictors of Anger

The psychological literature lists different determinants of anger-related phenomena, with cognitive and attributive factors being among the most commonly described. People experience anger when they are stopped while approaching a desired end-state, especially when the goal is personally relevant. It is also usually claimed that some external agent must be perceived as responsible for a negative, harmful event or frustration (e.g. Stadler, Rohrmann, Steuber, & Poustka, 2006). The possibility of experiencing angry feelings is also high when one perceives the negative situation as unjustified and unfair. Moreover, many situational factors are described in the literature. In particular, anger can be caused (or at least intensified) by stress, physical pain or discomfort (Berkowitz & Harmon-Jones, 2004). Yet another class of determinants refers to some relatively stable personality characteristics; these are the main focus of the present paper. In a study by Biaggio (1980), high anger arousal subjects had lower scores in measures of socialisation, self-control, tolerance, and flexibility. In contrast, low anger arousal subjects were characterised by lower self-acceptance, higher responsibility, higher socialisation and a need for making a good impression on others. Similarly, Wojciszke and Baryła (2005) showed positive correlations between anger and dissatisfaction with life, chronic complaining, rumination, and a belief that the world is unjust.

Another line of research is looking for the predictors of anger in the context of the five-factor model of personality (FFM), the theory stating that neuroticism, extraversion, openness, agreeableness, and conscientiousness are the main personality dimensions (McCrae & Costa, 1999). Many studies have consistently shown that, among the FFM traits, neuroticism and agreeableness are the most effective in predicting aggression (Bettencourt, Talley, Benjamin, & Valentine, 2006; Caprara et al., 2013; Gleason, Jensen-Campbell, & Richardson, 2004; Miller, Lynam, & Leukefeld, 2003). Specifically, neuroticism is connected mostly with impulsive forms of aggressive behaviours; while low agreeableness predicts “cold” instrumental aggression that may occur without any external provocation (Bettencourt et al., 2006). There are fewer studies focused on anger as distinct from aggressive behaviour, but their results are similar to those dealing with aggression. Costa, McCrae, and Dembroski (1989) have found that anger expression is related to low agreeableness, while neuroticism correlated with the experience of anger. Martin et al. (2000) confirmed that the strongest relationship between trait anger and the FFM traits concerns neuroticism and agreeableness. The behavioural aspect of trait anger (aggression) correlated with agreeableness, and very weakly with the remaining four traits. However, the angry affect was strongly related to neuroticism (see also Sanz, García-Vera, & Magán, 2010).

The aims of the present study were to replicate previous results regarding FFM traits and to provide more detailed distinctions between the predictors of trait anger, anger expression and anger control. It was hypothesised that, among the FFM traits, neuroticism and agreeableness

are the most important personality predictors of anger (Hypothesis 1). More specifically, this hypothesis stated that the experience of anger is predicted mostly by neuroticism (Hypothesis 1a), while agreeableness is the most important predictor of both expression and control of anger (Hypothesis 1b). Still, it was proposed here that some additional personality variables may add to the prediction of anger over and above the FFM traits.

The FFM traits refer to very broad, nonconditional and decontextualised dispositions and, as such, they do not cover the whole spectrum of personality-related phenomena. To provide a fuller, more integrative picture of the whole person additional personality variables should be taken into account. Compared to general dispositions, these additional variables are more specific, and more dependent on social-cognitive factors (McAdams & Pals, 2006). This applies also to the predictability of anger-related phenomena. It is unlikely that the general dispositional traits of neuroticism and agreeableness are the only plausible predictors of anger (Robinson & Wilkowski, 2010). This seems particularly relevant to strategies of expression and control of anger, in which social-cognitive and cultural factors play important roles (e.g. Kinney, Smith, & Donzella, 2001; Nunn & Thomas, 1999; Park et al., 2013; Restubog, Garcia, Wang, & Cheng, 2010; Stöber, 2003).

Thus, the effectiveness of predicting anger – particularly its expression and control – may be improved when some more specific personality variables are considered in addition to general personality traits. Two such variables are proposed in the present study: trait shyness and global self-esteem. First, they both correlate with neuroticism – a personality trait that is one of the chief predictors of anger. Nevertheless, neither can be reduced to neuroticism – they are more than merely facets of this general disposition. Second, shyness and self-esteem share a core of self-focused cognitions and concern for interpersonal evaluation that seems to be relevant for predicting anger given the negative social judgement of anger and aggression.

Shyness is usually defined as discomfort and inhibition in the presence of others (Cheek & Buss, 1981; Hopko, Stowell, Jones, Armento, & Cheek, 2005). It “involves anxious affect that is paired with inhibited behavior” and this “shy behavior may range from mild inhibition, involving bashful timidity and wary watchfulness, to stronger distancing behaviour that can include total withdrawal from social settings” (Miller, 2009, p. 177). Shyness is closely related to temperamental emotionality and neuroticism (e.g. Ebeling-Witte, Frank, & Lester, 2007; Eggum, et al., 2012; Mehrabian & Stefl, 1995); however, it cannot be seen as merely one facet of neuroticism or even social anxiety (Miller, 2009). A longitudinal study conducted by Caprara, Steca, Cervone, and Artistic (2003) revealed that social-cognitive factors (perception of social self-efficacy) contributes to the development of shyness regardless of its relationship with neuroticism. Compared to neuroticism, shyness explicitly implies a more specific interpersonal context, which makes

it a plausible predictor of anger. It was postulated in the present study that shyness predicts the expression of anger, that is, a higher level of shyness decreases the tendency to express angry feelings and increases the tendency to suppress anger (Hypothesis 2).

Global self-esteem is another trait-like construct that can serve as a potential predictor for anger-related variables. It is commonly defined as a generalised positive versus negative self-evaluation and refers to “the way people characteristically feel about themselves” (Brown, Dutton, & Cook, 2001, p. 616). Similarly to shyness, self-esteem correlates with neuroticism (Erdle, Gosling, & Potter, 2009; Judge, Erez, Bono, & Thoresen, 2002) and, to some extent, is genetically determined (Bosson & Swann, 2009; Caprara et al., 2009). Nevertheless, self-esteem is decidedly more than a general, temperamental trait, but is rather a result of complex social-cognitive factors, that is particularly stressed in the context of the sociometer theory of self-esteem (Leary, Tambor, Terdal, & Downs, 1995).

Given the common-sense negative evaluation of anger, the fact that self-esteem explicitly refers to self-evaluation as rooted in social evaluation suggests that there should be a substantial relationship between the two constructs. Previous studies have indeed revealed correlations between the level of self-esteem and a tendency to experience anger. The results of these studies, however, are not consistent. Some note that anger relates to low levels of self-esteem, while others suggest that the opposite is true. Other studies advocate taking into account the interaction between the level and stability of self-esteem (Kernis, Grannemann, & Barclay, 1989), or the interaction between the level of self-esteem and gender (Nunn & Thomas, 1999), or the discrepancy between implicit and explicit self-esteem (Schröder-Abé, Rudolph, & Schütz, 2007). Given the inconsistency of these findings, it was postulated that self-esteem adds to the predictability of anger, apart from what can be predicted based on the FFM traits only (Hypothesis 3). However, no specific hypotheses were formulated in this study regarding the direction of the relationships between the level of self-esteem and the experience, expression and control of anger.

## Method

### Participants and Procedure

Participants were 138 Polish students (70 females, 51%) between the ages of 18 and 25 ( $M = 21.57$ ;  $SD = 1.38$ ), representing different majors of studies. Thirty-two percent of the sample lived in villages, 17% lived in small towns of up to 20 thousand inhabitants, 20% – in towns of 20 to 100 thousand, and 31% of the participants lived in city of over 100 thousand inhabitants. The researcher met groups of students during their classes and distributed questionnaires among those who agreed to take part in the study. Their agreement was expressed after being informed that the participation requires filling in four questionnaires, the involvement is voluntary, and data are collected for research purposes only. Participants filled in

the measures at home and returned them in approximately one week. None were paid for their participation.

## Measures

### *The FFM personality traits*

The NEO Five Factor Inventory (NEO-FFI; Costa & McCrae, 1992) was used to measure neuroticism (N), extraversion (E), openness (O), agreeableness (A), and conscientiousness (C). The NEO-FFI consists of 60 items (12 for each of the five scales) for which participants respond on a five-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The NEO-FFI is a well-validated measure of the FFM personality traits and its Polish adaptation is widely used in research (e.g. Gawda, 2014; Gorbaniuk & Włodarska, 2015; Kaleta, Pisula, Fiszdon, & Kondrakiewicz, 2011; Roszak, 2012; Szymura, Waluszko, & Stachów, 2003; Zajusz-Gawędzka & Marszał-Wiśniewska, 2015). The Cronbach's  $\alpha$  reliability coefficients range from .68 (O, A) to .82 (C) (Zawadzki, Strelau, Szczepaniak, & Śliwińska, 1998).

### *Anger*

A set of anger-related variables were measured with scales from the State-Trait Anger Expression Inventory (STAXI-2; Spielberger, 1999). Since the Polish adaptation of STAXI-2 (Bak, 2016) has not been used in many studies so far, before running the analyses the factor structure for the present sample was checked independently for each scale using the confirmatory factor analysis (CFA) framework.

The STAXI-2 trait anger scale (T-Ang) consists of two subscales referring to the general personality disposition to experience anger. The angry temperament subscale (T-Ang/T) consists of four items (e.g. "I am a hot-headed person") that measure "the disposition to experience anger without specific provocation". The angry reaction subscale (T-Ang/R) consists of four items (e.g. "It makes me furious when I am criticized in front of others") that measure "the frequency that angry feelings are experienced in situations that involve frustration and/or negative evaluations" (Spielberger, 1999, p. 2). Another two items do not load on the subscales, but they are included in calculating the general score for trait anger (T-Ang). The answers are given on a four-point frequency scale ranging from 1 (*almost never*) to 4 (*almost always*). The same response format is used for the anger expression and anger control scales (see below). Referring to the original structure of trait anger scale (Spielberger, 1999) a CFA model was tested with a higher-level latent factor (T-Ang) loaded by two lower-level latent factors (T-Ang/T and T-Ang/R). The model fit ( $X^2/df = 1.90$ ; CFI = .93; RMSEA = .08) as well as the Cronbach's  $\alpha$  reliability coefficients for the general T-Ang scale (.84, 95% CI [.79, .87]) and for the T-Ang/T (.75, 95% CI [.68, .81]) and T-Ang/R (.78, 95% CI [.71, .83]) subscales were satisfactory. Since there were no specific hypotheses regarding the subscales the analyses were conducted for the general trait anger scale (T-Ang).

The anger expression-out scale (AX-O) refers to the extent to which people express their anger in an "outwardly negative and poorly controlled manner" (Vagg & Spielberger, 2013, p. 10). The scale consists of eight items (e.g. "When angry or furious I do things like slam doors"). Its unidimensionality for the present sample was confirmed – the one-factor CFA model fitted the sample data well ( $X^2/df = 1.33$ ; CFI = .98; RMSEA = .05). The reliability of AX-O scale for the present sample was  $\alpha = .78$ , 95% CI [.73, .84].

The anger expression-in scale (AX-I) "measures the extent to which people hold things in or suppress anger when they are angry or furious" (Vagg & Spielberger, 2013, p. 11). It consists of eight items (e.g. "When angry or furious I keep things in"), however, for the present sample the factor loading for two items ("I pout or sulk"; "I am secretly quite critical of others") were low (.09 and .39, respectively). After removing the two items the unidimensionality of the AX-I was confirmed with the acceptable fit indices ( $X^2/df = 2.22$ ; CFI = .96; RMSEA = .09). The reliability of the six-item scale was  $\alpha = .79$ , 95% CI [.74, .84]. Thus for the further analyses the shortened version (six-item instead of original eight-item) of AX-I scale was used.

The remaining two STAXI-2 scales – anger control-out (AC-O) and anger control-in (AC-I) – capture two different ways of controlling anger. The AC-O refers to the "expenditure of energy to monitor and control the physical or verbal expressions of anger", while the AC-I "measures how often a person attempts to relax, calm down, and reduce angry feelings before they get out of control" (Vagg & Spielberger, 2013, p. 12). There are eight items to measure anger control-out (e.g. "When angry or furious I am patient with others") and another eight items to measure anger control-in (e.g. "When angry or furious I take a deep breath and relax"). The unidimensionality of the scales was confirmed with the CFA, independently for AC-O and AC-I. The fit indices were  $X^2/df = 1.86$ , 1.69; CFI = .95, .97; RMSEA = .08, .07, respectively. The reliability of the AC-O and AC-I for the present sample was  $\alpha = .85$ , .89, 95% CI [.81, .88], [.85, .91], respectively.

### *Shyness*

Trait shyness was measured with the Revised Cheek and Buss Shyness Scale (RCBS; Hopko et al., 2005) in Polish adaptation by Chmielnicka-Kuter (2011). RCBS is a 14-item self-report questionnaire, which captures shyness defined "in terms of one's reaction to being with strangers or casual acquaintances: tension, concern, feeling of awkwardness and discomfort, and both gaze aversion and inhibition of normally expected social behavior" (Cheek & Buss, 1981, p. 330). Generally, shyness refers to "discomfort and inhibition in the presence of other individuals" (Hopko et al., 2005, p. 185). The responses to RCBS items (e.g. "I feel inhibited in social situations") are given on a five-point scale, ranging from 1 (*completely untrue, strongly disagree*) to 5 (*completely true, strongly agree*). The unidimensionality of RCBS for the present sample was confirmed with CFA ( $X^2/df = 1.19$ ; CFI = .98;

RMSEA = .04). The Cronbach's  $\alpha$  reliability coefficient was .89, 95% CI [.86, .91].

#### Self-esteem

Participants rated their self-esteem on 10-item Rosenberg Self-Esteem Scale (SES; Rosenberg, 1989). The Polish adaptation of SES (Dzwonkowska, Lachowicz-Tabaczek, & Łaguna, 2008), which was employed in the present study, uses a four-point response format ranging from 1 (*strongly agree*) to 4 (*strongly disagree*). Global self-esteem is a one-dimensional construct which refers to a general positive versus negative attitude towards the self, with no reference to specific quality or attributes. It is assumed to be relatively enduring in time and situations (Brown et al., 2001). The unidimensionality of the scale for the present sample was confirmed. The tested model was the exact replication of a CFA model claimed to prove the unidimensionality of SES for the Polish adaptation sample (Dzwonkowska, Lachowicz-Tabaczek, & Łaguna, 2008, pp. 40–47, model 7). The present sample data fitted the model well ( $X^2/df = 1.24$ ; CFI = .99; RMSEA = .04) and the reliability was  $\alpha = .89$ , 95% CI [.87, .92].

### Results

The study sought out personality predictors of the trait, expression and control of anger. First, I attempted to replicate previous findings concerning the role of FFM personality traits with neuroticism and agreeableness being the hypothesised most important predictors of anger (hypothesis 1). Second, it was postulated that including two additional variables – shyness and self-esteem – may improve the predictability of anger-related phenomena (hypotheses 2 and 3).

There were two missing values in the data set (both for STAXI-2 items) and they were imputed with the sample mean. The scale cores were calculated by averaging items (instead of summing them) to facilitate the interpretation of the scale's means and standard deviations by referencing to the original response format. The total of 12 variables was included in the study, for which the descriptive statistics and intercorrelations are presented in Table 1. The outcome (dependent) variables were five different aspects of anger, i.e. trait anger, anger expression-out, anger expression-in, anger control-out, and anger control-in. There were two sets of predictor variables. First, the basic predictors were the FFM personality traits (N, E, O, A, C). Second, shyness and self-esteem served as additional predictors.

A set of multiple regression analyses was conducted to verify the first hypothesis, stating that among the FFM personality traits neuroticism and agreeableness are the most important predictors of anger-related phenomena. Each of the five aspects of anger was significantly predicted by the FFM traits, with the  $R^2$  coefficient varying from .13 (anger expression-out) to .22 (anger control-in; see Table 2). As predicted, neuroticism and agreeableness were the two most important predictors, though the effects for neuroticism were less consistent than expected. The trait anger and anger control-out were significantly predicted by neuroticism with the  $\beta$  coefficients of .31 and -.33, respectively. In contrast, neuroticism was non-significant in predicting anger expression-in, and anger control-in and only marginally significant for anger expression-out. Besides neuroticism the majority of anger-related variables was significantly predicted by agreeableness, for which the  $\beta$  coefficients varied from .28 (AC-O) to .43 (AC-I). There was, however, one important exception. Agreeableness was non-significant in predicting the anger expression-in

**Table 1. Summary of Means, Standard Deviations, and Intercorrelations for the Study Variables**

	<i>M</i>	<i>SD</i>	<i>K</i>	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. N	1.7	0.7	-0.17	-											
2. E	2.4	0.6	-0.63	-.43***	-										
3. O	2.3	0.5	-0.36	-.08	.06	-									
4. A	2.5	0.6	-0.64	-.06	.16	-.02	-								
5. C	2.5	0.6	-0.02	-.27**	.12	-.02	.07	-							
6. RCBS	2.6	0.7	0.29	.68***	-.60***	-.25*	.04	-.27*	-						
7. SES	3.0	0.5	-0.08	-.71***	.49***	.10	.05	.26*	-.57***	-					
8. T-Ang	2.1	0.6	0.38	.26**	-.08	-.03	-.35***	.03	.17*	-.15	-				
9. AX-O	2.1	0.5	0.76	.09	.03	.07	-.35***	.05	-.05	.01	.68***	-			
10. AX-I	2.3	0.7	0.13	.30***	-.40***	-.16	.06	-.17*	.49***	-.33***	-.05	-.17*	-		
11. AC-O	2.7	0.6	-0.10	-.36***	.16	.08	.30***	.16	-.18*	.28*	-.50***	-.53***	.28*	-	
12. AC-I	2.7	0.6	-0.24	-.20*	.21*	.07	.46***	.13	-.16	.21*	-.42***	-.43***	.21*	.76***	-

Note. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

**Table 2. Multiple Regression Analyses Predicting State Anger (S-Ang), Trait Anger (T-Ang), Anger Expression-Out (AX-O), Anger Expression-In (AX-I), Anger Control-Out (AC-O), and Anger Control-In (AC-I) from FFM Personality Traits**

	T-Ang	AX-O	AX-I	AC-O	AC-I
Predictors	β coefficients				
Neuroticism	.31***	.16†	.12	-.33***	-.13
Extraversion	.09	.14	-.35***	-.04	.08
Openness	-.02	.07	-.13†	.06	.07
Agreeableness	-.35***	-.37***	.13	.28***	.43***
Conscientiousness	.13	.10	-.11	.05	.06
<i>R</i> <sup>2</sup>	.17***	.13***	.20***	.18***	.22***

Note. †  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

scale, for which introversion unexpectedly turned out to be a significant predictor (see Table 2).

The second and third hypotheses stated that shyness and self-esteem improve the prediction of anger-related phenomena apart from what can be predicted solely from the general FFM personality traits. To verify these hypotheses a set of hierarchical multiple regression analyses was conducted. In order to provide the most parsimonious models the predictor variables with non-significant  $\beta$  coefficients were excluded from the analyses. The FFM personality traits were introduced first. They were selected based on the previous analyses (see Table 2); only those with statistically significant  $\beta$  coefficients were entered. In the second step of the hierarchical regression analyses, shyness or self-esteem were entered as additional predictor variables. Since shyness and self-esteem are significantly correlated (see Table 1) only one of them was included in a particular analysis. Whether to enter shyness or self-esteem was decided based on the partial correlations between anger-related variables and shyness (as controlled by self-esteem) and self-esteem (as controlled by shyness; see Table 3). Note, however, that in the case of anger expression-out the partial correlations for shyness and self-esteem are both very low (see also Table 1 for zero-order correlations), thus neither shyness nor self-esteem could reasonably serve as a potential predictor variable. Consequently, the AX-O was not included at this stage of analyses; no hierarchical analysis was calculated for anger expression-out.

The results of hierarchical multiple regression analyses showed that neither shyness nor self-esteem

improves the prediction of trait anger and anger control-out (see Table 4). In the case of those two anger variables the FFM traits of neuroticism and agreeableness are the only two significant personality predictors. This is not true, however, in the case of the remaining two anger variables. The ability of predicting anger control-in is significantly better when it is based not only on agreeableness but also on self-esteem ( $\Delta R^2 = .03$ ,  $p = .016$ ; see Table 4). The most interesting results, however, can be observed in the case of anger expression-in. As it was stated earlier, AX-I is best predicted by extraversion. However, when shyness was additionally taken into account, not only the overall  $R^2$  increased ( $\Delta R^2 = .10$ ;  $p < .001$ ) but also the predictive role of extraversion markedly diminished ( $\beta$  changed from  $-.40$  to  $-.17$ ). The change in  $\beta$  coefficients suggests that mediation effect may operate here, thus additional analyses were conducted to directly test this ad hoc hypothesis.

In order to test the mediation effect of shyness on the relationship between extraversion and anger expression-in a three-step procedure was applied, as proposed by Baron and Kenny (1986). The first step confirmed a direct relationship between predictor (E) and output variable (AX-I). The regression model was well fitted,  $R^2 = .16$ ,  $F(1, 136) = 26.60$ ,  $p < .001$ , and indicated that extraversion decreases the tendency to suppress angry feelings ( $\beta = -.40$ ,  $p < .001$ ). The second step tested the relationship between extraversion and shyness. The significant regression model,  $R^2 = .36$ ,  $F(1, 136) = 74.99$ ,  $p < .001$ , indicated a negative relationship between these variables ( $\beta = -.60$ ,  $p < .001$ ).

**Table 3. Partial Correlations between Anger-Related Variables and Shyness (Controlled by Self-Esteem) and Self-Esteem (Controlled by Shyness)**

	T-Ang	AX-O	AX-I	AC-O	AC-I
Shyness (controlled by self-esteem)	.11	-.05	.39	-.03	-.05
Self-esteem (controlled by shyness)	-.07	-.02	-.06	.22	.14

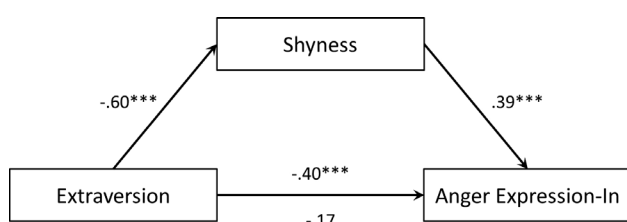
**Table 4. Hierarchical Multiple Regression Analyses Predicting State Anger (S-Ang), Trait Anger (T-Ang), Anger Expression-In (AX-I), Anger Control-Out (AC-O), and Anger Control-In (AC-I) from FFM Personality Traits, Shyness and Self-Esteem**

	T-Ang	AX-I	AC-O	AC-I
Step 1				
$\Delta R^2$	.17***	.16***	.20***	.21***
Predictors	$\beta$ coefficients			
Neuroticism	.24**	–	-.34***	–
Extraversion	–	-.40***	–	–
Agreeableness	-.33***	–	.28***	.46***
Step 2				
$\Delta R^2$	.01	.10***	.01	.03*
Predictors	$\beta$ coefficients			
Neuroticism	.20†	–	-.31**	–
Extraversion	–	-.17†	–	–
Agreeableness	-.34***	–	.28***	.45***
Shyness	.05	.39***	–	–
Self-esteem	–	–	.04	.18*
Total $R^2$	.16***	.25***	.19***	.23***

Note. †  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

Finally, when both extraversion and shyness were entered as predictor variables, the regression model was still highly significant,  $R^2 = .25$ ,  $F(2, 135) = 23.65$ ,  $p < .001$ , though the independent role of extraversion was no longer significant ( $\beta = -.17$ ,  $p = .061$ ) while shyness significantly related to the output variable ( $\beta = .39$ ,  $p < .001$ ). The full mediation effect of shyness on the relationship between extraversion and anger expression-in (see Figure 1) was confirmed with the statistically significant Sobel test ( $Z = -3.75$ ,  $p < .001$ ,  $SE = 0.07$ ).

**Figure 1. Mediation model testing the effect of shyness accounting for the relationship between anger expression-in and extraversion**



\*\*\*  $p < .001$

## Discussion

The present study sought to identify personality predictors of anger with its various aspects of experience, expression, and control. The hypotheses referred to two levels of personality variables. At the basic level of general personality traits, it was hypothesised that neuroticism and agreeableness are of most importance in predicting anger-related phenomena. Assuming, however, that the FFM traits do not cover the whole spectrum of important personality variables, it was postulated that additionally taking into account some more specific variables improves the predictability of anger. Shyness and self-esteem were hypothesised to play the role of additional predictors.

The results confirmed the hypothesised role of neuroticism and agreeableness. These two personality traits served as the chief predictors for the majority of anger variables. This is especially true in the case of trait anger, anger expression-out and anger control-out, for which neuroticism and agreeableness remained the only predictors, even after allowing shyness and self-esteem to serve as potential additional predictors. The present results indicating the prominent role of neuroticism and agreeableness in the anger-related phenomena are consistent with Costa and McCrae's (2000) description of, what they designate as, *personality styles*. They presented a set of circumplex graphs with the axes referring to interactions between two FFM traits. Each circumplex illustrates four personality styles referring to a specific area of functioning. Among the various styles (e.g., styles of well-being or styles of interests) those referring to anger control have also been described. They are defined by the interaction between neuroticism and agreeableness, resulting in the following styles: *temperamental* (N↑A↓), *timid* (N↑A↑), *cold-blooded* (N↓A↓), and *easy-going* (N↓A↑; Costa & McCrae, 2000). Hence the crucial role of neuroticism and agreeableness in determining styles of anger control is consistent with the results of the present study, indicating that these two traits are the chief predictors of trait anger and anger control-out.

There were, however, some more specific predictions regarding the FFM traits. It was hypothesised that neuroticism is the most important predictor of the experience of anger (hypothesis 1a), while agreeableness is the most important in predicting the expression and control of anger (hypothesis 1b). These detailed predictions were only partially confirmed. In line with hypothesis 1b, for the anger expression-out and anger control-in agreeableness does in fact stand as the only important predictor. This is not true, however, for the remaining two expression and control scales. The anger control-out is best predicted by the combination of agreeableness and neuroticism. What is more, for the anger expression-in agreeableness plays no role at all (neither does neuroticism), while the unexpected role of extraversion was revealed. The predictions regarding the specific role of neuroticism in the domain of the experience of anger (hypothesis 1a) were not confirmed. Although neuroticism does predict trait

anger, agreeableness turned out to be a similarly important predictor for this aspect of anger experience.

The second step of the analyses referred to a more specific level of personality variables. It was hypothesised that the predictability of anger increases when shyness (hypothesis 2) or self-esteem (hypothesis 3) are entered as additional (besides the FFM traits) predictors. In line with the second hypothesis, the overall predictability of a tendency to suppress anger (anger expression-in) is substantially higher when shyness is entered into the regression model. A similar effect can be observed in the case of anger control-in; though in this case it is self-esteem, not shyness, which serves as an important additional variable. The prediction of the remaining three scales, i.e. trait anger, anger expression-out and anger control-out, is by no means better after taking into account shyness or self-esteem.

Analysing the results, one may notice the interesting difference between the variables for which shyness or self-esteem are significant predictors and those for which they are not. The difference refers to the distinction between the *out* and the *in* aspects of the expression and control of anger. The out-aspect of both expression and control is not likely to be predicted neither by shyness nor by self-esteem. In contrast, the in-aspects seem to be determined (at least in part) by these two personality variables. The out-aspects refer to the outward behaviours, which are expressed and controlled by the individual. The in-aspects, in contrast, are to a much more degree oriented at the inner, subjective and emotional rather than behavioural experiences. Self-esteem, as well as shyness, by definition involves the inwardly directed process of experiencing one's own self. Thus, we should not be surprised that it is the in-aspect of expression and control rather than the out-aspect, which is predicted by shyness and self-esteem.

On the contrary, the tendency to express angry feelings in outwardly negative and aggressive ways (AX-O) depends mostly on general personality traits. It is characteristic for disagreeable and emotionally unstable individuals (marginally significant effect for N), and neither shyness nor self-esteem counts here. A similar effect can be observed in the case of the anger control-out scale, for which again agreeableness and neuroticism are the only predictors. Note, however, the reversed direction of the relationship between predictors and outcome variable. Emotionally stable and agreeable individuals are most strongly inclined to take actions directed towards monitoring and controlling the outward expression of anger.

Let us focus more deeply on this last issue of controlling and expressing anger. It may seem that the anger control-out and anger expression-in scales refer to very similar phenomena. One may suppose that a tendency to control the outward expression of anger (AC-O) should result in (or be strongly related to) a tendency to inhibit anger and direct it inwardly (AX-I). Indeed, the correlation between the AX-I and AC-O is statistically significant, but there is only 8% of shared variance (see Table 1). One may also suppose that the anger expression-out and anger expression-in scales are the opposite poles of one

dimension and as such should be strongly conversely related. Again, there is a significant negative correlation between the scales, but the relationship is weak (3% of shared variance). It seems then that anger expression-in is relatively independent from the remaining anger-related phenomena. Consistent with this are two other issues. First, AX-I is the only scale for which agreeableness is not a significant predictor. Instead, extraversion turned out to play an important role, which again is unique for this scale. The tendency to suppress anger (i.e. express it inwardly) is characteristic for introverted individuals. What is more, the mediation effect of shyness was observed for the relation between AX-I and extraversion.

In summary, anger expression-in, similarly to anger control-out and anger control-in, refers to strategies people use when they want to control their inner experience of anger. There is, however, a substantial difference between anger expression-in and both aspects of anger control (AC-O and AC-I). The latter seem to represent more adaptive ways of dealing with anger, while the former refers to defensive suppression. The differences are evident not only on the level of definitions of these three constructs (Spielberger, 1999), but they are also consistent with previous results, showing that anger expression-in correlates positively with anxiety and depression, while both anger control-out and anger control-in correlate with anxiety and depression negatively (Bak, 2016).

It is also consistent with the literature dealing with the issue of self-regulation of anger as well as with the broader issue of emotion regulation. Alcázar-Olán, Deffenbacher, Guzmán, and Cárdenas (2015) found that high trait anger individuals, who do not identify anger as a personal problem, compared to those high in trait anger, who do regard anger as a personal concern, are more inclined to suppress anger and less effective in controlling anger and aggression. Berkowitz (2012), within the context of his cognitive-neoassociation conception of the relation between anger and aggression, points that cognitive reappraisal combined with relaxation is effective in reducing the aggressive expression of anger. In contrast, the inhibition of anger may paradoxically backfire in the prolonged experience of hostile emotions and stronger susceptibility to anger-related stimuli. Similarly, Gross and John (2003) found that suppressing emotions relates to both experience and expression of less positive and more negative emotions, worse interpersonal functioning and worse well-being.

The present study adds to the understanding of the personality predictors of different anger-related phenomena. It confirms the prominent role of agreeableness and neuroticism, as well as points at extraversion, shyness and self-esteem as being important for at least some variables. Still a substantial part of variation remains unexplained. Besides personality traits there are other determinants of hostile tendencies, such as one's own developmental history, gender, age, sociocultural factors as well as more transient, situational conditions (Barefoot & Boyle, 2009). Thus, further studies are needed to sketch the full picture of variables that predict various anger-related phenomena.



There are also important limitations of the presented study. It was conducted on student sample, thus the results should not be directly generalised for the broader population. Another concern is that all variables were measured with self-report questionnaires. Undoubtedly further replication studies are needed to check whether the effects remain stable if we go beyond self-report. This seems particularly relevant to the measurement of anger-related variables. Note however, that the self-report STAXI-2, which was used in the present study, had been extensively validated not only with other self-report measures but also with objective indicators of anger, such as type A behaviour pattern, blood pressure, or cardiovascular reactivity (for a review see Spielberger, 1999).

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