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The Relationship between Personality and Creative Self-Beliefs at Different Levels of Personality Hierarchy

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Abstract

In recent decades, research has shown that one set of individual factors contributing to creative self-beliefs are personality traits, with openness showing the strongest relationship. However, these associations have been studied at higher levels of the personality hierarchy and mostly in non-musician samples. The aim of this study was to examine the relationship between personality (measured at factor and facet levels) and two types of creative self-beliefs, trait-like creative self-efficacy (tCSE) and creative personal identity (CPI), in a sample of a cappella singers. A total of 128 individuals (64% women) participated in the study. Participants were members of 18 conveniently sampled traditional Croatian a cappella groups. Personality factors and facets were measured with the BFI-2 questionnaire (Soto & John, 2017), while creative self-beliefs were measured with the Short Scale of Creative Self (Karwowski et al., 2018). At the factor level, openness had the highest correlation with both tCSE and CPI. At the facet level, the highest correlations with tCSE were found for creative imagination, an openness facet, and energy level, an extraversion facet, while with CPI for all openness facets, creative imagination, aesthetic sensitivity and intellectual curiosity. In linear regression analyses, the only significant predictors of CPI were openness at the factor level and creative imagination at the facet level. Significant predictors of tCSE were openness and neuroticism at the factor level and creative imagination and sociability at the facet level. Personality facets explained more variance in both types of creative self-beliefs than factors.

Keywords: creative personal identity, creative self-efficacy, personality facets, personality factors, singers

Introduction

Creativity has been named as one of the key skills for the 21st century which has led to research of new concepts in the creativity literature. One of those relatively new concepts that have become increasingly important are creative self-beliefs.

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Often characterized as constructs situated between traits and states, creative self-beliefs refer to an individual's views on the nature of creativity, and their convictions about their own creative abilities (Karwowski & Barbot, 2016). Such a perspective sets the stage for a hierarchical conceptual framework, whereby creative self-beliefs themselves are a higher-order construct that encompasses a multitude of lower-order components of self-concept. These can be divided into three broad categories: creative self-awareness, creative confidence, and creative self-image, which can all be further divided into specific types (Karwowski et al., 2019).

Creative self-awareness includes creative mindset (CM), which refers to a person's implicit theories about the nature of creativity, and creative metacognition (CMC), which refers to one's self-knowledge about one's creative strengths and weaknesses and contextual knowledge about why, when, and how to be creative (Karwowski et al., 2019). Creative confidence beliefs include creative self-efficacy (CSE) and creative self-concept, i.e., a trait-like creative self-efficacy (tCSE). CSE is an extension of the more general construct of self-efficacy proposed by Bandura (1982) and can be defined as a personal confidence that one can overcome challenges that require creative thinking and action. Compared to self-assessed creativity, which represents people's definition of themselves as more or less creative, CSE is a dynamic and probabilistic construct representing a person's "assessment of 'chances for success' in creative outlets" (Karwowski & Barbot, 2016, p. 304). CSE beliefs are prospective, i.e., they refer to judgments of personal ability to creatively perform an upcoming task, and specific, i.e., focused on specific tasks and situational features. On the other hand, tCSE is a more global and stable construct. It is retrospective and based on aggregate judgments of past performance over time (Beghetto & Karwowski, 2017; Karwowski et al., 2019). Because of the way they have been conceptualized and measured in previous studies, the line between these two constructs is often unclear (for a detailed discussion, see Beghetto & Karwowski, 2017). Creative self-image, i.e., creative personal identity (CPI), refers to a person's belief that creativity is an important element of the self (Jaussi et al., 2007) and represents a stable identity construct. CSE and CPI are conceptually distinct constructs, but previous studies have shown that they are related. For example, Jaussi et al. (2007) found a correlation between the two concepts of .46 and Karwowski et al. (2018) found a correlation of .69. In addition, some longitudinal studies (e.g., Karwowski, 2016) have indicated that the relationship between these two constructs is complex and reciprocal. However, there is some evidence that, at least in younger individuals, CSE may have a stronger effect on CPI than vice versa.

Most research on predictors of creative self-beliefs focused on social variables such as leadership (Beghetto et al., 2011), school or class climate (Beghetto, 2006), peers (Karwowski, 2015), and socioeconomic status (Karwowski, 2011). This comes as no surprise, because according to socio-cognitive theory (Bandura, 1997), they are the main influence on self-efficacy, along with mastery and physiological experiences. However, an accumulating body of research, whose hypotheses are

derived mostly from the Big Five model of personality (Costa & McCrae, 1995; McCrae & Costa, 1997; Soto & John, 2017), suggests that personality is also worth taking into consideration when examining predictors of creative self-beliefs. The question of whether the relationship between various creative self-beliefs and personality traits is correlational or causational is difficult to answer empirically. However, since the Big Five personality traits are generally deemed intra-individually stable and strongly biologically determined (DeYoung, 2010; DeYoung et al., 2010), and because self-beliefs are, according to socio-cognitive theory (Bandura, 1997), relatively more amenable to environmental influences during development, it is generally assumed that the former "hardcore" traits are causes, and that the latter "surface characteristics" are their outcomes (Asendorpf & Van Aken, 2003; Kandler et al., 2014; Karwowski et al., 2013). A reciprocal relationship between personality and more surface characteristics does seem intuitive and has in fact been hypothesized (Marsh et al., 2006), but reasons to expect that it is personality that influences self-beliefs prevail (Asendorpf & Van Aken, 2003).

That said, until the preceding decade, direct empirical tests of the relationship between personality and creative self-beliefs were scarce. Since then, accrued evidence points to openness as the most prominent domain related to creative self-beliefs. For example, in one of the first studies, Karwowski et al. (2013) found that all five personality factors were related to CSE and CPI, but the strongest relationship was found for openness. Karwowski and Lebuda (2016) identified 25 independent investigations into the effect of personality on creative self-beliefs, and they performed a meta-analysis revealing openness to consistently be the strongest predictor of creative self-beliefs (r = .47), followed by extraversion (r = .26), conscientiousness (r = .13), neuroticism (r = -.12), and agreeableness (r = .07). In addition, the strength of these relationships was moderated by the type of creative self-belief, with stronger associations found for domain-general than for domain-specific measures of creative self-beliefs.

The Big Five model of personality posits a hierarchical structure consisting of five personality domains, with each domain subsuming several specific lower-level traits called facets (Costa & McCrae, 1995; Soto & John, 2017). The common elements these lower-level traits share, manifest in their empirically established correlations, are in fact what defines a particular domain or "factor" of personality. Furthermore, DeYoung and his colleagues extended this logic to expand the hierarchy by introducing an intermediate level between the domain and facet levels consisting of two maximally independent "aspects" for each domain (DeYoung et al., 2007), and a level above the one comprised of domains, consisting of two meta-traits – "plasticity" and "stability": the so-called "huge two" (DeYoung, 2006). Constructs at different levels of the hierarchy are characterized by a differing degree of conceptual breadth, with meta-traits having the highest bandwidth and lowest fidelity, while scaling down the hierarchy successively increases the fidelity and reduces the bandwidth of constructs found at a given level (Soto & John, 2017). High

bandwidth can provide an efficient summary of a large amount of information and concise prediction of a wide array of criteria (Ozer & Benet-Martinez, 2006), whereas high fidelity offers greater precision and accuracy in describing and predicting behaviour (e.g., Anglim & O'Connor, 2019; Paunonen & Ashton, 2001). Personality researchers are thus faced with a bandwidth-fidelity tradeoff when deciding on which level they will focus their efforts.

We mentioned above that Karwowski and Lebuda (2016) found that, when it comes to predicting creative self-beliefs with personality variables, a significant moderating variable is the generality of the construct under scrutiny. From a wider perspective, both creative confidence and creative self-image as well as their specific types can be regarded as narrower constructs derived from their conceptually wider origins: self-efficacy and self-image. It stands to reason that if one focuses on more specific components of these self-beliefs, namely *creative* self-beliefs, the narrower personality facets may prove more predictive than their higher-level and broader counterparts. As Paunonen and Ashton (2001) point out, the specificity of each facet that is independent of its corresponding factor may contain "healthy" variance, which could in turn be used to significantly improve the prediction of a criterion over and above that which the factor provides. In short, facets may have substantial incremental value over factors. Sure enough, research has indeed shown that, compared to the broad Big Five, narrow traits provide enhanced predictive validity, with a modest but significant increment over what the factors provide (e.g., Anglim & Grant, 2014, 2016), especially when the criterion is a narrower outcome variable (Dudley et al., 2006).

In the field of creativity research, the narrower personality constructs subsumed by their common, upper-level constructs were thus far found to be differentially related to creativity. For example, two studies using the Big Five Aspects Scale (BFAS), which measures, among others, two personality aspects – intellect and openness, showed that openness is more strongly related to creativity measures than intellect (Dumas et al., 2020; Jauk et al., 2019). Furthermore, several studies examining the relationship between creativity on the one hand, and aspects and facets of openness on the other, revealed a meaningful distinction between creativity in the arts and the one in the sciences, with intellect predicting creative achievement in the sciences, while openness predicting creative achievement in the arts (Kaufman et al., 2016; Perrine & Brodersen, 2005).

Notwithstanding the reasoning above, research into the predictive value of personality with regard to creative self-beliefs has thus far focused mainly on the domain level of the personality hierarchy, prompting Karwowski and Lebuda (2016) to call for an increase in attention to personality constructs with higher fidelity in studies examining the relationship between personality and creative self-beliefs. Therefore, this study's primary aim is to clarify the contribution of specific personality facets in predicting creative self-beliefs, namely trait-like creative self-efficacy and creative personal identity, in a sample of a cappella singers. Two meta-

analyses have thus far found that openness is the most important personality trait for an artist (Barrick et al., 2003; Hurtado Rúa et al., 2019). In line with that, we hypothesized that openness and its facets would have the strongest associations with both types of creative self-beliefs, but significant associations with other factors and facets were also expected. In addition, we hypothesized that the facet level of personality would explain more variance in creative self-beliefs than the factor level.

Method

Participants

Participants were members of 18 conveniently sampled traditional Croatian a cappella singing groups (cro. *klapa*), six of which were all-male groups, whereas the rest were only female groups. In total, 128 subjects (64% female) took part in the study. Their age varied from 19 to 74 years (M = 37.93, SD = 10.08, Md = 38.00), and they had been singing for 20 years on average (M = 20.10, SD = 11.33, Md = 20.00), and 7–8 years in a cappella groups (M = 8.05, SD = 6.29, Md = 7.00). Participants were highly educated (60% had at least an MA degree), but 40% indicated that they were self-taught in music.

Materials and Procedures

The data were collected during the groups' regular rehearsal hours, during a traditional a cappella festival, and during a seminar on traditional *klapa* singing that some groups attended. Each participant was given a pen-and-paper questionnaire containing written instructions, the Big Five Inventory-2 (BFI-2; Soto & John, 2017), the Short Scale of Creative Self (SSCS; Karwowski et al., 2018), and several demographic questions. The two measurement instruments and variables extracted from each are described below.

The Big Five Inventory-2

We measured the Big Five personality traits using the Big Five Inventory-2 (BFI-2; Soto & John, 2017). The version used here was an existing translation. The instrument consists of 60 items, with 12 items measuring each of the Big Five personality factors: Extraversion (e.g., *"I am someone who is outgoing, sociable."*), Agreeableness (e.g., *"I am someone who has a forgiving nature."*), Conscientiousness (e.g., *"I am someone who is dependable, steady."*), Negative Emotionality (e.g., *"I am someone who worries a lot."*) and Open-Mindedness (e.g., *"I am someone who is original, comes up with new ideas."*). The BFI-2 also measures 15 facet traits nested within the Big Five factors: Sociability, Assertiveness, and Energy Level nested within Extraversion; Compassion, Respectfulness, and

Trust nested within Agreeableness; Organization, Productiveness, and Responsibility nested within Conscientiousness; Anxiety, Depression, and Emotional Volatility nested within Negative Emotionality; and Intellectual Curiosity, Aesthetic Sensitivity, and Creative Imagination nested within Open-Mindedness.

Participants were asked to rate on a 5-point Likert-type scale (1 = *strongly disagree*, 5 = *strongly agree*) the extent to which a series of characteristics applied to them. Negative items were reverse coded, and scale scores for each of the five domain scales were computed as the mean of twelve items associated with each factor. Subscale scores for each of the fifteen facet scales were computed as the mean of four items associated with each facet. Previous validation studies have shown that the BFI-2 is a reliable and valid personality measure (e.g. see, Soto & John, 2017). In the present study, the internal consistency coefficient calculated as Cronbach's alpha ranged between .78 and .89 for the factor subscales, and between .55 and .79 for the facet subscales. However, relevant methodological sources increasingly point out that Cronbach's alpha makes strict assumptions that often even purportedly unidimensional scales do not in fact satisfy (e.g., *essential tau equivalence*, i.e., equal factor loadings for all items of the scale; Hayes & Coutts, 2020; McNeish, 2018). Hence, it is suggested that researchers rather report McDonald's omega as a more suitable measure of reliability (McDonald, 1999).

Therefore, to gain a deeper insight into the scales' and subscales' reliability, we fit five theoretically plausible second-order ordinal CFA models to the corresponding domain data using robust unweighted least squares (ULSM) estimation (Forero et al., 2009; Li, 2016; Shi et al., 2018) to compute omega hierarchical (ω_h) coefficients (McNeish, 2018; Zinbarg et al., 2005). The robust fit indicators for the five models were as follows: (1) Open-mindedness: $\chi^2(51) = 56.48$, $p = .278$; CFI = .99; TLI = 1.0; RMSEA = .023; SRMR = .061; (2) Conscientiousness: $\chi^2(51) = 75.50$, $p = .014$; CFI = .99; TLI = 1.0; RMSEA = .044; SRMR = .066; (3) Extraversion: $\chi^2(51) = 76.24$, $p = .013$; CFI = .98; TLI = 1.0; RMSEA = .047; SRMR = .061; (4) Agreeableness: $\chi^2(51) = 55.04$, $p = .324$; CFI = .99; TLI = 1.0; RMSEA = .017; SRMR = .057; (5) Negative emotionality: $\chi^2(51) = 77.83$, $p = .009$; CFI = .976; TLI = 1.0; RMSEA = .055; SRMR = .066. Recent analyses (e.g., Sass et al., 2014; Xia & Yang, 2019) seem to cast doubt on the applicability of these typically reported measures of model-data fit to ordinal data, but the standard cut-off values provided by Hu & Bentler (1999) seem to point to a satisfactory goodness-of-fit of the models.

In the case of domains, ω_h represents the proportion of variance of a composite score calculated from the observed indicators that is attributable to the second-order factor. For facet subscales, ω_h represents the proportion of observed variability in their composite score that is attributable to the first-order factor. The various scales yielded adequate reliability coefficients: Open-Mindedness .69 (facets: .58–.70); Conscientiousness .86 (facets: .71–.78); Extraversion .71 (facets: .57–.79); Agreeableness .82 (facets: .62–.73); Negative Emotionality .77 (facets: .57–.75).

The Short Scale of Creative Self

The Short Scale of Creative Self (SSCS; Karwowski et al., 2018) was used to measure creative self-beliefs. The scale is intended to measure two types of creative self-beliefs, namely trait-like creative self-efficacy (tCSE) and creative personal identity (CPI). Although they are often studied together, the tCSE and CPI subscales can be used as standalone scales (Karwowski, 2012, 2014; Karwowski et al., 2018). The tCSE subscale consists of six items (e.g., *„I know I can efficiently solve even complicated problems.“*) and the CPI subscale consists of five items (e.g., *„My creativity is important for who I am.“*). Participants rated to what extent each provided statement describes them on a 5-point Likert-type scale (1 = *definitely not*, 5 = *definitely yes*). Subscale scores for each of the two dimensions were computed as the mean of items associated with each dimension. Previous studies have shown that the scale has good internal consistency, high test-retest reliability, and good criterion and discriminant validities (e.g. see, Karwowski et al., 2018). The internal consistency of both subscales in the present study was high: $\alpha = .85$ for the tCSE subscale, and $\alpha = .92$ for the CPI subscale. We also computed omega total coefficients as alternative and possibly more adequate indicators of reliability (McNeish, 2018). These were, however, practically equivalent to the alpha coefficients: .84 and .92 for the tCSE and CPI subscales respectively.

Missing Data Treatment

The total proportion of missing values in our entire dataset was less than 2%. Little's *MCAR* test indicated an MCAR pattern of missingness ($\chi^2 = 3416.02$, $df = 3318$, $p = .115$). Although this can ameliorate the biases induced by listwise/pairwise deletion, we wanted to use all the data at our disposal to preserve power. Therefore, we opted for multiple imputation (MI) to handle the missing data and decided to impute the missing values at the item level. We sought to include as many auxiliary variables as possible to aid the imputation procedure, as is generally recommended in the literature (e.g., Bartlett et al., 2015; Murray, 2018; White et al., 2011).

Since most of our variables were ordinal in nature, all distributions in our dataset deviated from the normal (all Shapiro-Wilk tests were statistically significant). In addition, some variables had skewness and kurtosis statistics that were outside the recommended range between -2 and +2 (George & Mallery, 2016). Thus, we considered the more flexible fully conditional specification (FCS) approach to be more advantageous for our situation than a joint modelling (JM) approach, as it does not assume multivariate normality, and provides methods which preserve unique features in the data (Van Buuren, 2018; Van Buuren et al., 2006).

Kropko et al. (2014) found that FCS with predictive mean matching (PMM) outperforms JM for every metric and variable type. Therefore, we decided to use PMM, which produces values constrained to the same set as the observed ones, making them much more realistic. We used the R language (R Core Team, 2022) and

the *mice* package (Van Buuren & Groothuis-Oudshoorn, 2011) to conduct MI using *weighted* PMM. Since we are dealing with a rather low average rate of missing data (≈ 1.4%), we chose to impute $m = 5$ complete datasets. Unless otherwise stated, all reported estimates were obtained as pooled values from the five generated datasets.

Results

In this study, we set out to elucidate the relationship between personality and a selection of creative self-beliefs (tCSE and CPI) using a sample of a cappella singers. We did this by running correlational and linear regression analyses using in turn personality factors and facets as predictors. Table 1 presents descriptive statistics for all variables examined, while Tables 2 and 3 show bivariate correlations and standardized regression coefficients from regression analyses for factors and their facets, respectively, obtained by pooling estimates from five imputed datasets. Since we conducted multiple significance tests, we adjusted the cutoff *p*-value with the Bonferonni correction, resulting in a *p*-value of .003.

Table 1

Mean Values, Standard Deviations, and Omega Hierarchical Reliability Coefficients for all Variables Studied, Obtained as Estimates from Five Pooled Datasets (N = 128)

	Variable	*M*	*SD*	ω
Personality factors	Open-mindedness	4.03	0.52	.69
	Conscientiousness	3.79	0.72	.86
	Extraversion	3.76	0.57	.71
	Agreeableness	4.08	0.55	.82
	Negative emotionality	2.66	0.60	.77
Personality facets	Intellectual curiosity (O1)	3.75	0.70	.58
	Aesthetic sensitivity (O2)	4.20	0.66	.66
	Creative imagination (O3)	4.14	0.60	.70
	Organization (C1)	3.94	0.82	.78
	Productiveness (C2)	3.79	0.83	.78
	Responsibility (C3)	3.61	0.80	.71
	Sociability (E1)	3.88	0.79	.75
	Assertiveness (E2)	3.36	0.69	.57
	Energy level (E3)	4.05	0.70	.79
	Compassion (A1)	4.16	0.63	.62
	Respectfulness (A2)	4.18	0.66	.73
	Trust (A3)	3.91	0.64	.65
	Anxiety (NE1)	3.17	0.74	.57
	Depression (NE2)	2.05	0.73	.75
	Emotional volatility (NE3)	2.75	0.73	.61
Creative self-beliefs	tCSE	4.18	0.66	.84
	CPI	4.11	0.78	.92

Note. tCSE - trait-like creative self-efficacy; CPI - creative personal identity.

Table 2

Bivariate Correlations and Standardized Betas from Regression Analysis with Personality Factors as Predictors, Obtained as Estimates from Five Pooled Datasets

	tCSE		CPI	
	r	β	*r*	β
Open-mindedness	**.54***	**.40***	**.67***	**.63***
Conscientiousness	**.37***	.18	.24	.10
Extraversion	**.42***	.06	**.34***	-.02
Agreeableness	**.44***	.09	**.35***	.08
Negative emotionality	**-.38***	**-.23***	-.13	.02
	Adj. R^2 = **.41***		Adj. R^2 = **.44***	

Note. tCSE - trait-like creative self-efficacy; CPI - creative personal identity; *r* - Pearson correlation; β - standardized regression coefficient; Adj. R^2 - adjusted coefficient of determination.
* and in bold $p \leq .003$.

Table 3

Bivariate Correlations and Standardized Betas from Regression Analysis with Personality Facets as Predictors, Obtained as Estimates from Five Pooled Datasets

	tCSE		CPI	
	r	β	*r*	β
Intellectual curiosity (O1)	**.36***	.08	**.46***	.11
Aesthetic sensitivity (O2)	**.28***	-.09	**.47***	.14
Creative imagination (O3)	**.65***	**.42***	**.67***	**.52***
Organization (C1)	.22	-.04	.12	-.04
Productiveness (C2)	**.42***	.20	**.33***	.28
Responsibility (C3)	**.33***	.03	.19	-.13
Sociability (E1)	.13	**-.36***	.12	**-.24***
Assertiveness (E2)	**.35***	.15	**.28***	.05
Energy level (E3)	**.52***	.20	**.43***	.06
Compassion (A1)	**.39***	.02	**.38***	.06
Respectfulness (A2)	**.32***	-.02	.19	-.05
Trust (A3)	**.43***	.20	**.34***	.11
Anxiety (NE1)	**-.27***	-.10	-.01	.04
Depression (NE2)	**-.43***	-.06	-.22	.11
Emotional volatility (NE3)	**-.25***	-.04	-.09	-.06
	Adj. R^2 = **.57***		Adj. R^2 = **.52***	

Note. tCSE - trait-like creative self-efficacy; CPI - creative personal identity; *r* - Pearson correlation; β - standardized regression coefficient; Adj. R^2 - adjusted coefficient of determination.
* and in bold $p \leq .003$.

As shown in Table 1, our participants scored high on both creative self-beliefs (M_{tCSE} = 4.18, *SD* = 0.66; M_{CPI} = 4.11, *SD* = 0.78). Among the personality traits, the highest mean scores were obtained for open-mindedness scale, more specifically for the facets of aesthetic sensitivity and creative imagination, and for agreeableness, i.e. for the facets of compassion and respectfulness. In line with our hypotheses, both openness as a factor and its facets measured with open-mindedness scale showed a positive and the strongest relationship with the two selected creative self-beliefs

across all analyses. Considering the factor level of analysis, at the bivariate level, all personality factors were significantly correlated with tCSE, but in the regression analysis, apart from open-mindedness, only negative emotionality was found to be significantly and negatively associated with tCSE. Besides open-mindedness on a bivariate level, CPI was also significantly correlated with extraversion and agreeableness, but these variables' betas proved statistically insignificant in the regression analysis. Regarding personality facets, at the bivariate level only Organization (C1) and Sociability (E1) were not correlated with tCSE. All open-mindedness facets, as well as Productiveness (C2), Assertiveness (E2), Energy level (E3), Compassion (A1) and Trust (A3) were significantly correlated with CPI. However, in regression analyses for both CPI and tCSE, only the coefficients for Creative imagination (O3) and Sociability (E1) reached statistical significance. While the Creative imagination (O3) facet had the highest bivariate associations with creative self-beliefs, Sociability (E1) was not correlated on a bivariate level with either, and in both regression analyses it had significant negative betas indicating a suppressor effect. A significant and approximately equal amount of variance of both types of creative self-beliefs was explained in all analyses, and personality facets explained more variance than personality factors for both CPI (52% vs. 44%) and tCSE (57% vs. 41%). We assessed the significance of the incremental variance explained by facets over factors with a double-adjusted-R^2 bootstrap procedure implemented in the *personality facets* package (Anglim & Grant, 2014). 40,000 non-parametric bootstrap samples were drawn from each of the five imputed datasets, and for each sample, a difference was calculated between the double-adjusted-R^2 obtained by using facets and factors as predictors. For tCSE, none of the 95% confidence intervals obtained with the recommended percentile method contained zero, and for CPI only one confidence interval did. We take this as convincing evidence in favour of the hypothesis that facets provide a substantial increase in the amount of variance explained over factors for both types of creative self-beliefs.

Discussion

In recent decades, research has suggested that one set of individual factors that contribute to creative self-beliefs are personality traits. A meta-analysis conducted by Karwowski and Lebuda (2016) showed that the Big Five and Huge Two personality traits are associated with creative self-beliefs. To our knowledge, the relationship between personality and creative self-beliefs has not yet been studied at the lower levels of the personality hierarchy, i.e. at the facet and aspect levels. To add to the literature, we examined this relationship at both factor and facet levels.

Consistent with previous findings (e.g., Karwowski & Lebuda, 2016; Karwowski et al., 2013), openness as a factor and openness facets were significant and the most important predictors of both types of creative self-beliefs, confirming our hypothesis. In other words, participants with higher openness also believe that

creativity is important to their identity and that they can be creative. More specifically, the facet of creative imagination that reflects one's focus on creativity and originality proved to be the most important predictor of both tCSE and CPI. At the bivariate level, creative imagination shares 42% of variance with tCSE and 45% with CPI, indicating that this personality facet could be a good personality proxy for a person's creative self-beliefs. Based on previous findings, we also expected significant relationships between creative self-beliefs and other personality factors and facets. For example, Karwowski et al. (2013) reported significant relationships between tCSE and CPI with all five personality dimensions. The results of their study showed that both types of creative self-beliefs were positively related to openness, extraversion and conscientiousness and negatively related to neuroticism and agreeableness, although they observed some gender differences. In the present study, we found significant (all $p < .003$) bivariate correlations between all personality factors and tCSE. All factors correlated positively with tCSE, except negative emotionality. However, taking into account the correlations between personality factors, only negative emotionality remained a significant predictor of tCSE in the regression analysis, along with openness, suggesting that participants with lower negative emotionality believe they can be creative. As for CPI, three bivariate correlations were statistically significant at the $p < .003$ level. In addition to openness, we found significant positive correlations between extraversion and agreeableness. In the regression analysis, however, only openness retained its statistical significance.

Furthermore, because narrow traits are better predictors, especially of narrow outcomes (Anglim & O'Connor, 2019), we hypothesized that the facet level of personality would predict more variance in creative self-beliefs than the factor level. An approximately equal proportion of the variance in both types of creative self-beliefs was explained by personality factors and facets. Factors explained 41% and 44% of the variance and facets explained 57% and 52% of the variance in tCSE and CPI, respectively. Consistent with our hypothesis, personality facets explained significantly more variance than personality factors. There are a few studies that have examined the relationship between creativity and personality at both the factor and facet levels. For example, Batey et al. (2010) found that aesthetics, actions and ideas, three openness facets, competence and deliberation, two conscientiousness facets, and angry hostility and vulnerability, two neuroticism facets, predicted more variance in ideational behaviour than personality factors, intelligence and gender combined. In a study by Krumm et al. (2018), the personality facets were found to explain more variance in children's creativity, as measured by self-evaluations, parent ratings and objective tests, than the personality factors. All these findings, as well as ours, indicate that personality facets should be included routinely in studies when authors want to predict narrow outcomes.

In addition to examining this association only on a factor level, most previous studies examined the relationship between personality and creative self-beliefs in non-musician samples. In this study, we examined this relationship in a specific

sample of traditional a cappella singers, representing a sample of musicians. Consistent with previous findings, we found relatively high scores for openness and agreeableness among our participants. For example, Torrance (2017) found that singers scored higher than non-musicians on extraversion and openness/intellect, and Sandgren (2019) found that singers scored higher than psychology students on extraversion, agreeableness, and openness. In addition, studies that compared the personality of musicians with other professions or the general population have found higher levels of openness in musicians (e.g., Butkovic & Rancic Dopudj, 2017; Vaag et al., 2018). Mean scores for tCSE and CPI also indicate high levels of both types of creative self-beliefs in our sample of a cappella singers. Despite the restricted range of these scores, our results suggest that the associations between personality and creative self-beliefs are similar when examined in student samples (e.g., Fino & Sun, 2022), samples from the general population (e.g., Karwowski et al., 2013), and in a sample of musicians like in our study, at least at the factor level. Future studies are needed to examine if similar findings about the associations between creative self-beliefs and personality in diverse samples are obtained when personality is measured at the facet level.

Finally, there are some limitations of the study that should be addressed. Although we included a sample of musicians in our study, which is an important contribution, they are not representative of all musicians. Therefore, it is important that these associations be examined in more heterogeneous samples of musicians. Measuring both personality factors and facets requires longer personality questionnaires. Using medium-length questionnaires like the one we used in this study means that the facets are measured with just a few items (four items each, in our case). This, of course, influences the obtained reliability indices, which were lower for some of the facets, and that could have limited our findings. Creative self-beliefs are a higher-order construct that encompasses a multitude of lower-order components of self-concept, and we only measured two constructs in this study: trait-like self-efficacy or creative self-concept and creative personal identity or creative self-image. Compared to other types of creative self-beliefs, these two constructs are more general, stable and based on retrospective judgments. Since it could be expected, as shown in the meta-analysis conducted by Karwowski and Lebuda (2016), that different creative self-beliefs have different patterns of associations with personality, future studies should examine the associations between personality facets and other creative self-beliefs' constructs.

In conclusion, our study adds to the literature on the relationship between personality and creative self-beliefs by examining the relationship at the facet level of the personality hierarchy and in a specific sample of traditional a cappella singers. Our results support previous conclusions that openness is the most important personality trait in explaining creative self-beliefs. Furthermore, our results showed that personality facets, as narrower traits, explain a greater proportion of the variance in creative self-beliefs, with creative imagination being the most important predictor.

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