

## Introduction

Spirituality and religiosity are constructs that have gained increasing interest in psychological and psychiatric research during recent years. This is due predominantly to the prevailing view that they impact positively on both mental and physical health, and the ability to cope effectively with stressors (e.g., Costanzo, Ryff, & Singer, 2009; Dew et al., 2010; Koenig, 2010; 2012). Such an interpretation is somewhat undermined by several recent studies, however; King et al. (2013), for instance, provide evidence that spirituality without a religious framework constitutes a risk factor for mental disorders, such as neurotic disorder or major depression (Leurent et al., 2013; see also Koenig, 2009; Koenig, King & Carson, 2012). Similarly, Unterrainer, Huber, Sorgo, Collicutt, and Fink (2011) identified both health-promoting and pathogenic aspects of spirituality in relation to well-being and personality. Finally, recent studies have failed to observe a significant relationship between spirituality, health, and life satisfaction in a UK undergraduate sample (Anand, Jones, & Gill, 2015) or a more general population from US (Lindeman, Blomqvist, & Takada, 2012). Given the salutogenic effects reported elsewhere, identifying the cause of these inconsistencies seems a particularly worthwhile endeavour.

Conflicting findings possibly reflect conceptual issues endemic to this research domain, with diverse definitions of spirituality as a scientific construct (e.g., MacDonald, 2009) resulting in a broad range of measurement instruments. Furthermore, while there is general agreement on the multidimensional nature of spirituality (Oman, 2013), the number and characteristics of its primary dimensions remains a subject of ongoing debate. This is of particular concern given that some dimensions express differential (and even opposing) associations with health and well-being (MacDonald & Friedman, 2002; MacDonald, 2009). On the other hand, discrepant research findings might reflect the complexity of the relationship between religion/spirituality

and health (Koenig, King, & Carson, 2012), with many potentially intervening factors (e.g., cultural background; see King et al., 2013; Leurent et al., 2013). In this light, individual differences in personality may go some way towards reconciling recent inconsistencies by elucidating the mechanisms through which spirituality influences well-being in general (Löckenhoff, Ironson, O'Cleirigh, & Costa, 2009; Schuurmans-Stekhoven, 2010) and existential well-being in particular (but see Lindeman et al., 2012).

To date, research into personality and spirituality has been restricted to a variable-centred approach (see Johnstone et al., 2012; Labbé & Fobes, 2010; Robbins, Francis, McIlroy, Clarke, & Pritchard, 2010; Saroglou, 2010); studies have examined the relative contribution of discrete personality traits as predictor variables on behavioural outcomes across entire *samples*. This traditional approach has shown that both spirituality and religiosity are associated positively with some traits (i.e. Agreeableness, Extraversion, and Conscientiousness; Henningsgaard & Arnau, 2008; MacDonald, 2000a; Saroglou, 2002; 2010) and negatively with others (Neuroticism; Saroglou, 2002). These data provide limited insight into the dynamic organisation of psychological systems that underlies an individual's personality, however (Block, 2010; Cervone, 2005; Epstein, 2010; Kuhl & Kazén, 2006); no inferences can be drawn about the patterns of functional system interactions that might bring about differences between *individuals* vis-à-vis spirituality. For this reason, we believe it is necessary to introduce an alternative, person-centred approach to this domain, with methods that capture sample heterogeneity. We can then investigate how specific configurations of personality styles modulate the relationship between spirituality and specific facets of well-being (e.g., existential well-being).

To achieve this we explored personality types using an alternative theoretical framework to the prevailing Five Factor model (Johnstone et al., 2012; Labbé & Fobes, 2010; Robbins et al., 2010; Saroglou, 2010). Specifically, we employed an instrument borne out of Personality System Interaction theory ([PSI]; e.g. Kuhl, 2000a; 2000b) – a framework that considers individual personality configurations (“styles”) to emerge through dynamic interplay between affective dispositions acquired early in life (i.e. sensitivity to positive and negative affect) and various cognitive systems (e.g., object recognition; see Kuhl, 2000a). From this perspective, personality styles are not fixed but individuals do show a tendency for some styles over others and vary in their capacity for flexibility. An individual’s preferred styles can therefore inform us about the way in which system interactions might drive associations between spirituality and existential well-being. Within the PSI framework, personality is conceptualised dimensionally and each dimension is expressed on a continuum ranging from personality style to personality disorder (e.g., ambitious-narcissistic, emotional-histrionic). In other words, personality disorders are defined by the same principles as non-pathological personality styles. The theory postulates that disorders emerge when preferences for certain personality styles become inflexible – that is, with little adaptation to changing environmental conditions or motivations. Importantly, the hypotheses that emerge from this model of personality have been validated empirically (e.g., Baumann & Kuhl, 2002, 2003; Kaschel & Kuhl, 2004; Kuhl & Kazén, 2006; Quirin, Bode, & Kuhl, 2011; Kazén, Kuhl, & Quirin, 2014). The instrument we used – Personality Systems and Disorders Inventory (Kuhl, 2000a; 2000b; Kuhl & Kazén, 2006) – considers functional interactions among cognitive and affective systems, allowing us to build on recent evidence for associations between cognitive processing style and spirituality/religiosity (Browne, Pennycook,

Goodwin, & McHenry, 2014; Gervais & Norenzayan, 2012; Pennycook, Cheyne, Barr, Koehler, & Fugelsang, 2014; Shenhav, Rand, & Greene, 2012).

To determine if and how profiles of personality styles differentiate with respect to spirituality dimensions and existential well-being, we adopted a data-driven statistical approach. Specifically, we investigated if and how similar configurations of personality styles for different subgroups reveal potential functional mechanisms behind these relationships. Since research suggests that spirituality is not an integral part of personality but rather a qualitatively different construct (MacDonald, 2009; Piedmont & Wilkins, 2005; Říčan & Jánošová, 2010; but see Cloninger, 1999), we expected our analyses to reveal distinct relationships between different personality profiles and both spirituality and existential well-being, with the latter variables associated differentially across different profiles (see Koenig, 2008; Lindeman et al., 2012; Schuurmans-Stekhoven, 2011). Previous personality research that has taken a person-centred approach has revealed three robust personality prototypes: Overcontrolled, Undercontrolled, and Resilient (Asendorpf, 2015; Alessandri et al., 2014; Block, 2002; Klimstra, Luyckx, Teppers, Goossens, & Fruyt, 2011; Steca, Alessandri, & Caprara, 2010). The Resilient prototype is characterised commonly by high extraversion and conscientiousness, and low neuroticism; Overcontrollers usually score high on neuroticism and low on extraversion; and Undercontrollers report low conscientiousness and agreeableness, but high extraversion (e.g., Donnellan & Robbins, 2010). Block (2002) defined Resilient individuals as dynamically resourceful and highly adaptive. On this basis we hypothesized that, should we observe personality profiles similar to these prototypes, the Resilient profile will be characterised by better existential well-being and higher spirituality relative to Overcontrollers and Undercontrollers.

## Methods

### Participants

Our sample comprised 431 students (89%) and associates (11%) of Masaryk University, Czech Republic (290 females; mean age = 23.2yrs [SD = 3.8, range = 18-48yrs]). Participants were recruited via emails and university websites. All respondents provided informed consent. Students were awarded 1 course credit for participation.

### Materials

Having provided basic demographic information (age, gender, completed education level, general religious belief without specifying any religious movement), participants completed at their own pace the Czech version of the Personality Styles and Disorders Inventory ([PSDI]; Kuhl & Kazén, 2002) – an instrument designed to measure personality styles as defined by Personality Systems Interaction theory. The PSDI consists of 140 standardised items, each rated on a 4-point scale ranging from 0 (“*Certainly no*”) to 3 (“*Certainly yes*”). The instrument measures 14 non-pathological personality styles, each represented by a continuum on which the extremes are analogous to personality disorders as defined by ICD-10 and DSM IV-TR (WHO, 1992; APA, 2000; respectively). In our sample, levels of Cronbach’s alpha for each dimension were as follows: Self-determined-Antisocial:  $\alpha = .83$ ; Cautious-Paranoid:  $\alpha = .84$ ; Independent-Schizoid:  $\alpha = .85$ ; Apprehensive-Avoidant:  $\alpha = .79$ ; Conscientious-Compulsive:  $\alpha = .80$ ; Intuitive-Schizotypal:  $\alpha = .87$ ; Optimistic-Rhapsodic:  $\alpha = .85$ ; Ambitious-Narcissistic:  $\alpha = .71$ ; Critical-Negativistic:  $\alpha = .68$ ; Loyal-Dependent:  $\alpha = .78$ ; Spontaneous-Borderline:  $\alpha = .80$ ; Emotional-Histrionic:  $\alpha = .86$ ; Calm-Depressive:  $\alpha = .81$ ; Obliging-Self-sacrificing:  $\alpha = .76$ . For

the sake of brevity and to avoid excessive abbreviations, we refer to each style according to its clinical extreme henceforth.

The construct of spirituality was defined in this study according to the multidimensional model provided by MacDonald (MacDonald, 2000a; 2000b), whereby individual components were determined on the basis of latent factors present in multiple spirituality measures available at that time. The following aspects of spirituality were revealed as representative: [1] Cognitive orientation towards spirituality (COS; a belief in the significance of spirituality in life); [2] Experiential/Phenomenological dimension (EPD; past experience of a mystical, religious, or transcendent nature); [3] Existential well-being (EWB; a sense of meaning and purpose in life, and the capability to cope with difficulties); [4] Paranormal beliefs (PAR; beliefs in existence of paranormal phenomena); [5] Religiousness (REL; beliefs and practices related to intrinsic religiosity).

To capture all these dimensions we measured spirituality with the revised version of Expression of Spirituality Inventory (ESI-R; MacDonald, 2000b; MacDonald et al., 2015). In addition to the 30 items measuring these facets of spirituality, ESI-R contains one item that reflects face validity (i.e. *“This test appears to be measuring spirituality”*) and one item associated with response bias (i.e. *“I have responded to all items honestly”*). Participants respond on a 5-point scale ranging from 0 (*“Strongly disagree”*) to 4 (*“Strongly agree”*). Importantly, this instrument has been found to be sensitive to the presence of intrinsic religiousness without being confounded by constructs from specific religious affiliations (MacDonald, 2000a), and its structural validity has been confirmed cross-culturally (MacDonald et al., 2015; Muhamad, Roodenburg, & Moore, 2014; Proyer & Laub, 2015). The instrument was translated into Czech language, the accuracy of which was verified by qualitative comparisons

with other translations (e.g. Striženec, 2004) and excellent levels of reliability observed for all dimensions (COS:  $\alpha = .92$ ; EPD:  $\alpha = .90$ ; EWB:  $\alpha = .83$ ; PAR:  $\alpha = .89$ ; REL:  $\alpha = .90$ ). The factor structure was also verified; confirmatory factor analysis (CFA) specified according to MacDonald et al. (2015; five-factor, fully correlated) provided strong evidence for acceptable fit ( $\chi^2 = 1147.29$ ,  $df = 395$ ,  $p < .0001$ ; Goodness-of-fit index = .842; Comparative fit index = .909; Tucker-Lewis index = .900; Root mean square error of approximation = .067; 90% CI [.063 .072]; Standardized root mean square residual = .063). The pattern of associations between factors was also similar to those observed elsewhere (MacDonald et al., 2015; Proyer & Laub, 2015). Importantly, the EWB was not associated significantly with any of the other factors (see Figure 1 for details). On the basis of these CFA results, as well as previous research (Koenig, 2008; Migdal & MacDonald, 2013; see also de Jager Meezenbroek, et al., 2012), we dissociated EWB from other dimensions of spirituality and interpreted it separately.

### **Statistical analyses**

To allow comparisons with existing literature, using SPSS 21 we performed pairwise Pearson correlation coefficients between the raw scores for personality styles and ESI-R dimensions. The CFA was calculated in R ([package lavaan]; Rosseel, 2012).

In order to identify subgroups of individuals with similar patterns of personality styles, we conducted Latent Profile Analysis ([LPA]; Lazarsfeld, & Henry, 1968) using *Mplus 7.3* (Muthén & Muthén, 2012). This is a data-driven analytical method for classifying individuals into distinct groups on the basis of a statistical model. In contrast to cluster analysis, LPA offers the advantage of a goodness-of-fit assessment of the selected model(s). Furthermore, unlike clustering approaches, LPA provides a measure of classification accuracy not only in terms of

entropy but also the probability of group membership for each participant. This is achieved by comparing the estimated and actual probability of an individual's membership to a particular group against the probability of their membership to all others. As such, a given individual has a probability of membership for all emerging classes.

The aim of this investigation was to identify distinct subgroups of participants based on their personality profiles, and to explore the relationships between these profiles, spirituality dimensions, and existential well-being. In order to overcome problems associated with the one-step approach (see Asparouhov & Muthén, 2014a; 2014b), a three-step LPA was employed with all ESI dimensions as distal outcome variables. Following the most recent development in this area, we opted for the BCH<sup>1</sup> method recommended for continuous distal outcomes (see Asparouhov & Muthén, 2014b; Bakk & Vermunt, 2014). Both automatic and manual versions of the BCH were calculated and their results compared (Asparouhov & Muthén, 2014b; Bakk and Vermunt, 2014). The analytical procedure was as follows: First, to identify a best-fitting model, LPA was applied using personality dimensions as indicators and models with two to six latent classes were calculated. Since adding gender into these models did not improve the fit indices significantly, and a qualitative inspection of the resulting profiles revealed only negligible differences (only 4 participants ended up in a different profile, with no differences in PSDI means), we decided to proceed with further analyses without this covariate. The best log likelihood was replicated successfully in all instances. The optimal model solution was determined on the basis of (1) the best fit indices, (2) interpretability of the solution, (3) the degree of distinctiveness between the resulting profiles, and (4) consistency with previous research on personality typology. Specifically, all models were assessed by Akaike information criteria (AIC; Akaike, 1974), Bayesian information criteria (BIC; Schwarz, 1978), sample size-



adjusted BIC, the Lo-Mendell-Rubin Adjusted Likelihood Ratio Test (LMRT; Lo, Mendell, & Rubin, 2001), the Parametric Bootstrapped Likelihood Ratio Test (BLRT; Arminger, Stein & Wittenberg, 1999; McLachlan & Peel, 2000), and entropy. Table 2 presents model fit indices for each solution (lower values on descriptive indices AIC, BIC and adjusted BIC signify a better fit). The LMRT and BLRT provide information on significant improvement of neighbouring models by comparing the current  $k$ -profile model with  $k-1$ -profile model (significant  $p$  values indicate that the current model fitted the data better in comparison to a model with one less profile). For BLRT, 100 bootstrap samples were drawn for all models. Entropy summarizes the degree of accuracy of classifying participants into individual groups on the basis of posterior probabilities – higher values signifying higher accuracy of classification (better class separation; Ramaswamy, DeSarbo, Reibstein, & Robinson, 1993).

After selecting the optimal solution for our personality profiles, distal auxiliary variables (ESI-R dimensions) were added to the model and their relationship with the latent categorical variable was evaluated. Finally, the relationships between distinct profiles and basic demographic characteristics – such as gender and age – were examined using non-parametric statistics with SPSS 21.

## Results

### Preliminary analyses

We removed from the analyses all participants who reported not being honest in their answers ( $n = 7$ ), as indicated by their response to the ESI item “*I have responded to all items honestly*”. An inspection of the item indicating face validity showed that 10.6% of the sample ( $n = 45$ ) disagreed with the statement that the instrument measures spirituality (mean = 2.74, SD = 1.01).

This ratio is similar to that reported elsewhere in a sample from neighbouring Slovakia (MacDonald et al., 2015).

Results from the correlational analysis are presented in Table 1, illustrating patterns of significant associations between individual personality styles and ESI-R dimensions. Associations were unidirectional primarily; for instance the rhapsodic style is correlated positively to all ESI-R dimensions, while the paranoid style is correlated negatively with the majority.

The most reliable association between personality styles was found for EWB. More importantly, however, the direction of these correlations with EWB differentiated between styles – while some displayed positive associations (i.e. rhapsodic and histrionic), others were related negatively to EWB (i.e. avoidant, negativistic, borderline, and depressive). Furthermore, although the schizotypal personality style demonstrated the strongest overall relationship with other ESI-R dimensions, it revealed no correlation with EWB.

### **Identification and description of personality profiles**

All fit indices (see Table 2) suggested that the three-class solution was optimal and the groups of participants comprising these profiles present qualitatively distinct personality profiles. Classification accuracy for this solution is presented in Table 3. Importantly, the diagonal values present the high probability (.90 and above) that all participants were assigned to their respective profiles correctly.

Latent profile #1 comprised 147 participants (34.7% of the sample) with predominantly average ratings on all styles, but slightly decreased levels of dependent and borderline styles. Since this profile appears to utilise a variety of personality styles, we refer to it as the *Flexible*

profile. Latent profile #2 comprised 126 participants (29.7%) characterised by considerably elevated scores in rhapsodic, histrionic, and schizotypal styles, and very low scores on schizoid and depressive styles. This profile appears to be sensitive particularly to positive affect and prone to using an intuitive mode of information processing, and so we refer to this style as *Intuitive*<sup>2</sup>. Latent profile #3 encompassed 151 participants (35.6%) scoring high on depressive, avoidant, borderline, and negativistic personality styles, and very low on rhapsodic and histrionic styles. With the exception of the borderline style, which is sensitive to positive affect, these individuals report a strong tendency towards inhibiting positive affect and a heightened sensitivity to negative affect. According to PSI theory, this reflects reduced access to intuitive programs and a preference for an analytical mode of information processing. Accordingly, we refer to this as the *Analytical* profile. Interestingly, *Intuitive* and *Analytical* groups also demonstrated the strongest preference for selected groups of personality styles, indicative of decreased flexibility in response to changing environments.

### **Personality profiles, spirituality dimensions and existential well-being**

When examining the relationship between latent profiles and distal outcomes, the results revealed that all individual profiles differentiated significantly with respect to all ESI-R dimensions (COS:  $\chi^2(2) = 42.82, p < .001$ ; EPD:  $\chi^2(2) = 48.93, p < .001$ ; EWB:  $\chi^2(2) = 296.11, p < .001$ ; PAR:  $\chi^2(2) = 46.51, p < .001$ ; REL:  $\chi^2(2) = 24.68, p < .001$ , see Figure 2). Individual contrasts between the profiles, however, show that the difference between *Flexible* and *Intuitive* profile did not reach significance for EWB ( $p = .09$ ).

The three profiles produced a unique pattern of results: While participants in *Intuitive* and *Analytical* profiles demonstrated a contrasting relationship with respect to all distal outcomes

(high vs. low spirituality and EWB, respectively), the *Flexible* group revealed a pattern similar to that of the *Analytical* profile with low scores on all dimensions (an exception is EWB, where the *Flexible* participants scored comparably to the *Intuitive* group). For summary of mean ESI-R scores for each profile, see Table 4.

### Demographic information

In a final step of analysis the resulting personality profiles were compared according to basic demographic characteristics, using Pearson chi square, Kruskal-Wallis, and Mann-Whitney tests as appropriate. Multiple comparisons were corrected with the Bonferroni method. These analyses revealed differences between the profiles with respect to gender ( $\chi^2(2) = 8.82, p = .012$ ), age ( $\chi^2(2) = 14.45, p < .001$ ), completed education level ( $\chi^2(2) = 18.00, p < .001$ ), and reported general religious belief ( $\chi^2(2) = 15.34, p < .001$ ). Follow-up analyses showed that gender differences were accounted for mainly by a significantly higher proportion of females in the *Intuitive* compared with the *Flexible* profile, with an almost even male-female ratio in the latter ( $\chi^2(1) = 7.83, p = .005$ ). Gender differences between *Analytical* and *Flexible* groups failed to reach significance after multiple-comparison correction. The differences with respect to age as well as completed education were significant when contrasting the *Flexible* profile with both *Intuitive* (age:  $U = 7581, Z = -2.61, p = .009, r = -.16$ ; education:  $U = 7288, Z = -3.64, p < .001, r = -.22$ ) and *Analytical* (age:  $U = 8386, Z = -3.68, p < .001, r = -0.21$ ; education:  $U = 8978, Z = -3.42, p = .001, r = -.20$ ), although the effect sizes were rather modest. Participants comprising the *Flexible* group were both older and reported a higher level of completed education relative to the rest of the sample. Reported general religious belief, on the other hand, differed between *Intuitive* individuals and those in both the *Flexible* and *Analytical* profiles ( $U = 6937, Z = -3.71, p$

< .001,  $r = -.22$ ;  $U = 7938$ ,  $Z = -2.45$ ,  $p = .014$ ,  $r = -.15$ , respectively), with the latter two groups reporting weaker religious belief. This corresponds with findings from our previous analyses.

### Discussion

The aim of this study was to explore in a non-clinical sample how personality profiles are associated with spirituality and existential well-being. To this end we employed a personality instrument focused on the interplay among affective and cognitive systems that underlie an individual's personality style. More importantly, this is the first investigation in this area conducted from a person-centred perspective, allowing us to explore associations with different personality profiles identified in our sample.

The first important outcome of our study is the identification of the three personality profiles, which we label *Flexible*, *Intuitive*, and *Analytical*. While the *Analytical* and *Intuitive* profiles demonstrate a strong preference for a specific selection of personality styles (and corresponding information-processing modes), the *Flexible* profile indicated a more diverse pattern. Interestingly, profiles emerging from our analyses resemble closely the “prototypes” identified in previous personality research (Block, 2002; see also Donnellan & Robins 2010): Our *Analytical* group, comprising reserved, pragmatic, and highly organized individuals, appears analogous to the Overcontrolled prototype, while our *Intuitive* group of spontaneous, impulsive, enthusiastic and less emotionally stable individuals resemble the Undercontrolled prototype. Further, both profiles can be regarded as less resilient (i.e. more inflexible) due to the strong preference they show for personality styles that would be situated on opposite ends of the ego-control dimension (see Block, 2002). Conversely, our *Flexible* profile matches the Resilient prototype characterised by moderate ego-control and high ego-resilience. Owing to their large

repertoire, the individuals comprising this profile may demonstrate better adjustment to various situations by selecting the most appropriate styles for a given context (Block, 2002; Kuhl & Kazén, 2002). Importantly, *Flexible* individuals were generally older, with higher completed education relative to participants from *Intuitive* and *Analytical* subgroups. Further, it is worth noting that participants included in the *Intuitive* profile consisted of significantly larger amount of females than males, in contrast to the *Flexible* profile where the gender distribution was fairly even.

The second main outcome is that the revealed profiles are differentiated clearly with respect to EWB and spirituality dimensions. Our *Intuitive* group scored high on all aspects of spirituality and EWB. From the perspective of PSI, this profile can be characterized by high sensitivity to positive affect and a consequential overuse of intuitive programs (e.g., emotion contagion) at the expense of planning and analytical thinking strategies (see Kuhl, 2000a). Although high EWB was reported by these individuals, their preference for a narrower repertoire of personality styles could constrain their adjustment to various situations. A recent study has reported a negative association between EWB and empathy, and a lack of significant relationship between EWB and altruism (Huber & MacDonald, 2012). Together with an association between EWB, social desirability, and self-deceptive enhancement (MacDonald, 2000a), we can speculate that this apparent contradiction (high EWB in presumably less flexible individuals) could result partly from avoidance of negative affect; specifically, *Intuitive* individuals might be motivated to avoid stressors or suffering in order to preserve their self-perception of efficacy and well-being (Huber & MacDonald, 2012). Inhibiting negative affect by boosting positive affect and not actively coping with painful experience, coupled with an inability to perceive the negative aspects of a situation related to the self, might be efficient in low-stress but not high-stress

contexts (Kuhl, 2000a), and could be even maladaptive at times (see Labouvie-Vief & Márquez, 2004).

Our findings of associations between intuitive processing, positive affect, and spirituality or religiosity are in line with previous findings in this area: Behavioural indices such as online use of language indicate more positive emotions and better social connections experienced by religious relative to non-religious individuals (Ritter, Preston, & Hernandez, 2013); and Saroglou, Buxant, and Tilquin (2008) report a causal link between positive emotions and spirituality (see also Van Cappellen, Saroglou, Iweins, Piovesana, & Fredrickson, 2013). This relationship was also suggested in the opposite direction – spiritual and religious practices, such as meditation and prayer, have been proposed to foster implicit self-regulation (related to an intuitive cognitive style) in people with intrinsic religiosity (see Koole, McCullough, Kuhl, & Roelofsma, 2010; McCullough & Willoughby, 2009). The general effects of positive affectivity on social interactions and cognition are well-documented: positive affect facilitates social interactions and flexibility in cognitive processing (Baumann & Kuhl, 2005; Kuhl, 2000a; Broaden-and-build theory, Fredrickson, 2001; 2004; see also Bolte, Goschke, & Kuhl, 2003). Taken together, we suggest that individuals who rely predominantly on intuitive information processing can be characterised as more open to new experience, curious and creative; and by ascribing meaning to stimuli regarded as meaningless by others (see also Kuhl & Kazén, 2002) these individuals are predisposed to become spiritual. Accordingly, owing to these very same personality characteristics and processing styles, such individuals might have a stronger tendency to engage in spiritual and/or religious practices that might, in turn, serve to elevate their well-being (for a related discussion see Schuurmans-Stekhoven, 2010; Van Cappellen, Toth-Gauthier, Saroglou, & Fredrickson, 2016).

In contrast to the *Intuitive* profile, our *Analytical* group is characterised mostly by styles sensitive to negative affect and a stronger preference for analytical processing, and individuals comprising this profile reported low spirituality, religiosity, and very low existential well-being. Again, this relationship between a tendency towards analytical processing and low spirituality and religiosity converges with recent experimental evidence; a negative association is reported between an analytical cognitive style and religious and paranormal belief (Gervais & Norenzayan, 2012; Pennycook, Cheyne, Seli, Koehler, & Fugelsang, 2012; Shenhav et al., 2012).

Third, our data support previous evidence that EWB might operate independently of other spirituality dimensions (Koenig, 2008; Migdal & MacDonald, 2013; de Jager Meezenbroek, et al., 2012); although it parallels other ESI-R dimensions for both personality profiles with decreased flexibility (*Analytical* and *Intuitive*), it occurs inversely for individuals who utilise a wider selection of personality styles. Although individuals in the *Flexible* group reported high level of EWB, this was not true for other spirituality dimensions. In other words, lower reported spirituality does not always lead to lower existential well-being.

Using a variable-centred approach, our data demonstrate that individual ESI-R dimensions are related differentially to personality styles; while styles characterised by a preference for analytical processing displayed rather weak and mostly negative associations, those prone to intuitive processing were correlated positively. This complements our data-driven analyses as well as previous literature (Browne et al., 2014; Gervais & Norenzayan, 2012; Pennycook et al., 2014; Shenhav et al., 2012). Further, the independence of EWB is evidenced by its diverging relationship with personality in contrast with other dimensions. All this is in agreement with past research and reflects qualitative differences between constructs of



spirituality and personality (MacDonald, 2009; Piedmont & Wilkins, 2005; Říčan & Jánošová, 2010).

It is important to stress that our sample comprised Czech participants, and it has long been known that the Czech Republic is the least traditionally religious country in Europe (e.g., WIN-Gallup International, 2012). Given this specific cultural background, our results might not be replicated in countries with a strong religious tradition such as US (see also Leurent et al., 2013). The low percentage of Czech citizens reporting themselves as religious in official surveys might be due to subjective definitions of religiousness according to specific church/denomination affiliations, rather than to spirituality in its wider sense or general religious belief in the existence of a higher power. Importantly, however, the instrument we employed in the present study has been shown to be sensitive to intrinsic religiousness regardless of specific religious affiliation (e.g., MacDonald, 2000a), and so we are confident that our findings are valid. Furthermore, results from ESI-R corresponded to those acquired from the item measuring general religious belief. On the other hand, ESI-R has been found to exhibit cross-cultural variability in terms of measurement invariance (e.g. MacDonald, 2015). It is necessary, therefore, to assess whether the relationships we have revealed between personality styles and spirituality exist in other cultures with stronger religious tendencies.

Another potential limitation of our study is the degree of generalizability of our results due to the specific characteristics of our sample (e.g., age range, prevailing education level, or computer literacy). Future studies in our region should determine whether our findings apply also to other populations, such as older adults or those with lower education levels. Lastly, some researchers question the validity of research conducted online. Recent evidence, however, indicates that this method of data collection leads to equivalent results when compared with

standard modes of administration (e.g., computer administration in the lab) in terms of social desirability and self-report measures in general (e.g., Dodou & Winter, 2014; Weigold, Weigold, & Russell, 2013).

### **Conclusions**

This study shows that the relationship between spirituality dimensions and existential well-being is not as straightforward as many previous experiments claim. This relationship differs across personality profiles, and is likely to be mediated by complex functional interactions and dependencies between affective and cognitive systems. Using a novel person-centred approach we have revealed three profiles that boast strong theoretical meaning (Kuhl, 2000a, 2006) and are related closely to other personality typologies (Asendorpf, 2015; Block, 2002; Donnellan & Robins, 2010). In agreement with previous research, our results imply that people with certain affective dispositions and preferences for corresponding forms of information processing are more likely to be spiritual and/or religious; individuals sensitive to positive affect who express a strong tendency for intuitive processing are likely to engage in practices associated with spirituality or religion. High existential well-being is not exclusive to this profile, however, as evidenced in our *Flexible* profile. In summary, personality exerts an important influence in any salutogenic effects from spirituality or religiosity.

### Footnotes

<sup>1</sup>The acronym “BCH” reflects the names of the authors whose work served as an inspiration for development of this method (Bolck, Croon, & Hagedaars, 2004).

<sup>2</sup>Intuitive and analytical processing modes correspond approximately to Kahneman’s System 1 (fast, parallel, and automatic) and System 2 (slow, serial, and effortful) of thinking modes (see Kahneman, 2011).

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**Table 1. Associations between personality styles and ESI-R dimensions**

<b>PSI Personality Styles</b>	<b>COS</b>	<b>EPD</b>	<b>EWB</b>	<b>PAR</b>	<b>REL</b>
Self-determined-Antisocial	-.11 [-.21,-.01]				-.14 [-.22,-.05]
Cautious-Paranoid	-.22 [-.32,-.12]	-.16 [-.27,-.05]	-.33 [-.41,-.24]		-.27 [-.35,-.19]
Independent-Schizoid	-.20 [-.29,-.10]	-.25 [-.34,-.15]	-.27 [-.36,-.18]	-.19 [-.28,-.09]	-.25 [-.34,-.16]
Apprehensive-Avoidant			-.59 [-.66,-.53]		
Conscientious-Compulsive			-.16 [-.25,-.06]		
Intuitive-Schizotypal	.66 [.59,.72]	.70 [.65,.75]		.73 [.67,.77]	.57 [.50,.63]
Optimistic-Rhapsodic	.28 [.18,.37]	.32 [.22,.41]	.46 [.38,.54]	.26 [.17,.35]	.26 [.17,.35]
Ambitious-Narcissistic		.21 [.11,.31]	-.13 [-.23,-.03]	.14 [.04,.24]	
Critical-Negativistic	-.16 [-.27,-.06]		-.59 [-.66,-.52]		-.15 [-.25,-.06]
Loyal-Dependent		.11 [.02,.21]	-.41 [-.49,-.32]	.14 [.05,.23]	.15 [.05,.23]
Spontaneous-Borderline		.12 [.02,.21]	-.70 [-.74,-.64]		
Emotional-Histrionic	.17 [.08,.27]	.31 [.23,.40]	.38 [.29,.46]	.22 [.13,.32]	.12 [.04,.23]
Calm-Depressive	-.15 [-.25,-.05]	-.16 [-.25,-.07]	-.76 [-.80,-.72]	-.12 [-.21,-.02]	
Obliging-Self-sacrificing	.24 [.15,.32]	.13 [.03,.22]	-.24 [-.33,-.15]	.14 [.05,.23]	.25 [.17,.34]



**TABLE 2. Latent Profile Models and Fit Indices**

Models	2-class	3-class	4-class	5-class	6-class
Log Likelihood	-17667	-17507	-17343	-17255	-17181
Number of parameters	43	58	73	88	103
AIC	35420	35130	34832	34686	34568
BIC	35594	35365	35127	35043	34985
Adjusted BIC	35457	35181	34896	34763	34659
Entropy	0.86	0.82	0.85	0.85	0.85
L-M-R LRT ( <i>p</i> )	< .001	.030	.164	.269	.456
Bootstrap LRT ( <i>p</i> )	< .001	< .001	< .001	< .001	< .001
Number of participants	156	147	148	84	49
per class	268	126	100	138	63
		151	89	75	112
			87	42	108
				85	47
					45

*Note:* BIC, Bayesian information criterion; LMRA-A, Lo-Mendell-Rubin adjusted likelihood ratio test; BLRT, Bootstrap likelihood ratio test.

**TABLE 3. Average Latent Profile Probabilities for Estimated Most Likely Latent Profile Membership (row) by Assigned Latent Profile (column).**

	FLEXIBLE	INTUITIVE	ANALYTICAL
FLEXIBLE	<b>.90</b>	.07	.03
INTUITIVE	.06	<b>.93</b>	.01
ANALYTICAL	.03	.02	<b>.94</b>

*Note:* Bold values indicate the average probability that participant membership to a particular latent profile was categorised correctly.

**TABLE 4. Comparisons between the Latent Profiles and Distal Outcomes (ESI-R dimensions)**

	FLEXIBLE		INTUITIVE		ANALYTICAL	
	M	S.E.	M	S.E.	M	S.E.
<b>COS</b>	10.89	.64	16.27	.53	12.59	.51
<b>EPD</b>	6.20	.56	12.32	.61	8.49	.52
<b>EWB</b>	17.20	.28	17.99	.33	10.60	.34
<b>PAR</b>	9.21	.59	14.94	.54	11.75	.49
<b>REL</b>	7.31	.62	11.56	.54	9.01	.53

*Note.* COS = Cognitive orientation towards spirituality; EPD = Experiential/Phenomenological dimension; EWB = Existential well-being; PAR = Paranormal beliefs; REL = Religiousness; M = mean; S.E. = standard error.

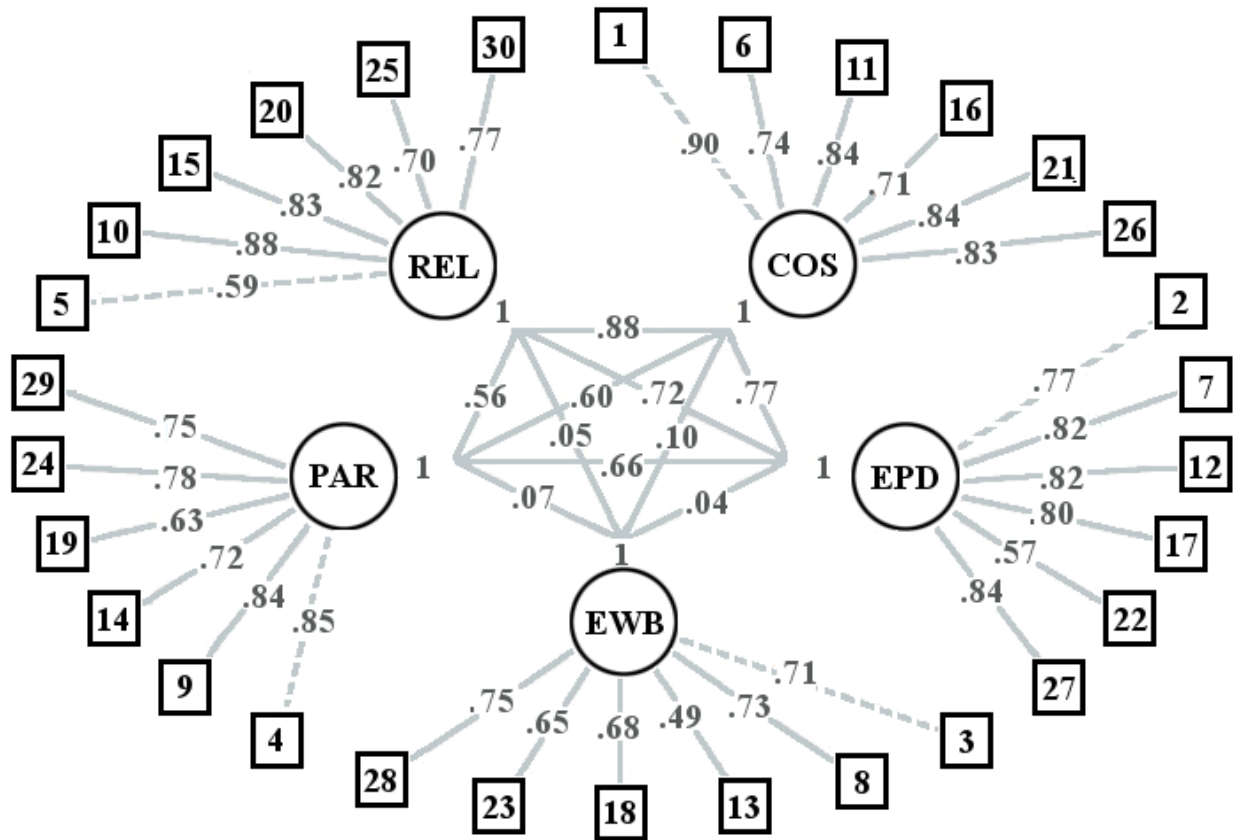
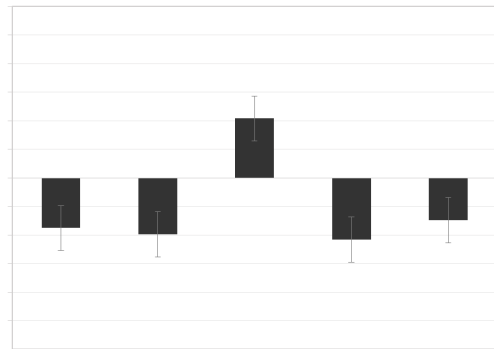
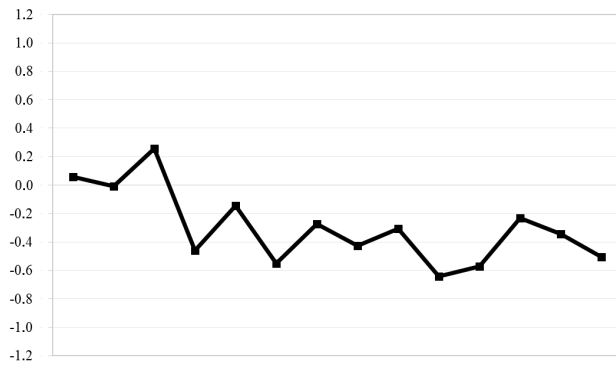


FIGURE 1. Standardized loadings for a fully correlated five-factor model.

PERSONALITY SYSTEMS, SPIRITUALITY, AND EXISTENTIAL WELL-BEING

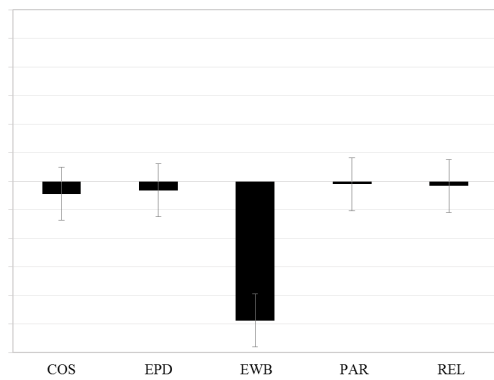
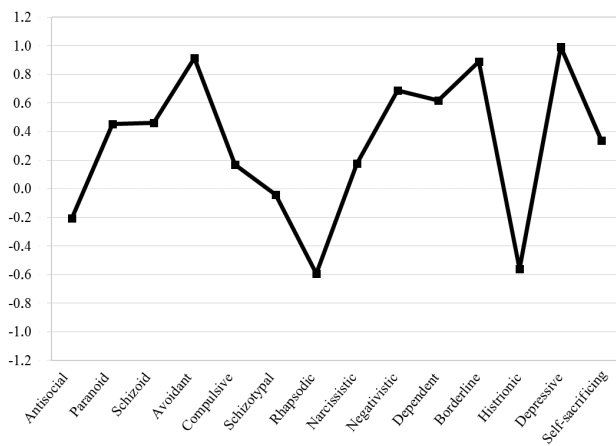
**Flexible**



**Intuitive**



**Analytical**



**FIGURE 2. Graphical representation of the relationship between personality profiles and spirituality dimensions.** *Left:* Profiles of personality styles. *Right:* Distal outcomes corresponding to each personality profile: *Abbreviations:* COS = Cognitive orientation towards spirituality; EPD = Experiential/Phenomenological dimension; EWB = Existential well-being; PAR = Paranormal beliefs; REL = Religiousness. *Note:* Values are represented as z-scores.