The overlap of sense of coherence and the Big Five personality traits: A confirmatory study

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Abstract

Sense of coherence is the perception of the world as coherent. Its conceptual similarities to the Big Five personality traits have been demonstrated. We therefore investigated the relationship between sense of coherence and the Big Five. In total, 1088 Japanese youths completed the 29-item Sense of Coherence Scale and the Ten-Item Personality Inventory. Neuroticism was negatively correlated and extraversion was positively correlated with comprehensibility ($r = -.47, .35$), manageability ($r = -.44, .26$), and meaningfulness ($r = -.28, .30$). These correlations were strong, and the overlap between the two scales was about 36 percent. While the Big Five are related to sense of coherence, their differences cannot be ignored.

Introduction

Sense of coherence (SOC), the core of the salutogenic model, is defined as an individual's perception and sense that their experiences in the world are coherent, comprehensible, consistent, and reasonable (Antonovsky, 1987). SOC consists of three components: comprehensibility (i.e. encountered stimuli in the future will be predictable), manageability (i.e. the extent to which a person perceives that they have adequate resources to meet life's demands), and meaningfulness (i.e. the extent to which activities are worthy of commitment or investing energy in, and are seen as challenges rather than as burdens; Antonovsky, 1987). SOC is known to be associated with the five major personality traits outlined in the Big Five theory (i.e. the Big Five)—neuroticism, extraversion, openness, agreeableness, and conscientiousness (Goldberg, 1990). In fact, researchers have stated that SOC and the Big Five are conceptually similar, as both develop until about 30 years of age, after which they remain mostly stable (Feldt et al., 2007).

Studies on the relationship between SOC and personality traits have typically investigated the relationships between SOC and either a specific Big Five trait or all of them (e.g. Feldt et al., 2007; Gibson and Cook, 1996). Briefly, SOC

appears to have positive correlations with extraversion, openness, agreeableness, and conscientiousness; however, it has a negative correlation with neuroticism. The relationships of SOC with conscientiousness and neuroticism are of particular note, as they have been consistently found (e.g. Feldt et al., 2007). In addition, Hochwälder (2012) showed that emotional stability (the reverse concept of neuroticism) is strongly related to SOC ($\beta = .47$) via a multiple regression analysis. These findings, taken together, indicate that the characteristics of high extraversion, openness, agreeableness, conscientiousness, and emotional stability (i.e. low neuroticism) correspond with those of SOC, which include an extroverted social orientation, ability to effectively cope with emotions, and an emphasis on valuing interpersonal relationships, organized behavior, and high curiosity (Antonovsky, 1987; Hochwälder, 2012). In other words, we

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can interpret the relationships between SOC and the Big Five as providing an explanation for the constituent factors and functions of SOC from the viewpoint of personality.

Recently, researchers examined the discriminant predictability of SOC and the Big Five in relation to other psychological indicators. For example, Grevenstein and Bluemke (2015) indicated that SOC independently predicted mental health related to factors other than the Big Five—in other words, SOC predicted mental health–related factors such as lifestyle satisfaction, even while controlling for the influence of the Big Five. In sum, SOC and the Big Five appear to be related and have some conceptual similarities, but they do show certain differences based on their relationships with other indicators.

The above research makes it evident that the relationships between SOC and the Big Five should be examined from various perspectives, as this leads to a deeper understanding of SOC and its functions. However, the relationships between the subscales of SOC and the Big Five have not previously been examined in detail. Grevenstein et al. (2017) noted the importance of investigating heterogeneity in the subscales of SOC (comprehensibility, manageability, and meaningfulness), even though Antonovsky (1993) did not recommend analyzing them in isolation. In a quantitative study, Grevenstein et al. (2018) found that these three subscales have different relationships with psychological distress. Therefore, in verifying the relationship between SOC and the Big Five, it may be important to analyze the individual subscales of SOC. This study aims to investigate the relationship between SOC (specifically, its three subscales) and the Big Five.

Methods

Participants

The participants were 1088 youths (528 males, 560 females; mean age = 20.35 years, SD = 1.06) from all over Japan who completed an anonymous online survey. This survey was approved by the ethics committee of the first author's university (No. 17-64).

Measurements

SOC. SOC was assessed using the Japanese version of the 29-item SOC Scale (SOC-29; Yamazaki, 1999), which is a revised version of the 29-item Orientation to Life Questionnaire (Antonovsky, 1987) for Japanese individuals. The SOC-29 comprises 29 items in three subscales: comprehensibility (11 items), manageability (10 items), and meaningfulness (8 items). Each item is assessed on a 7-point scale, with higher scores indicating higher levels of SOC.

Big Five personality traits. The Big Five traits were assessed using the Japanese version of the Ten-Item Personality

Inventory (TIPI-J; Oshio et al., 2012), which is a revised version of the Ten-Item Personality Inventory (Gosling et al., 2003) used for Japanese individuals. The TIPI-J comprises 10 items in five subscales (each containing two items): neuroticism, extraversion, openness, agreeableness, and conscientiousness. Each item is assessed on a 7-point scale, with higher scores indicating higher levels of the Big Five traits.

Statistical analyses

First, the reliability of each scale was verified. Second, Pearson's product-moment correlation coefficients were calculated among the variables. Finally, canonical correlation analysis was conducted to examine the level of commonality between the SOC and the Big Five. The statistical analyses were conducted using IBM SPSS Statistics 25, and the significance level was set at 1 percent.

Results

Reliability

Cronbach's α coefficients for the SOC-29 and its subscales were as follows: whole scale, .85; comprehensibility, .67; manageability, .70; and meaningfulness, .69. To assess the reliability of the TIPI-J subscales, we calculated the Pearson correlation coefficients among the corresponding items according to Gosling et al. (2003) and Oshio et al. (2012). All subscales had relatively high reliabilities (r = .15 to .31, ps < .01). Thus, the study variables showed acceptable reliability.

Intercorrelations among the variables

The results of the correlation analysis are shown in Table 1. The SOC-29 total score and the scores for comprehensibility, manageability, and meaningfulness had significant positive correlations with the scores of extraversion, agreeableness, conscientiousness, and openness (r = .17 to .36, ps < .01); however, they had significant negative correlations with the scores for neuroticism (r = −.28 to −.47, ps < .01).

Commonality between SOC and the Big Five

The results of the canonical correlation analysis are shown in Table 2 and Figure 1. The canonical correlation coefficients were as follows: function 1, .60; function 2, .28; and function 3, .25. These coefficients were all significant (p < .01). However, the explanation ratios (R_c^2) of functions 2 and 3 were rather low (8.08% and 6.44%, respectively), whereas function 1 had an explanation ratio of 36.23 percent. These results indicate that functions 2 and 3 do not fully explain the commonality between SOC and the

Table 1. Intercorrelations between sense of coherence and the Big Five personality traits.

	Sense of coherence	Comprehensibility	Manageability	Meaningfulness
Neuroticism	−.47**	−.47**	−.44**	−.28**
Extraversion	.36**	.35**	.26**	.30**
Openness	.27**	.23**	.17**	.30**
Agreeableness	.29**	.16**	.34**	.26**
Conscientiousness	.29**	.31**	.18**	.26**

**p < .01.

Table 2. Canonical correlation analysis between sense of coherence and the Big Five personality traits.

	Function 1			Function 2			Function 3			h^2
	Coeff	r_s	r_s^2 (%)	Coeff	r_s	r_s^2 (%)	Coeff	r_s	r_s^2 (%)	
CO	.57	.92	.85	.78	.22	.05	−.94	−.33	.11	1.00
MA	.34	.86	.74	−1.41	−.50	.25	.01	.10	.01	1.00
ME	.24	.76	.58	.65	.19	.04	1.12	.62	.38	1.00
R_c^2			.36			.08	−.33		.06	
N	−.57	−.81	.65	.31	.24	.06	.73	.47	.22	.93
E	.38	.60	.36	.14	.36	.13	.09	.05	.00	.49
O	.17	.43	.18	.38	.49	.24	.54	.49	.24	.66
A	.31	.44	.20	−.61	−.65	.42	.71	.55	.30	.91
C	.21	.50	.25	.53	.55	.31	−.02	−.01	.00	.56

CO: comprehensibility; MA: manageability; ME: meaningfulness; N: neuroticism; E: extraversion; O: openness; A: agreeableness; C: conscientiousness; Coeff: standardized canonical correlation coefficient; r_s: structure coefficient; r_s^2: squared structure coefficient; h^2: communality coefficient; R_c^2: squared canonical correlation coefficient.
"Function" refers to the canonical function, the relationship (correlational) between two liner composites (Thompson, 2000).
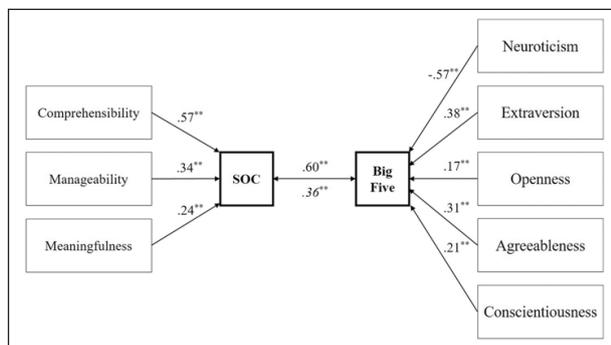

Figure 1. Canonical correlation analysis between sense of coherence and the Big Five personality traits. SOC refers to sense of coherence. Big Five refers to the Big Five personality traits. Reported values are standardized canonical correlation coefficients. The italicized value represents the squared canonical correlation coefficient. Asterisks denote *p*-values of the squared structure coefficients: **p < .01.

Big Five. Therefore, we conducted further analyses to interpret function 1 only. For function 1, all structure coefficients (r_s) were over .40. Moreover, the squared canonical correlation coefficients for comprehensibility, manageability, and meaningfulness were over .50, while those for neuroticism and extraversion were over .35.

Discussion

The results showed that SOC was associated with the Big Five, with neuroticism being negatively and extraversion being positively, and strongly, correlated with comprehensibility, manageability, and meaningfulness. These findings supported those of previous studies (e.g. Feldt et al., 2007). Moreover, since the structural coefficients for openness, agreeableness, and conscientiousness in the canonical correlation analysis were over .40, it is possible that these personality traits can help us further understand SOC and its various components.

Even when analyzing the subscales of SOC individually, all the Big Five traits showed significant correlations with SOC. However, as the explanation ratio of the common factor of SOC and the Big Five was only about 36 percent, there are clearly elements of these two constructs that do not overlap. Therefore, further studies are needed to better discriminate the unique aspects of SOC and the Big Five, as noted by Grevenstein and Bluemke (2015). Furthermore, to fully understand SOC in terms of its relationship with personality traits, it might be important to consider not only the specific characteristics of the five traits but also their structure and functions resulting from their overall balance (e.g. a general factor of personality, or personality prototype).

Since comprehensibility, manageability, and meaning-fulness all showed positive structural coefficients for function 1, the Big Five might be a multifaceted concept with some degree of homogeneity with the subscales of SOC. Conversely, it is possible that the heterogeneity among the subscales of SOC cannot be explained by their relationships with these personality traits. To verify this possibility, we might need to examine other variables independently related to SOC. In addition, it is important to confirm the reproducibility of our findings through follow-up tests using canonical correlation analysis (Thompson, 2000). Therefore, follow-up studies using similar methods to our study may be necessary.

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