



## Original Article

# Personality construct of Sasang Personality Questionnaire in an adolescent sample

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## ARTICLE INFO

## Article history:

Received 15 October 2014

Received in revised form

13 November 2014

Accepted 17 November 2014

Available online 2 December 2014

## Keywords:

adolescent

Junior Temperament and Character Inventory

profile analysis

Sasang Personality Questionnaire

Sasang typology

## ABSTRACT

**Background:** Sasang typology is a widely used personalized traditional medicine in clinical diagnosis and treatment in Korea. The aim of this study was to examine the personality construct of the Sasang Personality Questionnaire (SPQ) to replicate the previous findings in the adolescent sample.

**Methods:** A total of 543 high school students completed the SPQ and the Korean version of the Junior Temperament and Character Inventory (JTICI). The relationships between the subscales of JTICI and SPQ were examined using Pearson's correlation. The profile analysis and analysis of variance were used to investigate the difference among high, middle, and low SPQ total score groups.

**Results:** The SPQ and its subscales were significantly correlated with the JTICI subscales. SPQ total score was positively correlated with Novelty Seeking ( $r=0.424$ ) and negatively correlated with Harm Avoidance ( $r=-0.291$ ). The high, middle, and low SPQ total score groups showed significantly different JTICI profile (flatness with Greenhouse–Geisser correction,  $df=3.424$ ,  $F=443.812$ ,  $p<0.001$ ; parallelism with Greenhouse–Geisser correction,  $df=6.848$ ,  $F=18.610$ ,  $p<0.001$ ).

**Conclusion:** The validity of the SPQ construct was confirmed with adolescents. Further investigation on its personality construct would extend the clinical application of SPQ to young age groups including children.

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## 1. Introduction

Personalized medicine involves the use of effective and safe medical treatment best fit to specific patients, whose theme has been a major concern in both Western orthodox and

Eastern traditional medicine. Sasang typology is a personalized medicine based on traditional Korean medicine using acupuncture and medical herbs, and divides people into four Sasang types: Tae-Yang, So-Yang, Tae-Eum, and So-Eum types.<sup>1</sup> Each Sasang type is reported to have its own distinctive type-specific psychological and physical characteristics along

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<http://dx.doi.org/10.1016/j.imr.2014.11.002>

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with pathophysiological features, predisposition to a specific illness, and response to particular treatments.<sup>2,3</sup>

The Sasang Personality Questionnaire (SPQ) was recently developed for the objective assessment of psychological traits of Sasang typology on the basis of previous studies, and there have been studies for its psychological structure and clinical validations.<sup>4-8</sup> The SPQ has three subscales—SPQ-Behavior (e.g., passive vs. active), SPQ-Emotionality (e.g., static vs. dynamic), and SPQ-Cognition (e.g., meticulous vs. easygoing)—and the SPQ and its subscales were shown to be a valid instrument for the differentiation of Sasang types in adults, repeatedly demonstrating the rank order of So-Yang > Tae-Eum > So-Eum Sasang types.<sup>4,5,7,8</sup>

It was also reported that the SPQ is correlated with Temperament and Character Inventory (TCI),<sup>4,7</sup> a biopsychosocial personality model of Cloninger et al<sup>9-11</sup> found to be useful for the integrative medicine. And it was shown that the So-Yang and So-Eum Sasang types had significantly higher mean scores on TCI Novelty Seeking (NS) and TCI Harm Avoidance (HA), respectively, with adult and child clinical participants,<sup>12,13</sup> and the SPQ total score is correlated positively with NS and negatively with HA.<sup>4,5,7,8</sup>

However, as for the psychological characteristics of Sasang typology, the robust personality construct and longitudinal stability of SPQ should be explored with adolescents as well as adults.<sup>13,14</sup> So far, previous studies with children or adolescent participants were not satisfactory,<sup>15</sup> although written descriptions on the typical temperament characteristics of children and adolescents were limited in Lee Je-ma's *Principle of Life Preservation in Eastern Medicine*.<sup>3</sup> A qualitative study on Sasang type-specific behavioral traits of children has just suggested the possibility of objective research,<sup>15,16</sup> although one study with 12-year-old elementary school students using Murphy–Meisgeier Type Indicator failed to show notable differences between Sasang types.<sup>16</sup>

Hence, the purpose of the present study was to examine the psychological construct of Sasang typology in the general adolescent population using SPQ and the Junior Temperament and Character Inventory (JTCI), which was explicitly developed for adolescents.<sup>17</sup> Our expectation was that the distinctive features of Sasang typology in the adult samples would be replicated with adolescent participants, and these would validate the robust psychological construct of SPQ.

## 2. Materials and methods

### 2.1. Participants

A total of 543 individuals from a high school in the Daegu metropolitan area completed all the measures in this study. We measured the personality characteristics with SPQ and JTCI. The procedures followed were approved by the Institutional Review Board of Kyungil University, Gyeongsan, Korea. All participants provided written informed consent forms for the study.

### 2.2. Measures

The SPQ is a 14-item self-report assessment tool measuring temperament characteristics from the perspective of the

Sasang typology. Each item composes two opposite words describing a specific personality trait, and participants must choose one of three responses (on a 3-point Likert scale): 1 = delicate, 2 = average or middle, and 3 = tough.

The SPQ is composed of three subscales that measure the behavioral [SPQ-Behavior (SPQ-B)], emotional [SPQ-Emotionality (SPQ-E)], and decision-making or cognitive [SPQ-Cognition (SPQ-C)] components of personality. The internal consistency of SPQ-B, SPQ-E, and SPQ-C for the present study was 0.74, 0.56, and 0.53, respectively.

The Korean version of the JTCI is an 82-item self-report questionnaire that asks adolescents to rate each item on a 4-point Likert scale (ranging from 0 = not at all to 3 = very true). The Korean version of the JTCI questionnaire was standardized and validated in 2007 and demonstrated good validity and reliability.<sup>18</sup>

The JTCI has four temperament dimensions—NS, HA, Reward Dependence (RD), and Persistence (PS)—and three character dimensions consisting of Self-Directedness (SD), Cooperativeness (CO), and Self-Transcendence (ST) subscales. The internal consistency as measured using Cronbach's  $\alpha$  for the JTCI NS, HA, RD, PS, SD, and CO, and the ST scales were 0.76, 0.81, 0.67, 0.67, 0.74, 0.71, and 0.66, respectively.<sup>18</sup>

### 2.3. Statistical analysis

Descriptive statistics was used for sex and school year. The Pearson correlation coefficient was calculated to examine the correlations between the subscales of SPQ and JTCI. We divided the participants into three groups based on the SPQ total score, and the JTCI score of high (30%), middle (40%), and low (30%). SPQ total score groups were compared with analysis of variance, and Bonferroni or Dunnett's T3 post hoc analysis were applied when significant.<sup>19</sup> Profile analysis for the test of parallelism and flatness was used to test the difference of the JTCI profile for high, middle, and low SPQ total score groups.<sup>13</sup>

Statistical analysis results were presented as frequency (%) or mean  $\pm$  standard error, and statistical significance level was set at  $p < 0.05$ ,  $p < 0.01$ , and  $p < 0.001$ . IBM SPSS Statistics 20.0 (IBM, Armonk, NY, USA) was used for all statistical analyses.

## 3. Results

### 3.1. Demographic characteristics of the participants

The school year and sex composition are described in Table 1. The total number of students consisted of 266 (49.0%) sophomore and 277 (51.0%) junior students, and there were 250

**Table 1 – Demographic characteristics of the participants\***

School year	N	Males
Sophomore	266 (49.0)	250 (94.0)
Junior	277 (51.0)	249 (89.9)

Data are presented as n (%).

\* No significant differences between the frequency of school year and sex.

**Table 2 – Correlations between SPQ, subscales of SPQ, and JTCI**

	SPQ	SPQ-B	SPQ-E	SPQ-C	JTCI	NS	HA	RD	PS	SD	CO	ST
SPQ	<b>0.842***</b>	<b>0.661***</b>	<b>0.767***</b>	<b>0.424***</b>	-0.291***	<b>0.200***</b>	0.073	<b>0.225***</b>	-0.031	0.118**		
SPQ-B		<b>0.315***</b>	<b>0.504***</b>	<b>0.258***</b>	-0.354***	<b>0.315***</b>	<b>0.268***</b>	<b>0.339***</b>	0.123**	0.161***		
SPQ-E			<b>0.272***</b>	<b>0.451***</b>	-0.006	0.051	-0.136**	-0.003	-0.244***	0.054		
SPQ-C				<b>0.285***</b>	-0.263**	0.043	-0.032	0.126**	0.001	9.033		

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ ; bold data represent correlation coefficient exceeding 0.2.

CO, cooperativeness; HA, harm avoidance; JTCI, Junior Temperament and Character Inventory; NS, novelty seeking; PS, persistence; RD, reward dependence; SD, self-directedness; SPQ, Sasang Personality Questionnaire; SPQ-B, SPQ-behavior; SPQ-C, SPQ-cognition; SPQ-E, SPQ-emotionality; ST, self-transcendence.

**Table 3 – SPQ and JTCI subscale scores for high, middle, and low SPQ total score groups**

SPQ group	Low	Middle	High	F value	Post hoc
SPQ	23.13 ± 0.18	28.45 ± 0.08	34.08 ± 0.19	1199.79***	Low < middle < high
SPQ-B	7.9 ± 0.14	10.3 ± 0.10	12.87 ± 0.11	452.48***	Low < middle < high
SPQ-E	6.31 ± 0.12	7.65 ± 0.10	9.03 ± 0.13	135.48***	Low < middle < high
SPQ-C	8.92 ± 0.12	10.5 ± 0.10	12.18 ± 0.11	222.19***	Low < middle < high
JTCI					
NS	18.21 ± 0.33	20.49 ± 0.35	23.14 ± 0.43	43.94***	Low < middle < high
HA	23.11 ± 0.42	20.33 ± 0.44	18.72 ± 0.48	24.6***	High < middle < low
RD	14.07 ± 0.24	14.99 ± 0.26	16.09 ± 0.25	16.4***	Low < middle < high
PS	12.78 ± 0.23	13.35 ± 0.21	13.59 ± 0.25	3.29*	Low < high
SD	19.9 ± 0.38	21.77 ± 0.35	22.73 ± 0.36	15.68***	Low < middle, low < high
CO	24.69 ± 0.36	24.82 ± 0.35	24.58 ± 0.38	0.1	
ST	15.48 ± 0.37	15.34 ± 0.37	16.78 ± 0.35	4.7**	Low < high, middle < high

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

CO, cooperativeness; HA, harm avoidance; JTCI, Junior Temperament and Character Inventory; NS, novelty seeking; PS, persistence; RD, reward dependence; SD, self-directedness; SPQ, Sasang Personality Questionnaire; SPQ-B, SPQ-behavior; SPQ-C, SPQ-cognition; SPQ-E, SPQ-emotionality; ST, self-transcendence.

(94.0%) and 249 (89.9%) males in each school year. There were no significant differences in school year and sex composition [ $F(1543) = 3.053, p = 0.081$ ].

**3.2. Correlation between SPQ and JTCI**

Table 2 demonstrates the correlations coefficients between subscales of SPQ and JTCI. SPQ showed significant relations with the subscales of SPQ and JTCI. The correlations coefficient between SPQ and SPQ-B, SPQ-E, and SPQ-C were .842, .661, and .767, respectively. The correlations coefficient between SPQ and NS, HA, RD, PS, SD, CO, and ST rates were 0.424, -0.291, 0.200, 0.073, 0.225, -0.031, and 0.118, respectively.

**3.3. SPQ and JTCI subscales scores for high, middle, and low SPQ total score groups**

The subscale of SPQ and JTCI showed significant differences among high, middle, and low SPQ score groups (Table 3). Because these three groups are based on the SPQ total score, the significant differences in SPQ subscales of behavior, emotionality, and cognition were expected. And the subscales of JTCI have significant differences between high and low SPQ score groups except the JTCI CO.

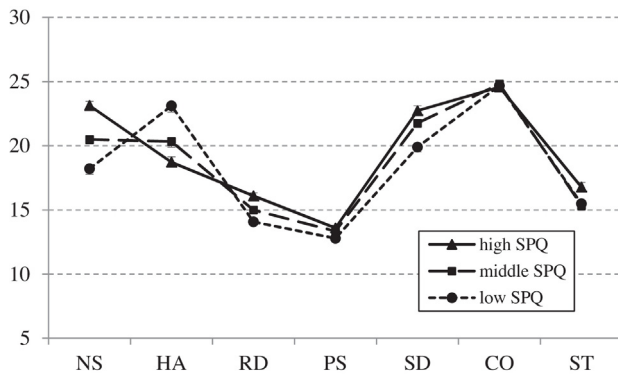
**3.4. JTCI dimension profile of high, middle, and low SPQ total score groups**

JTCI subscale profiles of high, middle, and low SPQ total score groups were significantly different (Fig. 1). The JTCI score profile of the three groups was not flat (Greenhouse–Geisser test,  $df = 3.424, F = 443.812, p < 0.001$ ). As for the parallelism of JTCI profiles, the interaction of three groups was significantly different (Greenhouse–Geisser correction,  $df = 6.848, F = 18.610, p < 0.001$ ).

**4. Discussion**

The personality construct of SPQ in an adolescent general population was examined and attested with JTCI in this study. The SPQ was correlated positively with NS and negatively with HA as suggested with adult samples previously.<sup>6,7</sup> And the high, middle, and low SPQ total score groups, which can be correspondent to So-Yang, Tae-Eum, and So-Eum Sasang type groups, respectively,<sup>4,5,7,8</sup> showed significant differences in NS and HA. In addition, these three SPQ total score groups presented significantly different JTCI dimension profiles replicating earlier studies with adults.<sup>12,13</sup>

This study showed that the adolescents have the same personality construct as the adults in terms of SPQ, implying that the clinical application of SPQ to adolescents is



**Fig. 1 – JTCI subscale profile of SPQ high, middle, and low groups. The JTCI score profile of the three groups were significantly different (flatness with Greenhouse–Geisser test,  $df = 3.424$ ,  $F = 443.812$ ,  $p < 0.001$ ; parallelism with Greenhouse–Geisser correction,  $df = 6.848$ ,  $F = 18.610$ ,  $p < 0.001$ ).**

**JTCI, Junior Temperament and Character Inventory; SPQ, Sasang Personality Questionnaire.**

acceptable. Adolescence is a transitional stage of physical and psychological changes with rapid cognitive development and physical growth, formation of self-identity, and sociocultural interaction/influence. There were restricted Sasang typology studies with this age for the limitation of objective and reliable instruments,<sup>13</sup> and restricted descriptions on adolescent characteristics in *Principle of Life Preservation in Eastern Medicine*.<sup>3</sup> This study revealed the stable biopsychological profiles with Sasang typology in the adolescent sample, which suggested the possibility of developing novel Sasang-type differentiation instruments for children including elementary school students and preschoolers.

With further studies, utilization of our results may lead to more enhanced clinical safety and efficacy in medication or acupuncture use for children, and may provide an important clinical guideline for personalized medicine in traditional Korean pediatrics.

However, there are also several limitations to be acknowledged. First, the clinical validity of SPQ for Sasang typology was not provided here yet, and other Sasang type-specific clinical characteristics in pathophysiological symptoms<sup>19,20</sup> with adolescence are still needed. Second, although the results in the current study are in accordance with previous adult studies, most participants are males and therefore further investigations with more female participants are required for the generalization of the current results. Last but not least, there are disparities in the correlation between the subscales of JTCI and SPQ compared with the previous studies, and prospective investigations are needed to scrutinize the reason.

This study marks the first practical clinical study using a reliable biopsychological instrument and provided preliminary clinical data for the development of the child version of Sasang-type diagnostic tools and longitudinal stability of Sasang typology.

## Conflicts of interest

No competing financial interests exist.

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