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## Original Article

Temperament profiles of *Sasang* typology in a child clinical sampleSoo Jin Lee<sup>a</sup>, Soo Hyun Park<sup>b</sup>, Han Chae<sup>c,\*</sup><sup>a</sup> Department of Psychotherapy, College of Health Sciences, Kyungil University, Daegu, Korea<sup>b</sup> Department of Occupational Therapy, College of Health Sciences, Yonsei University, Wonju, Korea<sup>c</sup> Division of Longevity and Biofunctional Medicine, School of Korean Medicine, Pusan National University, Busan, Korea

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## ABSTRACT

**Background:** *Sasang* typology is a personalized traditional medicine widely used in clinical diagnosis and treatment in Korea. The aim of this study was to examine the biopsychological personality profiles of traditional Korean *Sasang* typology in a clinical sample of Korean children.

**Methods:** A total of 150 children were classified as one of three traditional Korean *Sasang* types (19 So-Yang, 118 Tae-Eum, and 13 So-Eum) by two clinical experts in *Sasang* typology. The children's mothers completed the Korean version of the Junior Temperament and Character Inventory (JTCI). The four temperament dimensions of JTCI were compared between the different *Sasang* types using analysis of variance (ANOVA) and profile analysis.

**Results:** There were no significant differences in age, gender, and parents' education levels across the *Sasang* types. The JTCI temperament profile for each of the child *Sasang* types was significantly different (profile analysis,  $df = 5.315$ ,  $F = 2.508$ ,  $p = 0.027$ ). There were significant differences in novelty-seeking ( $F = 3.850$ ,  $p = 0.023$ ) and novelty-seeking subscales, but not with other temperament dimensions.

**Conclusion:** These results demonstrated distinct temperament traits associated with traditional Korean *Sasang* types in children using an objective biopsychological personality inventory. With further investigation into the biopsychological profiles of the children, the longitudinal stability of the *Sasang* typology can be examined.

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## 1. Introduction

*Sasang* typology, originally theorized by Lee Je-ma<sup>1</sup> in his book *Dong-Yi-Soo-Se-Bo-Won* (The Principle of Life Preservation

in Oriental Medicine), is a personalized traditional medicine practice widely used in the clinical diagnosis and treatment of disease in Korea. In *Sasang* typology, a person's *Sasang* type can be classified as Tae-Yang, So-Yang, Tae-Eum or So-Eum according to their psychological temperament and physical

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constitutions, with the implication that a person's sensitivity and response to certain drugs can be different depending on their *Sasang* type.<sup>2</sup>

Since the balance in the organs of the specific *Sasang* type is believed to stem from the natural temperaments of a person, there have been many studies focusing on the personality characteristics of each *Sasang* type which have revealed a variety of psychological traits and profiles.<sup>3,4</sup> A systematic review of research into *Sasang* typology<sup>4</sup> showed that the So-Yang type demonstrated high extraversion and low neuroticism, while the So-Eum type exhibited low extraversion and high neuroticism. Interestingly, these two factors have been repeatedly mentioned as perhaps the most critical variables in a range of research into personality including that of Eysenck's theory of personality and Cloninger's theory of temperament<sup>5</sup>.

The temperament and character inventory (TCI) originally developed by Cloninger, is an assessment tool based on a biopsychological personality model. The TCI consists of four temperament dimensions and three character dimensions. The temperament factors appear to be heritable, manifest early in life, and apparently involve pre-conceptual and unconscious biases in learning. The temperament dimensions include novelty seeking (NS), viewed as a heritable bias in the activation or initiation of behaviors, harm avoidance (HA), regarded as a heritable bias in the inhibition or cessation of behaviors, reward dependence (RD), viewed as a heritable bias in the maintenance or continuation of ongoing behaviors, and persistence (P), which is viewed as a heritable bias in terms of perseverance despite frustration and fatigue.

The temperament characteristics of *Sasang* typology have been repeatedly reported, and the TCI is a reliable tool for its objective measures.<sup>4,6</sup> There were significant differences in the temperament dimensions of NS and HA with adult clinical patients. That is, the NS scores of the So-Yang type was higher than others while the So-Eum type scored higher on the HA score compared to other *Sasang* types.

Since *Sasang* typology is based on personality<sup>7</sup> and genetic heritability,<sup>8,9</sup> the longitudinal stability of such personality characteristics should be explored with infant or preschool children as well as adults. However, there is no written description of the child temperament characteristics in Lee Je-ma's book,<sup>10</sup> and previous studies with children were not satisfactory.<sup>11,12</sup> A qualitative study on behavior traits in six children at a childcare center has suggested the possibility of objective research,<sup>11</sup> and one study with 12-year-old elementary school students using the Murphy-Meisgeier Type Indicator for Children (MMTIC) failed to show notable differences between *Sasang* types.<sup>12</sup>

In addition, appropriately validated diagnostic instruments for children have not been developed yet. Although development of an objective *Sasang* type diagnostic for elementary school students<sup>13</sup> was attempted based on mental characteristics<sup>14</sup> and physical shapes,<sup>15</sup> this was a simple modification of an existing adult version without consideration of biopsychosocial development of children, and proper standardization and validation procedures.<sup>14</sup>

Hence we examined the temperament profiles of a clinical sample of children with defined *Sasang* typology using

the junior TCI (JTCI), which was explicitly developed for children. Our research sought to corroborate results of an earlier study<sup>2</sup> that found a clear difference in the biopsychological characteristics of the So-Yang versus So-Eum type in an adult sample. We expect children to show more essential features because they are relatively less influenced by education, or social relationships or contexts compared with adults.

In this study, children whose *Sasang* types were confirmed by clinical experts in child *Sasang* typology were included because practical clinical guidelines or diagnostic instruments were not available for use with children. By using a clinical sample that had undergone a *Sasang*-based medical regimen, we hope that the temperament profile determined in this study will provide a foundation for the construction of *Sasang* type classification guidelines and assessment tools for children in the future.

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## 2. Methods

### 2.1. Participants

Participants were selected from the outpatients who visited specialized traditional medicine pediatric clinics in the suburban Seoul area between September of 2008 and August of 2009. The primary care doctor first suggested participation in the research with detailed explanation to the parents (mostly mothers) of children aged between 18 months and 82 months. After the participants completed a written consent form, parents completed the JTCI. This study was approved by the Department Research Review Committee of the Department of Psychology, Yonsei University.

Clinical determination of the childrens' *Sasang* typology was based on a medical chart review conducted by two independent clinical experts in pediatrics and Korean *Sasang* typology who have been in clinical practice for 5 years or more. Data pertaining to the So-Yang ( $N=19$ ), Tae-Eum ( $N=118$ ), and So-Eum ( $N=13$ ) *Sasang* types, which were excluded in analysis if two clinicians disagreed with confidence on one specific *Sasang* type, were statistically analyzed.

### 2.2. Measure

The Korean version of the JTCI is an 86-item parent-report questionnaire that asks parents to rate each item on a five-point scale (0 = not at all, to 4 = very true). The Korean version of the questionnaire was standardized and validated in 2007 and demonstrated validity and reliability.<sup>16</sup>

Each of the dimensions of the TCI is assessed as the sum of scores on two to four subscales measuring 19 more specific traits that define the temperament and character dimensions. For example, NS includes exploratory excitability versus stoic rigidity (NS1), impulsiveness versus reflection (NS2), extravagance versus reserve (NS3), and disorderliness versus regimentation (NS4). The internal consistency as measured by Cronbach  $\alpha$  for the JTCI NS, HA, RD, and P scales were 0.86, 0.86, 0.71, and 0.82, respectively, and the test-retest reliability was 0.89, 0.76, 0.75, and 0.88, respectively.<sup>16</sup>

**Table 1 – Demographic Characteristics Across Sasang Types.**

Demographic variables	So-Yang (n = 19)	Tae-Eum (n = 118)	So-Eum (n = 13)
Age in months (mean, SD)	55.3 (12.2)	54.3 (13.4)	53.8 (13.2)
Gender			
Male (%)	10 (52.6)	69 (58.5)	4 (30.8)
Female (%)	9 (47.4)	49 (41.5)	9 (69.2)
Level of education of mothers			
High school (%)	1 (5.6)	7 (6.0)	1 (7.7)
College (%)	15 (83.3)	94 (81.0)	11 (84.6)
Master degree (%)	2 (11.1)	15 (13.0)	1 (7.7)
Level of education of fathers			
High school (%)	1 (5.6)	10 (8.6)	0 (0)
College (%)	15 (93.3)	76 (65.5)	8 (61.5)
Master degree (%)	2 (11.1)	30 (25.9)	5 (38.5)

Results are reported as means (standard deviations) or as numbers (%).  
No significant differences in frequency of age, gender, and education of parents between types.

2.3. Statistical analysis

Demographic differences between *Sasang* types (So-Yang, Tae-Eum, and So-Eum) were tested using analysis of variance (ANOVA) for the one continuous variable (age) and Fisher’s exact tests for categorical variables (level of education and gender). Profile analysis such as test of parallelism and flatness was performed to test the difference of the TCI profile for each *Sasang* type. ANOVAs were conducted to test between-group differences in TCI scores across the three *Sasang* types. The data are represented as means and standard deviations. All analyses were conducted using PASW Statistics 18.0 for Windows (IBM, Armonk, NY), and *p* values of 0.01 and 0.001 were used for significance.

3. Results

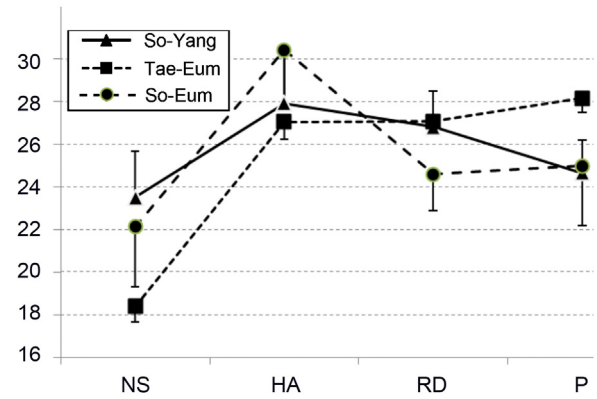
The results are divided into two sections. The first describes the background characteristics of the sample and the second describes the TCI temperament profiles across the three *Sasang* types.

3.1. Demographic background

The mean age, gender composition, and educational attainment level are described in Table 1. The mean age of the entire sample was 53.4 ± 13.2 months. There were no significant differences in age [*F*(2, 147) = 0.063, *p* = 0.939], gender ( $\chi^2 = 0.372$ , *p* = 0.985), and level of education ( $\chi^2 = 4.417$ , *p* = 0.353) between the three *Sasang* types.

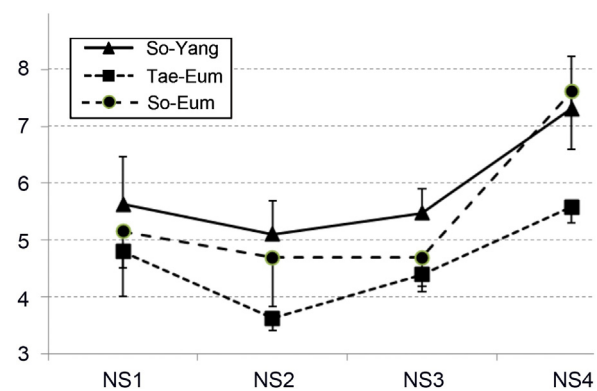
3.2. TCI profile across the *Sasang* types

Fig. 1 demonstrates the TCI temperament profile for each of the three *Sasang* types. The TCI temperament score profiles of the So-Yang, Tae-Eum, and So-Eum types were significantly different. The profile of TCI temperament characteristics, such



**Fig. 1 – TCI dimension score profile of *Sasang* types.** The TCI score profile of the So-Yang, Tae-Eum, and So-Eum types were significantly different (flatness with Greenhouse-Geisser test, *df* = 2.657, *F* = 8.623, *p* < 0.001; parallelism with Greenhouse-Geisser correction, *df* = 5.315, *F* = 2.508, *p* = 0.027). The So-Yang types (23.53 ± 9.34) scored higher on the NS scale than the Tae-Eum types (18.38 ± 8.04), *F*(2, 147) = 3.850, *p* = 0.023. Whisker represents standard errors. NS, novelty-seeking; HA, harm-avoidance; RD, reward-dependence; P, persistence.

as NS, HA, RD and P was not flat (Greenhouse-Geisser test, *df* = 2.657, *F* = 8.623, *p* < 0.001). As for the parallelism of TCI temperament profiles, the interaction of *Sasang* type was significantly different (Greenhouse-Geisser test, *df* = 5.315, *F* = 2.508, *p* = 0.027). *Sasang* types showed significant differences in the NS scale of the JTCI [*F*(2, 147) = 3.850, *p* = 0.023]. Least significant difference (LSD) post-hoc analysis revealed that the So-Yang type (23.53 ± 9.34) scored higher on the NS scales than the Tae-Eum type (18.38 ± 8.04). There were no



**Fig. 2 – TCI NS subscale scores of *Sasang* types.** There were significant differences between *Sasang* types. The So-Yang types scored higher on the NS2 (5.11 ± 2.54) and NS4 (7.32 ± 4.00) subscales than the Tae-Eum types (3.62 ± 2.31 and 5.58 ± 3.02), *F*(2, 147) = 3.880, *p* = 0.023 and *F*(2, 147) = 4.250, *p* = 0.016, respectively. Whisker represents standard errors. NS1, Exploratory Excitability vs Stoic Rigidity; NS2, Impulsiveness vs Reflection; NS3, Extravagance vs Reserve; NS4, Disorderliness vs Regimentation.

other significant differences between *Sasang* types in the other three temperament scales.

To further explore these dimensions, subscales of the NS were analyzed (Fig. 2). A significant difference was found in the NS2 (impulsiveness versus reflection) and NS4 (disorderliness versus regimentation subscales),  $F(2, 147) = 3.880, p = 0.023$  and  $F(2, 147) = 4.250, p = 0.016$ . More specifically, the So-Yang type ( $5.11 \pm 2.54$ ) scored higher on the NS2 when compared with the Tae-Eum type ( $3.62 \pm 2.31$ ) and the So-Yang ( $7.32 \pm 4.00$ ) and So-Eum types ( $7.62 \pm 3.69$ ) scored higher on the NS4 when compared with the Tae-Eum type ( $5.58 \pm 3.02$ ).

#### 4. Discussion

The relationship between objective personality theory as described by Cloninger in his biosocial model<sup>17</sup> of temperament and character, and *Sasang* typology of traditional Korean medicine was examined in children. We illustrated distinct temperament profiles for the different child *Sasang* types as suggested by the studies with adult clinical samples.<sup>3</sup>

The results demonstrated that the TCI temperament dimensions of NS were particularly important in distinguishing between the three *Sasang* types, especially between the So-Yang and Tae-Eum types. The So-Yang type, exhibiting contrasting features from the Tae-Eum type, scored higher on the NS scale and NS2 (impulsiveness versus reflection) and NS4 (disorderliness versus regimentation) subscales. As based on such a TCI temperament profile, So-Yang type children can be described as quick-tempered, excitable, impulsive, and vigorous.<sup>18</sup> The So-Yang type was originally described as hot-tempered, easily bored, and righteous by Lee Je-Ma in *The Principle of Life Preservation in Oriental Medicine*.<sup>1</sup> These results also corroborate findings from previous research that used a different diagnostic tool for differentiation of *Sasang* types.<sup>3,19</sup>

So-Eum type children have higher scores than other types with respect to HA, which is consistent with findings using adults. However this study could not illustrate a statistical difference between *Sasang* types. Considering the fact that HA is directly related to the child survival strategy during development, this should be thoroughly examined with a larger sample size.

As in previous research with adults, differences were found in the NS and HA dimensions, two temperament dimensions which are presumed to have a genetic and anatomical basis and can influence clinical outcomes.<sup>18,20-25</sup> However, just the NS showed a significant difference in this study, lending partial support, albeit indirectly, for the argument that the *Sasang* typology demonstrates longitudinal stability in terms of temperament, and these temperaments can be considered as major biopsychological traits in nature.

Several limitations of this study should be acknowledged. Firstly, individuals who chose not to participate by not returning the survey packet may represent a different slice of the population than those represented in this particular sample, suggesting the possibility of representational bias related to the Tae-Eum type. However, between the ages of 42 and 78 months, the distribution ratio of So-Yang:Tae-Eum:So-Eum has been found to be 1.8:43.2:55<sup>26</sup> indicating the possibility

of a significantly different prevalence of *Sasang* types between children and adults.

Secondly, we did not incorporate multi-method means of classifying *Sasang* typology due to the lack of reliable instruments for children. Although only those participants who were rated by two experienced clinical experts in pediatrics and *Sasang* typology could take part, future studies should utilize a diverse source of *Sasang* type classifications to enhance reliability, such as the combination scores from the research- and clinical-oriented methods as suggested previously.<sup>13</sup> Lastly, the systematic review by Chae et al.<sup>3</sup> suggests that the psychological characteristics of the Tae-Eum type lie somewhere in between the So-Yang and So-Eum types. Although the So-Yang and So-Eum types showed higher scores in NS and HA, we can find contrasting features between Tae-Eum and So-Yang/So-Eum. Future studies should utilize a larger sample size and various age cohorts to empirically ascertain the psychological characteristics of the previous studies.

In summary, three points should be emphasized in this study. Firstly, our analysis revealed stable biopsychological profiles with *Sasang* typology, and indicates a need for future studies that replicate or confirm the previous studies. Secondly, there is a need for developing novel *Sasang* type differentiation instruments based on the personality traits of children, preschooler and elementary school kids similar to those developed for adult patients.<sup>7</sup> And last but not least, utilization of our results may lead to more enhanced clinical safety and efficacy in medication or acupuncture use, and may provide an important clinical guideline for personalized medicine in traditional Korean medicine.

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

#### Conflict of interest

No competing financial interests exist.

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