Review

Psychological Profile of Sasang Typology: A Systematic Review

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A systematic review of studies related to the psychological characteristics of Sasang types was conducted with the goal of delineating generalizable psychological profiles based on Sasang typology, a traditional Korean medical typology with medical herbs and acupuncture that is characterized as personalized medicine. Journal articles pertaining to Sasang typology were collected using five electronic database systems in Korea and in the USA. As a result, 64 potentially relevant studies were identified and 21 peer-reviewed research articles that employed psychometric inventories were included. Beginning with the use of the Minnesota Multiphasic Personality Inventory in 1992, Myers-Briggs Type Indicator, NEO-Personality Inventory, Temperament and Character Inventory and other personality assessment tools were employed in the identified studies. Because data synthesis could not be carried out due to the heterogeneity of the studies, the present review article sought to delineate the mutual relevance of the studies based on research results pertaining to the correlation between the aforementioned psychological assessment instruments. Results of the review indicate that two super-factors, Extraversion and Neuroticism, serve as the foundation in regards to delineating personality constructs, such that the So-Yang type scored high on the Extraversion dimension and low on the Neuroticism dimension, while the So-Eum type scored low on the Extraversion dimension and high on the Neuroticism dimension. The present systematic review indicates that Sasang typology shares similarities with the Western psychological tradition.

Keywords: Extraversion – Neuroticism – personality profile – Sasang typology – systematic review

Introduction

Personality represents the characteristics of an individual’s pattern of behavior, way of thinking and emotional expression that interact to determine one’s adaptation to their environment (1). Beginning with Freud’s focus on the unconscious, modern Western psychology has examined personality in terms of fundamental traits of human personality and the biological basis of such traits. More recently, in addition to the Temperament and Character Inventory (TCI), which encompasses the complex interaction between different biopsychological factors, the Five Factor Model has been proposed as the universal structure underlying personality.

The beginning of personality theory stems from the four temperaments theory of Hippocrates and Galen. This theory posits that the four humors (blood, phlegm, yellow bile and black bile) form the basis for personality formation in addition to serving as the basic components of the human body. The underpinnings of this theory...
evolved into Hans J. Eysenck’s personality typology, which emphasizes the biological basis of fundamental personality traits. Eysenck proposed two core broad psychological traits (Extraversion and Neuroticism) and four constructs that result when these two core traits are crossed (2). The descriptive characteristics of personality outlined by Eysenck, namely the four personality types of Stable-Extrovert, Neurotic-Extrovert, Stable-Introvert and Neurotic-Introvert, share remarkable similarity with Galen’s Sanguine, Choleric, Phlegmatic and Melancholic types and the TaE-Yang, So-Yang, Tae-Eum and So-Eum Sasang types proposed by Lee Je-Ma who based his theory on traditional Korean medicine, Neo-Confucianism and clinical experience, respectively (Table 1) (3–6).

Sasang typology was systematically theorized in Lee Je-Ma’s book Dong-Yi-Soo-Se-Bo-Won (The Principle of Life Preservation in Oriental Medicine) with the quaternary nature of Neo-Confucianism (sadness, anger, gladness and enjoyment) which makes the four Sasang types with typical temperament profile, status of organ system, physiological and pathological features, physical characteristics and response to a certain drugs (7–9). Sasang typology also employs the same herbs and acupuncture points but is different from conventional traditional Chinese medicine, since it encompasses stable biopsychological temperaments alongside with sociological facets emphasizing development of one’s character (7,9).

Currently, traditional Korean personalized medicine utilizing acupuncture and medical herbs based on Sasang typology is being actively applied clinically in Korea. The Rehmanniae Radix and Corni Fructus, for example, are type-specific herbs for the So-Yang type, who can be characterized as a sharp and clean-looking person who is extroverted, easily acceptable, hot-tempered and interested in the outside world. Ginseng Radix and Cinnamomi Cortex are type-specific herbs for the So-Eum type, who is an introverted, inactive, prudent, negative, organized, nervous and resolute person. Ephedra Sinica, Dioscoreae Rhizoma and Puerariae Radix are type-specific herbs for the Tae-Eum type, who lies in between the So-Yang and So-Eum type in regards to their psychological features and typically has a high body mass index (7–9).

The similarities between Lee Je-Ma’s medical typology and modern psychology sparked psychological research investigating the characteristics underlying Sasang typology (10,11). Research examining the psychological characteristics of Sasang typology began with the use of the Minnesota Multiphasic Personality Inventory (MMPI) in 1992, continuing on to assessment tools such as the Sixteen Personality Factor Inventory (16PF), Myers-Briggs Type Indicator (MBTI), Beck’s Depression Inventory (BDI), State-Trait Anxiety Index (STAI), NEO-Personality Inventory (NEO-PI), Eysenck Personality Questionnaire (EPQ) and TCI. Because research utilizing such psychological inventories has in part been conducted depending on the researchers’ convenience or varying efficiency and need in the clinical setting, it has been difficult to delineate the directionality of such research results as a whole. Moreover, research results have been contradictory at times and/or have offered controversial conclusions. Hence, there is a need to conduct a systematic review of existing research, thereby creating a general personality profile based on Sasang typology.

### Methods

#### Search Strategy and Data Sources

The following electronic databases were searched from inception up to November 2008: Pubmed...
Study Selection and Data Extraction

Article Selection

Peer-reviewed research articles that reported on objective psychological features pertaining to Sasang types were included in the present review. Articles that provided only qualitative findings based on clinical experience or hypothesis, review papers focusing on translated text(s), clinical case studies, research that did not utilize a widely accepted and validated psychometric inventory, and research focusing on vocational compatibility and physical health status resulting from psychological stress were excluded.

Data Extraction

Hard copies of all articles were obtained and read in full. All articles were reviewed by two independent reviewers (H.C. and S.J.L.) and data from the articles were extracted according to the pre-defined criteria. Information pertaining to demographic characteristics such as gender distribution, participants’ general characteristics and mean age was collected. In cases where the age was not available, the average age group of the participants was estimated based on the frequency of particular age groups, e.g. 20s, as specified in the text. Furthermore, the method by which the Sasang type classification was obtained and prevalence of each Sasang type were both extracted in order to take into consideration potential differences that may arise as a result of different classification methodology used in the different studies. Using statistical significance value of $P<0.05$ as the basis, raw data pertaining to outcome measure items that represented statistical significance of each Sasang types, were organized to fit the pre-defined criteria. Because statistical analysis differed across the studies, the actual $P$ values are not provided separately in the present review. Instead, symbols ($\Delta$, $\bullet$ and $\nabla$) are used to directly show significance.

Data Analysis

Data synthesis using meta-analysis could not be conducted because the general characteristics, gender and age distribution of study participants, in addition to the level of research quality were heterogeneous. Hence, relevant data were analyzed in the following manner in the present review. First, data pertaining to psychological assessment that revealed statistically significant differences between the Sasang types were collected based on the pre-defined data extraction criteria. Second, based on the correlations between the different psychological inventories, the directionality of the super-factors was deduced.

Results

Characteristics of Studies

The search identified 618 potentially relevant articles which have Sasang typology related terms, and 554 studies were excluded as irrelevant based on article title and abstract. The majority of the excluded studies did not incorporate psychological features of the Sasang typology in their research question. Sixty-four studies remained, but 43 studies were subsequently excluded based on the exclusion criteria described above. Hence, a total of 21 studies were included in the current review. The key data extracted from these research articles are summarized in Table 2.

Psychological Inventory

The MMPI was used in four of the studies (12–15), while two studies based their research on the 16PF (16,17). The MBTI and the Murphy-Meisgeier Type Indicator for Children (MMTIC) were used in nine of the studies (7,17–24). In addition, two studies relied on the BDI (25,26), Neuroticism Extraversion Openness Personality Inventory-Revised (NEO-PI-R) (27,28), and TCI (8,23), respectively. Three studies employed the STAI (25,26,29) and one study used the EPQ (30) as the primary psychological inventory. Three studies used two or more psychological inventories.

Participants

Thirteen studies were conducted with non-clinical participants (7,13,15,16,18–20,23,25,27–30), eight articles used clinical participants (8,12,14,15,21,22,24,26), and one article focused on a mixture of both clinical and non-clinical subjects (17).

Mean Age

Mean age and standard deviations of participants were provided in nine studies (7,8,15,16,18,20,23,26,29).
| Reference       | Inventory | Demographic characteristics | Sasang type classification | Method | Prevalence<sup>b</sup> | Significant outcome | Tae-Eum | So-Eum |
|-----------------|-----------|-----------------------------|-----------------------------|--------|-------------------------|---------------------|---------|--------|
| Kim et al. (12) | MMPI      | Alcoholic patient           | N.A. (39.9)                 | Specialist | 0/9/18/16              | Hs (43.0 ± 4.44, ▲) | Hs (55.6 ± 9.29, ▲) | Hs (57.8 ± 10.18, ▲) |
| Kim et al. (13) | MMPI      | College student             | N.A.                        | QSCC1   | 0/23/30/22             | Hy (45.2 ± 4.92, ▲) | Hy (55.7 ± 9.62, ▲) | Hy (57.9 ± 10.67, ▲) |
| Kim et al. (14) | MMPI      | Neurpsychiatry patient      | N.A.                        | QSCC2   | 0/56/55/70             | n.s.                |                     |                     |
| Lee et al. (15) | MMPI      | Dysmenorrhea patient        | N.A.                        | QSCC2   | 0/15/10/21            | Pa (56.50 ± 10.66, ▲) | Pa (45.27 ± 9.22, ▲) | Pa (42.30 ± 6.95, ▲) |
| Ko (16)         | 16PF      | Hospital worker + college student | N.A.                        | QSCC1   | 5/41/21/68            | Re (5.23 ± 1.95)     | Re (6.22 ± 1.99, ▲) | Re (5.20 ± 1.58, ▲) |
| Cho et al. (17) | 16PF      | General patient + college student | N.A.                        | QSCC1   | NA                     | N.A.                |                     |                     |
| Cho et al. (17) | MBTI      | General patient + college student | N.A.                        | QSCC1   | NA                     | N.A.                |                     |                     |
| Park et al. (18)| MBTI      | Military personnel          | 21.5 ± 1.4                  | QSCC2   | 0/113/98/108          | EI (96.2, ▲)         | EI (94.4, ▲)         | EI (116.0, ▲)       |
| Kim et al. (19) | MBTI      | College student             | N.A. (23)                   | QSCC2 + specialist | 2/22/34/28          | EI (101.18, ▲)      | EI (124.09, ▲)      | EI (130.11, ▲)      |
| Choe et al. (7) | MBTI      | College student             | 25.1 ± 4.9                  | QSCC2   | 0/25/31/30            | Ei (101.6 ± 24.0, ▲)| Ei (118.0 ± 22.4, ▲)| Ei (133.9 ± 16.4, ▲)|
| Lee et al. (23) | MBTI      | College student             | 23.8 ± 3.7                  | QSCC2   | 0/12/10/44            | Ei (92.33 ± 24.26, ▲)| Ei (116.80 ± 28.50)| Ei (126.05 ± 19.10, ▲)|
| Choi et al. (24)| MMTIC     | Obese child                 | N.A. (10)                   | QSCC2 + specialist | 0/15/26/33          | n.s.                |                     |                     |
| Seo et al. (25) | BDI       | Healthy person              | N.A. (27.1)                 | QSCC2 + specialist | 0/11/35/17          | n.s.                |                     |                     |
| Lim et al. (26) | BDI       | Middle-aged obesity (BMI>25)| 45.4 ± 6.0                  | QSCC2 + specialist | 1/3/25/2             | BDI: Tae-Eum (6.88 ± 4.63, ▲) vs. Non-Tae-Eum (13.17 ± 8.89, ▲) |
| Seo et al. (25) | STAI      | Healthy person              | N.A. (27.1)                 | QSCC2 + specialist | 0/11/35/17          | STAI-S (39.00 ± 8.53) | STAI-S (39.97 ± 9.24, ▲) | STAI-S (46.82 ± 10.82, ▲) |
| Lim et al. (26) | STAI      | Obese middle-age (BMI>25)   | 45.4 ± 6.0                  | QSCC2 + specialist | 1/3/25/2             | STAI-T (39.09 ± 6.01, ▲) | STAI-T (41.14 ± 9.95, ▲) | STAI-T (47.76 ± 9.48, ▲) |
| Hsing et al. (29) | STAI  | College student             | 25.18 ± 4.18                | QSCC2 + specialist | 0/11/15/8            | n.s.                |                     |                     |
### Extracted Data

The results of data extraction from the aforementioned 21 studies are as follows. A significant difference between Sasang types were found in 15 studies and the raw data based on the particular psychological inventories for the Sasang type are presented in Table 2. A significant difference between Sasang types was not found in four of the studies with the STAI, BDI and MMPI (14, 24, 25, 29). While the results of statistical analysis were not available in studies that used the MMTIC (24), it was determined that the results would not have reached statistical significance based on the data provided in the studies.

Two studies that employed the 16PF (17) and MBTI (21) did not report findings that could be included in the present review. In one study (17) that used the 16PF and MBTI, only the final results of correlation analysis were presented without actual means and standard deviations. In another study (21) that used the MBTI data were reported simply as preferred MBTI type without displaying actual means and standard deviations for the different Sasang types.

### Outcomes

Confirming earlier findings by Chae and his colleagues (6–8), significantly contrasting differences between the So-Yang and So-Eum types were found in a majority of the studies.

### MMPI

The MMPI was initially designed to assist in the prediction of a subset of common psychiatric disorders. In the four studies that employed the MMPI (12–15), only one study (13) relied on a college sample while the remaining three based their findings using patients diagnosed with...
alcoholism (12), other neuropsychiatric conditions (14) and dysmenorrheal (15).

In study that used a non-clinical sample (13), a significant difference was found in the Depression (D), Psychasthenia (Pt), Hypomania (Ma) and Social Introversion (Si) scales, while differences were found in the Hysteria (Hs), Hypochondriasis (Hy), Paranoia (Pa) and Si scales in the clinical sample (12,15). The So-Yang type scored significantly lower on the Si, Hy, Hs, D and Pt scales compared to the So-Eum type (12,13,15). In contrast, the So-Eum type scored significantly lower on the Ma and Pa scales compared with the So-Yang type (13,15). The MMPI profile of the Tae-Eum type was found to be identical to the So-Eum type (12,13).

16PF

The two studies (16,17) that used the 16PF were conducted in the early phase of Sasang typology research and their primary goal was to explore the personality characteristics of the different Sasang types. Data from only one (16) of the studies that used a non-clinical sample (hospital staff and college student group) could be used in the present review, as the remaining study (17) did not present actual means and standard deviations. While other personality inventories reveal significant profile differences, mostly between the So-Yang and So-Eum types, a significant difference was found between the So-Eum and Tae-Eum types using the 16PF (16). More specifically, the So-Eum type scored significantly lower on the Reasoning (Re) scale while the Tae-Eum type scored significantly higher. The Tae-Eum type scored significantly lower on the Tough Mindedness (TM) scale while the So-Eum type scored significantly higher on the same scale.

MBTI and MMTIC

The MBTI was used in eight studies (7,17–23) to assess normal personality traits because first, this inventory is geared towards assessing differences that result from the way people perceive information and how they prefer to use that information, and secondly, because the general population frequently use this inventory due to the ease with which it can be completed. In six studies (7,18–20,22,23) within which data pertaining to Extroversion to Introversion (EI) and Introversion (Intr.) were presented, a significant difference between the So-Yang and So-Eum types was found. More specifically, while the So-Yang type demonstrated a significant tendency to be extraverted, the So-Eum type was found to be significantly more introverted. Five studies (7,18–20,22) reported a significant difference related to the Tae-Eum type, such that two studies (18,20) reported that the Tae-Eum type showed a similar tendency as the So-Yang type to be extraverted, while another study (7) showed that the Tae-Eum type demonstrated a significant difference from both the So-Yang and So-Eum types and positioned in between the two types. Other two studies (19,22) indicated that the Tae-Eum type tends to be more introverted, similar to the profile of the So-Eum type.

In the Sensing to Intuition (SN) dichotomy, the So-Yang type revealed a tendency to be more intuitive while the So-Eum and Tae-Eum types scored higher on the Sensing dimension (20). In the Thinking to Feeling (TF) dichotomy, the So-Yang type preferred Feeling while the Tae-Eum type tended towards Thinking.

In the five studies (7,18,19,22,23) that reported data pertaining to the Judging to Perceiving (JP) dichotomy, the So-Yang type significantly scored higher in the Perceiving domain, with one study (22) reporting significantly lower in Judging, while the So-Eum type scored higher in Judging in four studies (7,19,22,23). In relation to the Tae-Eum type, three studies (18,19,22) indicated that they leaned towards Judging while two studies (7,23) reported that they tended to be more Perceiving (one study reporting low scores in Judging). The cases in which Perceiving was high were ones in which the participants were college students (7,23), and cases in which Perceiving was low were ones in which the participants were general patients (22), college student (19) or members of the military (18).

In one study that used the MMTIC (24), an inventory identical to the MBTI but designed for use with children and adolescents, statistical analysis had not been conducted but in examining the data reported in the study, it was clear that no significant differences between the Sasang types existed.

BDI and STAI

The BDI and STAI were used to assess for variance in emotion and mood, as Sasang typology represents mind-body medicine. One study (29) used just the STAI to examine trait and state anxiety, while two studies (25,26) used both the STAI and the BDI for the purpose of investigating the degree of depressed mood.

In the one study (26) that employed just the STAI in a sample of college students, no significant difference between the Sasang types was found. However, in the two studies that used both the BDI and STAI, significant differences were found. In one study conducted with middle-aged participants diagnosed with obesity, comparisons between the Tae-Eum (n=25) and non-Tae-Eum group (combination of So-Eum, So-Yang, and Tae-Yang types; n=25) were made because of the numerical imbalance between Sasang types. The Tae-Eum type scored significantly lower on both the BDI and State Anxiety compared to the non-Tae-Eum group (26). In the study conducted with healthy non-clinical participants (25), no significant difference on the BDI was found. However, the So-Eum type scored significantly higher
in State Anxiety compared to the Tae-Eum type, while the So-Eum type scored significantly higher in Trait Anxiety relative to both the So-Yang and Tae-Eum types (25).

Discussion

Although the current examination of psychological profiles based on existing research was not based on a predetermined plan, a relatively diverse pool of psychological inventories was used in the reviewed studies, making it possible to infer broad personality profiles of the Sasang types. However, a more solid conclusion could have been drawn had the research quality and characteristics of participants been comparable across studies.

Results of the present review consistently indicate that the So-Yang and So-Eum types possess contrasting psychological profiles. However, the characteristics of the Tae-Eum type share similarities with both the So-Yang and the So-Eum types, and even contradictory data were reported depending on the particular psychological assessment used or the subject pool. The present review sought to draw the psychological profiles of the Sasang types using Extraversion and Neuroticism as the anchor points, based on the results obtained from heterogeneous psychological instruments such as the MMPI, 16PF, MBTI, NEO-PI, EPQ and TCI. Extraversion and Neuroticism are super-factors, posited to hold identical meanings in both the EPQ and NEO-PI (2), and these two factors have been repeatedly mentioned as the most critical variables in a variety of personality research, such as Eysenck’s theory of personality (36) and Costa and McCrae’s five-factor theory of personality (31,37). In addition, Novelty Seeking and Harm Avoidance, as indicated on the TCI, are presumed to represent a rotation of Eysenck’s Extraversion and Neuroticism dimensions based on Gray’s proposed constructs of impulsivity (behavior activation system) and anxiety (behavior inhibition system) (35,38).

Examination of the results of the review indicates that on the MMPI, the So-Yang type scored significantly lower on the Hs, Hy, D, Pt and Si scales and significantly higher on the Ma scale (12,13). So-Eum and Tae-Eum types showed the exact opposite results (12,13). The So-Yang type scored high on the Pa scale and low on the Si scale of the MMPI, with the So-Eum type showing the opposite profile (15). When the positive correlation between the D, Pt and Si scales of the MMPI with the Neuroticism dimension of the NEO-PI (39–41) is considered, it can be inferred that Neuroticism will be low for the So-Yang and high for the So-Eum type.

On the MBTI (7,18–20,22,23), the So-Yang type scored low on the EI dichotomy and high on the SN and JP dichotomy. So-Eum types showed the opposite profile. A negative correlation between MBTI’s EI, JP dichotomies and NEO-PI Extraversion and Conscientiousness
scales, respectively, and a positive correlation between MBTI’s TF dichotomy with NEO-PI Agreeableness scale, have been reported (42–44). It can be seen that the So-Yang type is high in Extraversion and low in Conscientiousness while the So-Eum type is low in Extraversion and high in Conscientiousness. When the positive correlation between NEO-PI’s high Extraversion and low Conscientiousness with TPQ’s NS is considered, it can be predicted that the So-Yang type will score high on the NS scale of the TCI, which is the expanded version of the TPQ, and the So-Eum type will score lower on the NS scale (7,45).

Data were insufficient to make clear conclusions based on the results of the BDI and STAI (25,26). However, it was apparent that the So-Eum type manifested high anxiety. On the NEO-PI-R and EPQ, the So-Yang type showed low Neuroticism, high Extraversion, high Openness and low Addiction (27,28,30). The So-Eum type showed high Neuroticism, low Extraversion, low Openness, high Addiction and high Conscientiousness.

The So-Yang type scored high on the NS and low on the HA scales, and the So-Eum type scored low on the NS and high on the HA scales of the TCI (23), which parallel the aforementioned inferences that were made based on results of the MBTI. Furthermore, such findings are consistent with the proposition that TCI’s NS and HA represent a rotation of Eysenck’s Extraversion and Neuroticism dimensions (8,35,38).

To summarize the results of the present review, the So-Yang type demonstrated high Extraversion and low Neuroticism while the So-Eum type showed low Extraversion and high Neuroticism on the Extraversion and Neuroticism structures of the NEO-PI, which had been obtained through factor analysis of psychological traits (31). Furthermore, on the NS and HA structures of the TCI, which has its foundation in the bio-psychological theory pertaining to fundamental psychological traits, the So-Yang type exhibited a high NS and low HA psychological profile and the So-Eum type scored low on the NS scale while high on the HA scale.

Our review has a number of limitations. For example, it is unclear whether precise data were obtained due to the heterogeneity in the quality of the reviewed articles. As a result, the overall picture may have been distorted. The fact that the mean age of participants in 6 out of the 21 articles was unavailable adds to this possibility. On the contrary, the finding that a consistent directionality was observed in spite of the various psychological inventories utilized across different situations supports the reliability of the present review. This must be further confirmed in a future study. Furthermore, locating and including unpublished data and/or studies that concern Sasang typology may have minimized the potential for publication bias.

Because the research reviewed in the present review targeted only Koreans, the results may be generalizable only to the Korean ethnic group and may not represent universal findings. There lies, however, sufficient possibility that the current conclusions may be generalizable, based on previous findings that suggest universality of basic personality traits and structures cross-culturally in both the East and the West (46,47), and the finding that it was possible to classify Sasang types using participants from the East Coast of the USA (48,49), are considered. This possibility also needs to be further confirmed in a future study.

In conclusion, the So-Yang and So-Eum types showed contrasting psychological profiles based on Extraversion and Neuroticism factors, as well as on the NS and HA scales of the TCI.

**Funding**

Korea Science and Engineering Foundation (KOSEF) grant funded by the Korea government (MEST) (Grant no M10643020004-08N4302-00400).

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Received March 11, 2009; accepted June 4, 2009