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Original Article

Analysis of the Relationships Between *Sasang* Typology, Holland's Vocational Typology, and Myers-Brigg's Types Among Undergraduate Students at the College of Oriental Medicine

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Objectives : The present study investigated the integrative relationships between *Sasang* typology, Holland's vocational typology, and Myers-Briggs type.

Methods : The sample was composed of 83 sophomores at the College of Oriental Medicine, Daegu Hanny University (56 men, 27 women; ages 19 to 39, mean age ± S. D. = 24.38 ± 5.28) and was carried out with the QSCC II, Holland inventory, and MBTI. SPSS 12.0 was employed for statistical analyses.

Results : The *Sasang* types of the subjects were as followed: 21 *Soyangin* (10 men, 11 women) (25.3 %), 20 *Taeumin* (18 men, 2 women) (24.1 %), and 42 *Soeumin* (28 men, 14 women) (50.6 %). There were no significant differences in the mean scores of Realistic, Investigative, Artistic, Social, Enterprising, or Conventional scale between the 3 *Sasang* types,but in the mean scores of Realistic, Investigative, and Artistic scale between the 4 MBTI combinations (Sensing-Thinking, Sensing-Feeling, Intuition-Thinking, and Intuition-Feeling type): $F(3, 73) = 3.11$, $p < .05$ in Realistic scale, $F(2, 73) = 3.70$, $p < .05$ in Investigative scale, and $F(2, 73) = 5.60$, $p < .01$ in Artistic scale.

Conclusions : The present study discovered that the first preference for vocational aptitude of undergraduate students at the College of Oriental Medicinewas Investigative and the second preference was Artistic, which fitted Holland's vocational codes as Investigative/Artistic or Investigative/Social scale. The personality traits underlying *Sasang* typology play an important factor in making career decisions.

Key Words : *Sasang* constitution, Holland vocational typology, MBTI, personality traits

Introduction

Although there have been a number of advertisements, newspaper articles, and internet sites[1-2] assessing relationships between *Sasang* typology and occupation based on personality traits and physical traits, few evidence-based studies about those relationships have been reported: Yoon & Kal[3] have found the characteristics of those who worked for the manufa-

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cturing industry based on *Sasang* typology and Sul and Kim[4] have uncovered a link between *Sasang* typology and occupational aptitude using KIPAT and KAT-A. Therefore it is premature to generalize relationships between *Sasang* types and vocational types due to the paucity of relationship studies between them. In the present study, we aimed to match the characteristics of *Sasang* types to vocational types based on Holland's theory.

Holland's six dimensional vocational model[5] is premised on a match between individuals and occupations. He proposed that a good match between a person's interest and occupational type is the critical concept underlying career satisfaction and longevity. Holland referred to this matching process as person-environment congruence or fit. This concept has transcended the vocational psychology field, and is now the dominant model underlying theories of organ-

Table 1. A Brief Description of the Holland Vocational Typology

	Vocational type					
Attribute	Realistic	Investigative	Artistic	Social	Enterprising	Conventional
Requires	Manual and mechanical competencies, interaction with machines, tools, and objects	Analytical, technical, scientific, and verbal competencies	Innovation or creative ability, emotionally expressive interaction with others	Interpersonal competencies, skill in mentoring, treating, healing, or teaching others	Skills in persuasion or manipulation of others	Clerical skills, skills in meeting precise standards for performance
Demands and rewards the display of	Conforming behavior, practical accomplishment	Skepticism and persistence in problem solving, documentation of new knowledge, understanding or solution of problems	Imagination in literary, artistic or musical accomplishment	Empathy, humanitarianism, sociability, friendliness	Initiative in the pursuit of financial or material accomplishment; dominance; self-confidence	Organizational ability, conformity, dependability
Values or personal styles allowed expression	Practical, productive and concrete values	Acquisition of knowledge through scholarship or investigation	Unconventional ideas or manners, aesthetic values	Concern for the welfare of others	Acquisitive or power-oriented style, responsibility	Conventional outlook and concern for orderliness and routine
Occupations and other environments involve	Concrete, practical activity; use of machines, tools, materials	Analytical or intellectual activity aimed at trouble-shooting or creation and use of knowledge	Creative work in music, writing, performance, sculpture, or unstructured intellectual endeavors	Working with others in a helpful or facilitating way	Selling, leading, manipulating others to attain personal or organizational goals	Working with things, numbers, or machines to meet predictable organizational demands or specified standards
Representative occupations	Carpenter, truck driver	Psychologist, microbiologist	Musician, interior designer	Counselor, clergy member	Lawyer, retail store manager	Production editor, bookkeeper

Source: Adapted from the Dictionary of Holland Occupational Codes, Third Edition, by Gary D. Gottfredson, Ph. D., and John L. Holland, Ph. D., 1982, 1989, 1997 by Psychological Assessment Resources, Inc.

izational behavior[6].

Holland identified six personality types or themes that represent characteristics of the work environment, personality traits, and interests of working people: Realistic, Investigative, Artistic, Social, Enterprising and Conventional or RIASEC, respectively. Table 1 shows the brief description of the Holland's 6 vocational types.

There are quite a few correlation studies between Holland aptitude test and MBTI[7] as well as between Questionnaire for *Sasang* Constitution Classification II (QSCC II) and Myers-Briggs Type Indicator (MBTI)[8,9].

Myers-Briggs type theory is that people tend to have differential preferences for certain modes of coping and developing, which they have to exercise in order to do well and feel well in their work and life situations. She suggested that individuals fall into four dichotomous personality types (Introversion/Extroversion, Sensing/Intuition, Thinking/Feeling, and Judging/Perceiving). She also maintained that Sensing/Intuition and Thinking/Feeling combinations are the most important factors for career choices: Sensing-Thinking (ST), Sensing-Feeling (SF), Intuition-Thinking (NT), Intuition-Feeling (NF). Table 2 shows the characteristics of such combinations.

Park and Kang[7] found that the Introversion preference of MBTI was significantly positively correlated to the Conventional scale, and negatively correlated to the Artistic and Enterprising scales of vocational preference inventory. Five of Holland's scales (Realistic, Investigative, Artistic, Social, and Conventional, except Enterprising) showed significant differences in Jung's four psychological functions: ST, SF, NT, NF. In the Artistic scale, NT and NF combinations were more common than any other MBTI combination: NT and ST in the Investigative scale, ST and SF in the Conventional scale, SF in the Social scale, and NT and ST in the Realistic scale.

Chae and his colleagues[8] substantiated that the *Soyangin* was more extroverted than the *Taeumin*, who in turn was more extroverted than the *Soeumin*, and the *Soeumin* was found to be more judging than both the *Soyangin* and the *Taeumin* using Myers-Briggs Type Indicator (MBTI).

Choi and her colleagues[9] discovered that the *Soeumin* showed more preference for Introversion, the *Taeumin* for Sensing and the *Soyangin* for Intuition and Perceiving.

Table 2. Characteristics of the 4 MBTI Combinations

	ST	SF	NT	NF
Attention	Fact	Fact	Possibility	Possibility
Processing	Objective analysis	Subjective values	Objective analysis	Subjective values
Inclination	Practical, realistic	Empathetic, friendly	Logical, creative	Compassionate, insightful
Representative areas	Applied science, business, administration, accounting law, production, construction	Medicine, service, teaching, supervision, religion, sales, office work	Science, research, managing, computer, law, engineering, technical service	Social science, research, literature, music, religion, medicine, psychotherapy, teaching

ST: Sensing-Thinking, SF: Sensing-Feeling, NT: Intuition-Thinking, NF: Intuition-Feeling,

The purpose of the present study is to investigate the integrative relationships between *Sasang* typology, Holland's vocational typology, and MBTI and to shed light on the generalization of relationships of *Sasang* type and vocational type.

Methods

1. Participants

The sample was composed of 83 sophomores at the College of Oriental Medicine of Daegu Hanny University aged 19 to 39 (56 men, 27 women; mean age ± S. D. = 24.38 ± 5.28). All participants gave oral consent for the full assessments.

2. Instruments

1) QSCC II.

QSCC II is a *Sasang* typology-based inventory, which was developed by the Department of *Sasang* Medicine at Kyung Hee Medical Center (Seoul, Korea) in 1993[10] and revised in 1996[11], and has been used in clinical studies. The revised edition is based on 1366 subjects (668 males, 678 females). Ages ranged from 10 to 60 years and 68 % of subjects had educational levels over 12 years. It has been also validated using 265 subjects from the Department of *Sasang* Constitutional Medicine or Oriental Medicine & Western Medicine Cooperative Health Examination Center, Kyung Hee University Medical Center. The QSCC II is composed of 121 forced-choice items. The internal consistency (Cronbach a) of this inventory is as follows: *Taeyangin* is .57, *Soyangin* is .57, *Taeumin* is .59, and *Soeumin* is .63.

The *Sasang* type of an individual was determined following two procedures. First, the raw scores for the *Sasang* types were acquired with the QSCC II. After standardizing the raw scores based on their age and gender-specific norms, these scores were computed into discriminants to differentiate the *Sasang* types of individuals. A paper-and-pencil self-report form of the QSCC II was used, and the *Sasang* type was determined using PC-based software (Win QSCC II 99 version; Ssord Medicom & Ssord OMS, Seoul, Korea).

2) Holland inventory

The Holland aptitude test in Korea was developed by Ahn[12] in 1996 and based on the Self-Directed Search[13]. Its contents consist of personality, activity preference, competency, values, occupation, and global evaluation and its reliability is .92-.94 in Realistic scale, .90-.93 in Investigative scale, .91-.94 in Artistic scale, .90-.92 in Social Scale, .89-.92 in Enterprising scale, and .84-.89 in Conventional scale. The form used in the present study was occupation preference test S type, which is based on Holland's theory, from the Korea Employment Information Service, the government internet site for those seeking information for careers and jobs. The raw scores of RIASEC were used for the analysis in the present study and the Holland type of an individual was determined by the highest raw score of each RIASEC scores.

3) MBTI.

The MBTI is a paper-and-pencil self-report form composed of 95 forced-choice items first developed by Meyers and Briggs and translated into Korean by Sim[14]. It is a psychometric instrument designed to assess normal personality traits[15]. This inventory has been geared toward assessing differences that result from the way

people perceive information and how they prefer to use that information[16]. The MBTI individual categorical dimensions (i.e., Extroversion/Introversion) were also presented as standardized continuous preference scores (i.e., below 100 is Extroversion and above 100 is Introversion). The continuous preference scores of ST, SF, NT, and NF were used for the analysis in the present study.

3. Data Analysis

The relationships between *Sasang* typology and Holland typology were analyzed first: the *Sasang* type and the raw scores of each of Holland's RIASEC scales. Next, the relationships between Myers-Briggs type and Holland typology were analyzed: the continuous preference scores of ST, SF, NT, and NF and the raw scores of each of Holland's RIASEC scalesin order to find the underlying personality characteristics relating to *Sasang* type and vocational type. The statistical analyses here were conducted using SPSS 12.0 (SPSS Inc., Chicago, IL).

Results

1. *Sasang* typology and Holland typology

The *Sasang* types of the subjects were 21 *Soyangin* (10 men, 11 women) (25.3 %), 20 *Taeumin* (18 men, 2 women) (24.1 %), and 42 *Soeumin* (28 men, 14 women) (50.6 %).

The vocational scales of the subjects were 6 Realistic scale (7.2 % 1 *Soyangin*, 3 *Taeumin*, and 2 *Soeumin*), 31 Investigative scale (37.3 % 8 *Soyangin*, 7 *Taeumin*, and 16 *Soeumin*), 16 Artistic scale (19.3 % 3 *Soyangin*, 3 *Taeumin*, and 10 *Soeumin*), 13 Social scale (15.7 % 2 *Soyangin*, 3 *Taeumin*, and 8 *Soeumin*), 5 Enterprising scale (6.0 % 4 *Soyangin* and 1 *Taeumin*), and 6 Conventional scale (7.2 % 1 *Soyangin*, 2 *Taeumin*, and 3 *Soeumin*). There were 5 Investigative/Social scale (6.0 %) and 1 Investigative/ Enterprising scale (1.2 %), which means they scored the highest score of Investigative/Social scale and Investigative/Enterprising scale at the same time, respectively. The 5 Investigative/ Social scale comprised 1 *Soyangin*, 1 *Taeumin* and 3 *Soeumin* and the 1 Investigative/ Enterprising scale was *Soyangin*. The values of mean and frequency of 5 Investigative/Social and 1 Investigative/ Enterprising scale were excluded in the present analyses to avoid the distortion of data and therefore the values of 77 subjects were included in the present analyses. Table 3 shows the mean scores of RIASEC scale for each *Sasang* type.

Age did not differ significantly ($F(2, 71) = 1.98$, $p > .05$) between *Sasang* types but gender ratio did differ significantly between *Sasang* types (x^2 $(2, N=77) = 7.71$, $p < .05$). The previous Holland typology studies did not divide subjects based on gender and therefore we did not distinguish the participants based on the gender.

Table 3. Mean Scores of the RIASEC Scale for Each *Sasang* Type

	R	I	A	S	E	C
So-Yang (N=19)	22.47±10.70	38.68±9.12	30.37±14.85	33.11±8.41	29.84±11.62	28.89±12.44
Tae-Eum (N=19)	28.68±11.96	35.21±11.28	24.32±12.49	26.21±10.73	23.89±14.22	24.21±13.37
So-Eum (N=39)	22.59±11.32	36.13±11.02	27.00±14.74	29.67±11.41	22.62±11.51	27.97±11.32

There was significant difference in the frequency of R, I, A, S, and C scale in *Soeumin* (x^2 (4, N=39) = 16.51, p < .01), but the frequency of R, I, A, S, E, or C scale in *Soyangin* and *Taeumin* did not differ significantly: x^2 (5, N= 19) = 11.00, p > .05 and x^2 (5, N=19) = 6.58, p > .01, respectively.

There were no significant differences in the mean scores of R, I, A, S, E, or C scale between the 3 *Sasang* types: F (2, 74) = 2.10, p > .05 in Realistic scale, F (2, 74) = .56, p > .05 in Investigative scale, F (2, 74) = .86, p > .05 in Artistic scale, F (2, 74) = 2.02, p > .05 in Social scale, F (2, 74) = 2.28, p >.05 in Enterprising scale, and F (2, 74) = .84, p > .05 in Conventional scale.

2. Myers-Briggs type and Holland typology

The Myers-Briggs types of the subjects were 34 Sensing-Thinking (ST) type (44.2 %), 18 Sensing-Feeling (SF) type (23.4 %), 16 Intuition-Thinking (NT) type (20.8 %), and 9 Intuition-Feeling (NF) type (11.7 %).

The vocational scales of the subjects were Realistic scale (5 ST type and 1 SF), 31 Investigative scale (14 ST type, 2 SF type, 11 NT type, and 4 NF type), 16 Artistic scale (3 ST type, 7 SF type, 3 NT type, and 3 NF type), 13 Social scale (5 ST type, 5 SF type, 1 NT type, and 2 NF type), 5 Enterprising scale (3 ST type, 1 SF type, and 1 NT type), and 6 Conventional scale (4 ST type and 2 SF type). The 5 Investigative/Social scale comprised 2 ST type, 1 SF type, 1 NT type, and 1 NF type and the 1 Investigative/Enterprising scale was ST type. Table 4 showed the mean scores of RIASEC scale for ST, SF, NT, and NF combinations.

Age and gender ratio did not differ significantly between MBTI combinations: F (3, 70) = .69, p > .05 and x^2 (3, N=77) = 2.40, p > .05, respectively.

There was significant difference in the frequency of R, I, A, S, E, and C scale in ST type and NT type (x^2 (5, N=34) = 15.41, p < .01 and (x^2 (5, N=16) = 17.00, p < .01, respectively), but the frequency of R, I, A, S, E, or C scale in SF type and NF type did not differ significantly: (x^2 (5, N=18) = 10.00, p > .05 and x^2 (5, N=9) = .67, p > .05, respectively.

There were significant differences in the mean scores of R, I, and A scale between the 4 MBTI combinations: F (3, 73) = 3.11, p < .05 in Realistic scale, F (2, 73) = 3.70, p < .05 in Investigative scale, and F (2, 73) = 5.60, p < .01 in Artistic scale. Tukey's post hoc test was performed: SF and NF were significantly different in Realistic scale, NT and SF were significantly different in Investigative scale, and ST and SF as well as ST and NF were significantly different in Artistic scale.

Table 4. Mean Scores of the RIASEC Scale for Each S/N and T/F MBTI Combination

	R	I	A	S	E	C
ST (N=34)	22.50±11.22	35.18±9.76	20.47±12.73	27.41±11.35	23.38±12.20	29.26±12.05
SF (N=18)	20.11±11.85	31.89±9.85	33.28±12.72	33.50±9.60	23.11±9.71	26.89±11.73
NT (N=16)	27.19±8.86	41.44±9.88	30.06±13.11	29.56±11.57	28.31±15.33	26.38±12.63
NF (N=9)	32.33±12.19	42.22±12.00	35.11±14.02	30.67±7.67	26.56±13.26	22.11±12.29

S/N: Sensing/Intuition, T/F: Thinking/Feeling
ST: Sensing-Thinking, SF: Sensing-Feeling, NT: Intuition-Thinking, NF: Intuition-Feeling,

Table 5. Correlations Between the RIASEC Scales and Myers-Briggs Types

	R	I	A	S	E	C
EI	-.062	-.291*	-.160	-.348**	-.577***	-.088
SN	.296*	.419***	.308**	-.047	.122	-.127
TF	-.006	-.179	.319**	.162	-.027	-.134
JP	.282*	.257*	.232*	.057	.158	-.170

* p< .05, ** p< .01, *** p< .001

Table 5 shows the correlations between Myers-Briggs types and RIASEC scales and their results were as follows: Extroversion/Introversion was correlated with in I, S, and E, Sensing/Intuition was correlated with R, I, and A, Thinking/Feeling was correlated with A, and Judging/Perceiving was correlated with R, I, and A.

Namely, vocational types were able to be differentiated by MBTI types rather than by *Sasang* types, suggesting underlying personality traits did play an important role in career decisions.

Discussion

The purpose of the present study was to find out the characteristics relating *Sasang* types to vocational types and the result was that personality traits are a more important factor than *Sasang* type itself to influence making a career decision. The present study also confirmed that *Sasang* type could be distinctively and reliably classified by a modern personality theory[8,12], suggesting that if you want to improve the success rate of your career, you had better utilize the individual personality traits information underlying *Sasang* typology. The present study also displayed the fact that the first preference for vocational aptitude of undergraduate students at College of Oriental Medicine was Investigative and the second preference was Artistic, which fitted Holland's vocational codes as Investigative/Artistic or Investigative/Social scale. However, for more detailed and informative conclusion, you are advised to look up information about psychological traits as well as physical traits. The concept of Holland inventory that fits between self and environment matters matches that of the *Sasang* typology emphasizing the harmony in social life and developing one's character[18].

Further research will be necessary to elaborate on the fact that correlations between MBTI and *Sasang* typology should consider essential characteristics such as Sensing/Intuition and Thinking/Feeling types, which seem more directly related to occupation and personality inventory than Extroversion/Introversion and Judging/Perceiving types. Such integrative attempts of MBTI and *Sasang* typology would embrace the *Sasang* typology as more comprehensive medicine.

Finally, we must discuss the limitations of the present study and the implications for further research. First, the classification of *Sasang* type should be produced from various assessments based on physical, pathological, psychological, and pharmaceutical characteristics. The *Sasang* type of the present study was drawn only from the QSCC II self-report, therefore further studies should consider the various informants for the diagnosis of *Sasang* types.

Second, the small sample size makes it difficult to divide subjects by sex and two-digit occup-

ational codes. In the Holland test, two-digit codes (e.g., IA, IS) are actually used in research and clinical areas, but the present study only focused the single code because if we divided the sample based on the two-digit codes, data interpretation would be more difficult and complicated. Therefore, a larger sample size would be needed for generalization of the results.

Third, the *Sasang* types seem to have a sex difference because the *Sasang* typology is based on biological as well as social grounds. Further studies should focus on a possible sex difference with a larger sample size and people of varying social status in order to evaluate the relationships between psychological characteristics and vocational aptitude of *Sasang* typology.

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