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MMPI-A Scale-Level Factor Analytic Findings for Korean Adolescents

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This study examined the factor structure of the MMPI-A basic and content scales based on the data of Korean normal and clinical adolescent samples. Principal factor analyses were conducted on the raw score data for 13 MMPI-A basic scales and 15 content scales, respectively. Analyses of the 13 basic scales yielded a three-factor solution for boys and girls in the normal sample and for the combined normal group. The three factors were labeled general maladjustment, repression/overcontrol, and social introversion. The fourth factor, masculinity-femininity, was obtained for the combined clinical group. Analyses of the 15 content scales produced a two-factor solution for all samples. The two factors were considered as externalizing tendencies and social discomfort. These results indicate that the factor structure of the Korean MMPI-A may be seen as relatively robust and stable within and across gender and settings. Given the limitations of this investigation, the results of this study would be an important step toward establishing the factor structure of this new instrument.

Keywords : MMPI-A, Adolescent, Factor Analysis

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The Minnesota Multiphasic Personality Inventory (MMPI) is the most frequently used objective test of psychopathology for both adults and adolescents (Archer, Maruish, Imhof, & Piotrowski, 1991; Watkins, Campbell, Nieberding, & Hallmark, 1995). Since the MMPI was originally developed for use with adults and normed on adult population, only adult norms and behavioral descriptors were available when the MMPI was used with adolescents(Dahlstrom & Welsh, 1960; Hathway & Monachesi, 1963). It had been suggested that this practice did not account for distinctive adolescent response patterns on the MMPI(Archer, 1987; Colligan & Offord, 1989). Researchers and clinicians who wanted to use the MMPI with adolescents needed to make a variety of adjustments in the scoring procedures to render a more meaningful interpretation until norms on adolescents were made available in 1972 (Dahlstrom, Welsh, & Dahlstrom, 1972). However, these norms were based on previously collected data sets from the 1940s and 1950s (Hathaway & Monachesi, 1963). Thus, doubt of the appropriateness of this approach were voiced by clinicians and researchers given the different lifestyles and array of problems facing adolescents in the 1970s and 1980s relative to adolescents life experiences in the 1940s and 1950s.

In response to these issues, the Minnesota Multiphasic Personality InventoryAdolescents (MMPI-A; Butcher et al., 1992), a revised form of the MMPI developed specifically for the assessment of adolescent psychopathology and normed on a contemporary sample of adolescents, was released in 1992. Similar to the objectives in developing the MMPI-2, every effort was made to retain the most useful and productive aspects of the original test instrument while improving several less desirable features of the MMPI. The MMPI-A contains 478 items, reflecting a shortening of the original test instrument by 88 items. Seventy items were revised or modified to simplify wording or to improve the relevance of item content to adolescent life experiences. For example, the item, I was fond of excitement when I was young(or in childhood) was modified for the MMPI-A to, “I like excitement”, and “During one period when I was a youngster I engaged in petty thievery” was modified to “I have sometimes stolen things”. In addition, a variety of new items not in the original MMPI item pool were incorporated into the MMPI-A to provide coverage of topics relevant for adolescents. For example, the items, “Sometimes I use laxatives so I won’t gain weight”, and “The only good thing about school is my friends” were added to the MMPI-A. The MMPI-A maintained the original MMPI Validity and Clinical scales because of the scales demonstrated ability to predict adolescents problems and behaviors(Archer, Gordon, Giannetti, & Singles, 1988). It also included 15 new Content scales that were specifically created to assess adjustment concerns common to most adolescents. Although 11 of the 15 MMPI-A

content scales overlap with the MMPI-2 content scales, adolescent issues have been addressed in the development of four new content scales, including Low Aspirations(A-las), Conduct Problems(A-con), Alienation(A-aln), and School Problems(A-sch) (Williams, Butcher, Ben-Porath, & Graham, 1992).

Although an extensive body of factor analytic results have been reported for the MMPI and MMPI-2 (e.g., Archer, 1992; Tonsager, 1995, 1996), relatively little factor analytic research has been conducted for the MMPI-A. Previous studies of the internal structure of the MMPI and MMPI-2 showed that four components typically emerge when correlation matrices using non-K-corrected raw scale scores for three validity and ten clinical scales of the MMPI and MMPI-2 are subjected to principal component analyses with varimax rotation. These four components have been labeled General Maladjustment(General Psychopathology), Repression(Overcontrol), Social Introversion, and MasculinityFemininity. This four component solution has been replicated well in adult samples in some other cultures(Butcher, 1996; Butcher & Pancheri, 1976). The MMPI-A test manual(Butcher et al., 1992) also reported the same four- factor solution for the MMPI-A basic scales. These four factors accounted for 78.6% of the total variance in basic scale scores for the 805 boys in the normal sample and 78.0% of the total variance found among basic scale scores for the 815 girls in the normal sample. These scale-level factor analytic results are similar to the findings reported by Archer(1984) in his analysis of the MMPI basic scales data from 156 adolescent psychiatric inpatients.

Since the publication of the MMPI-A, just a few studies have focused on the MMPI-A content scales. Archer(1992) examined factor structure of the combined MMPI-A content and supplementary scales in the MMPI-A normal sample and reported three factors for each gender. The first factor was characterized by high loadings on the content scales A-anx, A-obs, A-dep, A-biz, A-lse, A-trt, A-aln, and Welshs Anxiety (A) scale. This factor corresponded to the first factor produced for the MMPI-2 content scales(Tonsger, 1995) and labeled General Maladjustment. The second factor was comparable to the second factor reported in similar analyses of the MMPI-2 content scales and was labeled Externalizing Dimension. This factor was characterized by loadings on the MMPI-A content scales including A-con, A-fam, A-sch, MAC-R, ACK, PRO, and IMM scale. While the MMPI-2 content scales produced the two-factor solutions, the combined MMPI-A content and supplementary scales produced a third factor. This factor appeared to be related to repression and social discomfort for girls and general neuroticism or maladjustment and disinhibition for boys. Recent study by McCarthy and Archer(1998) investigated the factor structure of the 15 MMPI-A content scales in the MMPI-A normal sample. They reported a two-factor solution for boys in the normal sample

and a one-factor solution for girls in the normal sample and for the combined normal sample. The first factor was identified by strong loadings on A-trt, A-dep, A-aln, A-anx, A-lse, and A-hea, and labeled General Maladjustment. The second factor, when obtained, was marked by strong positive loadings on A-cyn, A-con, and A-ang, and labeled Externalizing Tendencies.

Although the MMPI has been widely used in Korea for over 40 years, factor analytic studies on the MMPI have been rarely published. In 1993, an attempt was made to explore the scale-level factor structure of the MMPI in adult samples(Choi, Im, Park, Ahn, Choi, and Kim, 1993). Choi et al. conducted principal factor analyses of the MMPI basic, content, and personality scales, respectively, based on the data of 500 adult psychiatric patients, 308 normal adults, and 207 college students. In their factor analyses of the MMPI basic scales, three factors were identified for normal adults and psychiatric patients. These factors were labeled neuroticism, psychoticism, and defensiveness/social desirability. For college students, an additional factor, introversion-extroversion, was obtained. Principal component analyses of the MMPI content scales yielded two factors(general maladjustment and aggressive tendencies) for psychiatric patients and male college students. Normal adult samples and female college students produced additional factors, health concerns and social discomfort, respectively. Analyses of the MMPI personality scales resulted in three factors, including introversion-extroversion, personality disfunctioning, and anxiety related symptoms. While the MMPI basic scales produced the three factors including neuroticism, psychoticism, and defensiveness, the combined set of MMPI basic, content, and personality scales produced additional three factors including introversion-extroversion, antisocial attitude, and masculinity-femininity. These results suggested that content and personality scales provide additional information on general personality functioning beyond the assessment of psychiatric symptoms available by basic scales.

The Korean version of the MMPI-A was developed by Lim and Han(1999). They first adapted the items of the Korean MMPI-2(Han, 1996) that are common to the MMPI-2 and MMPI-A, and then independently translated into Korean the items that are unique to the MMPI-A. Discrepancies between the two independent translations were solved by mutual consensus. These items were then submitted to a bilingual student for back-translation into English. The original English MMPI-A items and the back-translated English items were then examined for discrepancies by an American psychologist who was one of the members of the MMPI Restandardization Committee and who is an expert in MMPI cross-cultural work. This led to a review and retranslation of several items.

Recent study by Lim and Han(2000) provided initial information about cross-cultural performance

on this new translation of the MMPI-A, including differences between Korean and American adolescents on MMPI-A scales, differences on MMPI-A items, and cross-cultural similarities in gender differences. Mean Korean adolescent T-scores on the MMPI-A validity, clinical, and content scales all fell within one SD of the U.S. adolescent means. Item endorsement differences between Korean adolescents and American adolescents were modest, and item differences between Korean girls and boys were very similar to those between American girls and boys.

Building on the work of translation of the MMPI-A into Korean by Lim and Han(2000), this study was conducted to examine and interpret the overall factor structure of the Korean MMPI-A basic and content scales through the use of scale-level analyses. A second objective of this study was to evaluate the stability of factor structures within and across two diverse samples: a sample of normal adolescents and a sample of adolescents in psychiatric settings. Analyses of the normal adolescent sample were conducted separately by gender since the sample was large enough to allow partitioning by gender.

METHOD

Participants

Normal sample. The Korean MMPI-A was administered to 254 Korean adolescents attending middle and high schools in Seoul and Kyungki-Do. The Korea Guidance(KG), a publishing company in Korea, placed an advertisement in an educational newspaper regarding the research, interested schools contacted the KG, and students volunteered to participate in the study. After receiving informed consent from the students and their parents, the Korean MMPI-A was administered by a school teacher or counselor in a classroom. Data from seven participants were eliminated from the study for either 30 or more Cannot Say responses, a raw score of 25 or greater on the F scale, or participant age less than 14 or greater than 17(Butcher et al., 1992). The final sample consisted of 247 students(105 boys and 142 girls), with a mean age of 15.8 years for boys, and 15.9 for girls. The students were predominantly in grades 8 through 11, similar to the distribution of the U.S. normative sample.

Psychiatric sample. The clinical group consisted of 92 adolescents(40 boys and 52 girls) between the ages of 13 and 18 years, who were receiving inpatient psychiatric services in Seoul when the psychological assessment was conducted. This sample had a mean age of 14.7 years for boys and 15.3 for girls. All participants included in this study had received psychiatric diagnoses based on the *Diagnostic and Statistical Manual of Mental Disorders*(DSM-IV; American Psychiatric

Association, 1994), and had produced valid MMPI-A profiles defined by a Cannot Say raw score less than 30 or a F scale raw score less than 25. The diagnostic distribution of the sample consisted of 38% Conduct disorder, 33% Depression, 24% Schizophrenia, 2% Gender Identity Disorder, 1% Obsessive-Compulsive disorder, and 1% Bipolar disorder. No patients received dual diagnoses based on the DSM-IV.

Data Analyses

The underlying factor structure of the MMPI-A basic scales(3 validity and 10 clinical scales) and content scales was examined in separate analyses. The first analysis investigated the factor structure of the set of 3 validity and 10 clinical scales. The second analysis examined the factor structure of the 15 content scales. Factor analyses were conducted across varying samples, including boys in the normal sample, girls in the normal sample, the combined normal sample, and the combined clinical sample. The MMPI-A scale-level factor structure was examined by first preparing the intercorrelation matrices from the MMPI-A basic and content scale raw scores, respectively, that were submitted to a principal component analysis. Raw scores rather than T scores were used in the analyses since most of the factor analytic studies of the original MMPI are based on raw scores. In addition, Butcher and Tellegen(1978) recommended that raw scores be used in most research computations with the original MMPI, and this advice appears appropriate for the MMPI-A in which raw scores are converted to T scores using uniform transformation procedures. Further, it seems to be less confusing to conduct factor analyses with raw scores because high T scores of Mf mean opposite characteristics for both gender so that Mf loading is uninterpretable when combining the gender. When running factor analysis separately by gender, raw scores or T scores yield fairly consistent results, although the direction of Mf loadings probably are opposite for girls. The number of factors for extraction was determined by the following criteria: (a) the Kaiser rule or the eigenvalues greater than 1, (b) the Scree Test(Cattell, 1966), and (c) psychological interpretability of the factor. The solutions were then rotated using Varimax procedures. The factors were subsequently interpreted by examining the factor structure of the rotated factors and identifying the scales with the highest correlation coefficient values for each factor. Factor loadings of -.50 and .50 were used to interpret factor content.

RESULTS

Factor structure of the 13 basic scales

Examination of the eigenvalues indicated

the presence of three factors for boys and girls in the normal sample and for the combined normal group. The scree plots showed a major break after the first large factor, and subsequent minor breaks appeared after three factors for boys and girls in the normal sample and for the combined normal sample. Therefore, a three-factor solution was examined in each sample.

Table 1 presents the scale loadings on the three-factor solution and the percentage of variance accounted for. The factors have been reordered as necessary to match the factors for comparison. The three-factor solution accounted for about 70% of the overall variance in the MMPI-A basic scales for boys and girls in the normal sample and for the combined normal group. The first factor comprised 16% of the total variance for boys in the normal sample, whereas more than half of the total variance (42%) was explained by Factor 1 for girls in the normal sample. Factor 1 was marked by scales Hy, Hs, Pa, and Pd, with the Ma and Sc scales loading moderately for boys. For normal girls, MMPI-A basic scales loading on Factor 1 included Hs, Pa, Sc, F, Hy, and Pd. This factor may be considered as general maladjustment.

Table 1. Factor Structure extracted from the MMPI-A Basic Scales

	Normal Boys			Normal Girls			Combined Normal			Combined Clinical			
	F1	F2	F3	F1	F2	F3	F1	F2	F3	F1	F2	F3	F4
L	-.01	**.69**	.23	.02	**.74**	-.06	-.02	**.74**	-.01	-.05	**.89**	.04	.16
F	.37	**-.59**	.20	**.69**	-.35	-.02	**.65**	-.36	-.10	.38	-.16	.23	**.75**
K	-.11	**.84**	.32	-.23	**.81**	.17	-.20	**.83**	.18	-.17	**.85**	-.24	-.19
Hs	**.75**	-.26	.11	**.81**	.05	.21	**.78**	-.02	.18	**.67**	-.33	.33	.11
D	.29	-.19	**.83**	.36	-.13	**.79**	.42	-.10	**.78**	.22	.06	**.80**	-.23
Hy	**.77**	.29	.35	**.67**	.45	.35	**.69**	.45	.31	**.87**	.30	.17	-.08
Pd	**.63**	-.44	.07	**.64**	-.43	.25	**.69**	-.37	.08	**.65**	-.32	.05	.06
Mf	.15	.08	.42	.12	-.01	**.51**	.01	.01	**.57**	.08	-.04	.23	**-.83**
Pa	**.65**	-.37	.09	**.80**	-.21	.05	**.79**	-.19	-.08	**.74**	-.29	.00	.26
Pt	.40	**-.86**	.13	**.59**	**-.67**	.30	**.62**	**-.70**	.14	.42	**-.51**	**.64**	.14
Sc	**.53**	**-.79**	.03	**.70**	**-.65**	.04	**.71**	**-.63**	-.08	**.50**	-.45	.44	**.50**
Ma	**.53**	-.32	**-.65**	.45	-.30	**-.72**	.41	-.27	**-.72**	.33	**-.65**	-.21	.39
Si	.02	**-.74**	**.56**	.22	**-.58**	**.63**	.29	**-.62**	**.54**	-.02	-.02	**.94**	.07
% Variance	16	42	11	42	16	12	41	16	12	40	17	12	9

Note. Factor loadings ≥ .50 or ≤ -.50 are in boldface type. Combined refers to samples combined across gender.

The second factor accounted for 42% of the total variance for normal boys, whereas this factor comprised 16% of the overall variance for girls in the normal sample. Factor 2 was characterized by scales L and K, with scales Pt, Sc, and Si defining the opposite pole. This factor may be thought of as overcontrol or repression. The third factor accounted for 11% and 12% of the total variance for normal boys and girls, respectively. Factor 3 was defined by high loadings on D and moderate loadings on Si and Mf, with negative loadings on Ma. It appears that introverted Korean adolescents tended to be pessimistic, moody, and nonenergetic. This factor may be labeled social introversion. The congruence coefficients(Tucker, 1951, p43) between boys and girls for the three-factor structures were .97, .97, and .94, suggesting that the structures were almost identical across gender.

In the combined normal sample(a normal sample combined across gender), the first factor accounted for 41% of the overall variance in the MMPI-A basic scales. Factor 1 loaded on scales Pa, Hs, Sc, Hy, Pd, F, and Pt, which replicated the general maladjustment factor obtained for normal boys and girls. Factor 2 corresponded to the overcontrol or repression factor, and was marked by high loadings on L and K, with negative loadings on Pt, Sc, and Si. The third factor was defined by D and Si, with negative loadings on Ma and positive moderate loadings on Mf, which replicated the social introversion factor.

A review of eigenvalues and the scree plots indicated that a four-factor solution was appropriate for the combined clinical group. The four-factor solution accounted for 78% of the overall variance in the MMPI-A basic scales for the combined clinical sample. The first factor comprised about a half of the total variance (40%), and was marked by scales Hy, Pa, Hs, and Pd, with moderate loadings on Sc. This factor corresponded to the general maladjustment factor found in the normal samples. The second factor accounted for 17% of the overall variance. This factor corresponded to repression or overcontrol, and was represented by high loadings on L and K, with Ma loading negatively. The third factor, comprising 12% of the overall variance, was identified by high loadings on Si and D. This factor corresponded to social introversion. The fourth factor accounted for an additional 9% of the total variance and was defined by high loadings on Mf, with F highly and Sc moderately loading in the opposite direction. Since high Mf raw scores indicate masculine tendency for both gender and high level of masculinity is inversely related to psychopathology(as indicated by F and Sc), aggressive, ambitious, and high-achieving boys and girls may have low level of general psychopathology. This factor was considered as masculinity-femininity dimension, which was not obtained in the three-factor solution for the

normal samples.

Factor structure of the 15 content scales

A review of the eigenvalues and the scree plots indicated that a two-factor structure was appropriate for all samples(boys and girls in the normal sample, the combined normal group, and the combined clinical group). Table 2 shows the scale loadings on the two-factor solution and the percentage of variance accounted for. The two-factor solutions comprised around 60% of the overall variance in the MMPI-A content scales for all groups, with the first factor accounting for a majority(about 50%) of the total variance. This factor was marked by high loadings on A-ang, A-con, A-cyn, A-fam, A-obs, A-anx, and A-sch for boys. In the female sample, MMPI-A content scales loading on Factor 1 included A-ang, A-con, A-biz, A-obs, A-anx, A-cyn, and A-fam. This factor reflects problems related to poor impulse control, misanthropic attitude, conduct disturbance, and emotional distress, manifested by adolescents who have disciplinary problems in

Table 2. Factor Structure extracted from the MMPI-A Content Scales

	Normal Boys		Normal Girls		Combined Normal		Combined Clinical	
	F1	F2	F1	F2	F1	F2	F1	F2
A-anx	**.67**	**.56**	**.65**	.40	**.66**	**.53**	**.62**	**.52**
A-obs	**.69**	.35	**.66**	.44	**.68**	.39	**.60**	.46
A-dep	**.51**	**.70**	**.57**	**.67**	**.54**	**.68**	.44	**.75**
A-hea	.42	.38	.45	.28	.43	.29	**.71**	.23
A-biz	**.55**	.26	**.67**	.27	**.62**	.26	**.52**	**.53**
A-ang	**.83**	.04	**.81**	-.03	**.82**	-.01	**.82**	-0.5
A-cyn	**.75**	.28	**.65**	.19	**.71**	.22	**.65**	.43
A-aln	.44	**.74**	.49	**.68**	.47	**.70**	.38	**.70**
A-con	**.77**	.17	**.81**	.04	**.80**	.10	**.83**	-.12
A-lse	.37	**.81**	.41	**.74**	.40	**.77**	.15	**.82**
A-las	.28	**.54**	.08	**.75**	.15	**.66**	.01	**.66**
A-sod	-.13	**.83**	-.04	**.78**	-.06	**.79**	-.28	**.77**
A-fam	**.74**	.25	**.61**	.42	**.66**	.35	**.78**	.17
A-sch	**.66**	.36	**.57**	**.51**	**.61**	.45	**.65**	.21
A-trt	**.54**	**.67**	**.56**	**.58**	**.56**	**.61**	.46	**.72**
% Variance	52	10	50	10	50	10	46	16

Note. Factor loadings ≥ .50 or ≤ -.50 are in boldface type. Combined refers to samples combined across gender.

school and conflicts with parents and peers. This factor appeared to be related to externalizing tendencies. The second factor, which was characterized by scales A-sod, A-lse, A-aln, and A-dep, may be labeled social discomfort. This factor reflects characteristics such as timidness, passivity, low self-esteem, poor social skills, and feeling emotionally distant from others. The congruence coefficients between boys and girls for the two-factor structures were .99 and .98, indicating that the structures were very similar across gender.

In the combined normal sample, Factor 1 was defined by A-ang, A-con, A-cyn, A-obs, A-anx, A-fam, A-biz, and A-sch. This factor replicated the externalizing tendency dimension obtained for normal boys and girls. The second factor was marked by loadings on A-sod, A-lse, A-aln, A-dep, A-las, and A-trt, which corresponded closely to social discomfort factor found for normal boys and girls.

In examining each of the MMPI-A factors identified in the combined clinical sample, it is clear that Factor 1 is similar to the externalizing tendency factor identified in the normal samples. This factor was represented by scales A-con, A-ang, A-fam, A-hea, A-cyn, A-sch, and A-anx. The second factor, which corresponded to social discomfort dimension, was characterized by loadings on A-lse, A-sod, A-dep, A-trt, A-aln, and A-las. Therefore, the factor structures for the 15 MMPI-A content scales were very similar across the four samples(normal boys, normal girls, combined normal group, and combined clinical group).

DISCUSSION

The principal component analyses conducted on the 13 MMPI-A basic scales identified three factors for normal boys and girls and for the combined normal group, and four factors for the combined clinical group. The three factors were labeled general maladjustment, repression/ overcontrol, and social introversion. The fourth factor obtained in the clinical sample corresponded to masculinity-femininity dimension, which has been reported in the MMPI, and MMPI-A studies based on the US adolescent data(Archer, 1984; Butcher et al., 1992). This study utilized a three-factor solution in interpreting data of Korean normal samples in contrast to the more typical four-factor solution employed in the previous studies. Nevertheless, common factors did emerge, which suggests that factor analysis results of the MMPI-A basic scales obtained in this study appear to be reasonably consistent with prior findings. In the three-factor solution for Korean normal samples, the third factor(social introversion) included moderate loadings on Mf scale, which may be considered to involve masculinity-femininity features. When a four-factor solution was derived for Korean normal

samples in an attempt to make factors more comparable with the typical four-factor structure, the fourth factor loaded highly on the Mf scale as in the Korean clinical sample and American samples. Therefore, there seems to be no doubt that masculinity-femininity dimension, although accounting for a relatively limited amount of variance, constitutes the underlying structure of the MMPI-A basic scales. Nichols and Greene (1995) noted that the first general maladjustment factor denotes the major source of scale-level variance in almost all factor analyses of the MMPI, MMPI-2, or MMPI-A in both normal and clinical samples. Consistent with this notion, the factor analytic results derived from this investigation also yielded a strong first factor (general maladjustment), except for normal boys. The general maladjustment dimension typically accounts for 30% to 40% of the total variance, which reflects the fact that the MMPI, MMPI-2, and MMPI-A are primarily measures of psychopathology designed to assess the presence of maladjustment and emotional distress.

The principal component analyses conducted on the 15 MMPI-A content scales yielded a two-factor solution for all samples. The two factors derived from this investigation were externalizing tendencies and social discomfort. The first factor obtained in this study(externalizing tendencies) consistently accounted for a majority of the total variance(around 50%) in the MMPI-A content scales across all samples, and loaded on the scales that measure conduct disturbance. The second factor(social discomfort) accounted for 10% to 16% of the overall variance, and was associated with internalizing symptoms. Thus, the MMPI-A content scales based on the Korean adolescent data consistently produced a first strong factor, with a second factor accounting for proportionally much less variance. These factors were slightly inconsistent with the previous report based on the US adolescent data(McCarthy & Archer, 1998), in which the first factor described general maladjustment and the second factor, when obtained, reflected externalizing tendencies. This discrepancy may reflect some serious adolescent issues in the current Korean society, such as school violence, wang-dda(intentionally making a person alienated from ones classmates or peer groups), and violent computer games. The first salient factor, externalizing tendencies, may also reflect educational tendencies of Korean parents. Because most Korean parents encourage their children to speak out their own opinion and needs and to be highly achieving and competitive, Korean adolescents seem to be getting more egocentric, aggressive, and impatient, and feel a pressure for action. In addition, a relatively small sample size of Korean adolescents may have contributed to the discrepancy between factor structures of content scales of Korean and American adolescents. The degree to which factor analytic findings from this investigation are stable across samples awaits future research employing

sufficiently large and representative sample of Korean adolescents to address the issues described above adequately.

A limitation of this study is a relatively limited number of participants, especially in the clinical sample. The clinical sample was combined across gender because the sample size, when partitioned by gender, was not large enough to meet Gorsuchs(1983) recommendation that a minimum of 5 participants per variable be maintained in factor analysis studies. Butcher et al.'s (1992) addressed that gender had a minimal effect on scale loadings and no discernible effect on the obtained factor solution. Supporting Butcher et al.s conclusion, this investigation found similar factor structures for the MMPI-A basic and content scales in the normal sample when partitioned by gender. Nonetheless, future research should include the MMPI-A factor analyses using a clinical sample large enough to investigate gender differences. In addition, the clinical sample in this study consisted of mostly three diagnostic groups including conduct disorder, depression, and schizophrenia. Therefore, one should be cautious to generalize the results obtained in this study to entire clinical population and further research should employ a clinical sample including various diagnostic groups. These studies would permit sample subdivision to explore the possibility of gender differences in factor structure and the stability of the factor structure across various treatment settings and diagnostic groups.

Although scale-level analyses can potentially assist in identifying the salient dimensions that are assessed by the scale organization and structure of the MMPI-A, such techniques have been largely limited to analyses of the MMPI-A basic and content scales. Future research on the MMPI-A might be focused on the scale-level factor analyses using the entire 69 scales and subscales of this instrument, and item-level factor analyses might be conducted on the full 478-item form of the MMPI-A. These studies would provide a model for examining the underlying dimensions of the MMPI items and scales by sorting variables into relatively homogeneous and independent clusters that may describe characteristics or features of adolescent development and psychopathology. Further, this approach may cut across the largely arbitrary distinctions between certain classes of scales(e.g., basic and content scales), and permit a more organized and parsimonious interpretive approach.

Overall, the factor structure of the Korean MMPI-A may be seen as relatively stable within and across gender and settings. Viewed from a cross-cultural perspective, the factor analytic results from this investigation appeared to be fairly consistent with those reported in the US studies. Slight discrepancies, such as a strong first externalizing tendency factor for all Korean samples, may possibly reflect cultural values of Korean society. The factor structures identified for

the MMPI-A scales in this study imply that this instrument may be structured along broad dimensions within which measures are highly intercorrelated and represent similar dimensions of adolescents functioning and psychopathology. Therefore, clinicians should be aware of the possibility to overinterpret the findings from the highly interrelated scales as providing independent or separate information regarding an adolescents health functioning. Given the constraints described above, the results of this study would be an important step toward establishing the factor structure of this new instrument.

REFERENCES

American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Archer, R. P. (1984). Use of the MMPI with Adolescents: A review of salient issues. *Clinical Psychology Review, 4,* 241-251.

Archer, R. P. (1987). *Using the MMPI with adolescents.* Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Archer, R. P. (1992). *MMPI/MMPI-2/MMPI-A content scales.* Paper presented at the MMPI-2/MMPI-A Summer Institute, Portland, OR.

Archer, R. P., Gordon, R. A., Giannetti, R., & Singles, J. (1988). MMPI scale clinical correlates for adolescent inpatients. *Journal of Personality Assessment, 52,* 276-287.

Archer, R. P., Maruish, M., Imhof, E. A., & Piotrowski, C. (1991). Psychological test usage with adolescent clients: 1990 survey findings. *Professional Psychology: Research and Practice, 22,* 247-252.

Butcher, J. N. (Ed.), (1996). *International adaptations of the MMPI-2: A handbook of research and clinical applications.* Minneapolis, Minnesota: University of Minnesota Press.

Butcher, J. N., Dahlstrom, W. G., Graham, J. R., Tellegen, A., & Kaemmer, B. (1989). *MMPI-2 (Minnesota Multiphasic Personality Inventory-2): Manual for administration and scoring.* Minneapolis, Minnesota: University of Minnesota Press.

Butcher, J. N., Pancheri, P. (1976). *A handbook of cross-national MMPI research.* Minneapolis, Minnesota: University of Minnesota Press.

Butcher, J. N., & Tellegen, A. (1978). Common methodological problems in MMPI research. *Journal of Consulting and Clinical Psychology, 46,* 620-628.

Butcher, J. N., Williams, C.L., Graham, J. R., Archer, R. P., Tellegen, A., Ben-Porath, Y. S., & Kaemmer, B. (1992). *Minnesota Multiphasic Personality Inventory-Adolescent (MMPI-A): Manual for administration, scoring, and interpretation.* Minneapolis, Minnesota: University of Minnesota Press.

Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research, 1,* 245-276.

Choi, Y. J., Im, Y. R., Park, B.K., Ahn, C. I., Choi, J. Y., and Kim, J. H. (1993). Factor analyses of the MMPI content and personality scales.

Korean Journal of Clinical Psychology, *13*

Colligan, R. C., & Offord, K. P. (1989). The aging MMPI: Contemporary norms for contemporary teenagers. *Mayo Clinic Proceedings, 64,* 3-27.

Dahlstrom, W. G., & Welsh, G. S. (1960). *An MMPI handbook: A guide to use in clinical practice and research.* Minneapolis: University of Minnesota.

Dahlstrom, W. G., Welsh, G. S., Dahlstrom, L. E. (1972). *An MMPI handbook: Vol. 1. Clinical interpretation*. Minneapolis: University of Minnesota.

Gorsuch, R. L. (1983). *Factor analysis* (2nd ed.). Hillsdale, NJ: Erlbaum.

Han, K. (1996). The Korean MMPI-2. In J. N. Butcher (Ed.), *International adaptations of the MMPI-2: A handbook of research and clinical applications*(pp. 88-136). Minneapolis, Minnesota: University of Minnesota Press.

Hathaway, S. R., & Monachesi, E. D. (1963). *Adolescent personality and behavior.* Minneapolis, Minnesota: University of Minnesota Press.

Lim, J., & Han, K. (1999, April). *Korean adolescent performance on the Korean translation of the MMPI-A.* Paper presented at the 34th Annual Symposium on Recent Developments in the Use of the MMPI-2/MMPI-A. Huntington Beach, CA.

Lim, J., & Han, K. (2000). Korean adolescent performance on the Korean translation of the MMPI-A. *Korean Journal of Clinical Psychology, 19(4),* 863-872.

McCarthy, L., & Archer, R. P. (1998). Factor structure of the MMPI-A content scales: Item-level and scale-level findings. *Journal of Personality Assessment, 7(1),* 84-97.

Nichols, D. S., & Greene, R. L. (1995). *MMPI-2 structural summary: Interpretive manual.* Odessa, FL: Psychological Assessment Resources.

Tonsager, M. E. (1995). *The factor stability of the MMPI-2 validity, clinical, and content scales: An investigation of the effect of sex and psychiatric status.* Unpublished doctoral dissertation, University of Texas, Austin.

Tonsager, M. E. (1996, March). *Factor structure of the MMPI-2 content scales: Implications for interpretation.* Paper presented at the annual meeting of the Society for Personality Assessment, Denver, CO.

Tucker, L. R. (1951). *A method for synthesis of factor analysis studies, Personnel Research Section Report, 984.* Washington DC, Department of Army.

Watkins, C. E., Jr., Campbell, V. L., Nieberding, R., & Hallmark, R. (1995). Contemporary practice of psychological assessment by clinical psychologists. *Professional Psychology: Research and Practice, 26,* 54-60.

Williams, C. L., Butcher, J. N., Ben-Porath, J. S., & Graham, J. R. (1992). *MMPI-A content scales: Assessing psychopathology in adolescents.* Minneapolis, Minnesota: University of Minnesota Press.

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청소년용 미네소타 다면적 인성검사 한국판의 요인구조분석

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본 연구에서는 한국 정상 청소년집단과 임상집단을 대상으로 청소년용 미네소타 다면적 인성검사(MMPI-A) 한국판을 실시하여 표준척도와 내용척도의 요인구조를 분석하였다. 3가지 타당도 척도와 10 가지 임상척도로 이루어진 표준척도 셋트와 15가지 내용척도 셋트의 원점수에 대해 각각 주요인분석을 실시하였다. 표준척도에 대한 요인분석 결과 정상 남자 청소년 집단과 정상 여자 청소년 집단, 그리고 남녀 결합진단에 대해 3개의 요인이 추출되었다. 추출된 3개의 요인들은 일반적 부적응, 억압/과도통제, 그리고 내향성으로 명명되었다. 남녀 결합 임상집단에서는 이들 3요인 외에도 남성성-여성성의 제4요인이 추출되었다. 내용척도에 대한 요인분석 결과 모든 집단에서 2개의 요인이 추출되었으며, 추출된 2개의 요인들은 외현화 경향과 사회적 불편감으로 명명되었다. 본 연구의 결과는 청소년용 미네소타 다면적 인성검사(MMPI-A) 한국판의 요인구조가 성별과 집단(정상집단, 임상집단)에 관계없이 비교적 유사함을 시사하였다. 본 연구의 제한점을 보완함으로써 향후 청소년용 미네소타 다면적 인성검사(MMPI-A) 한국판의 요인구조를 확립하는 데에 초석이 될 것이다.

주요어 : 청소년용 미네소타 다면적 인성검사, 청소년, 요인분석