

Gender Differences in Validity Scales of Personality Measuring Instruments in Psychiatric Patients

Joško Sindik¹, Ana Pavelić Tremac² and Dražen Kovačević²

¹ Institute for Anthropological Research, Zagreb, Croatia

² »Dr. Ivan Barbot« Neuropsychiatric Hospital, Popovača, Croatia

ABSTRACT

The main goal of the study was to determine gender differences in validity scales of personality measuring instruments, among the psychiatric patients. Additional goals are to find the differences among male and female psychiatric patients, in relation to their age group, education level and type of psychiatric diagnosis. A total of 331 male and 331 female participants (psychiatric patients) are examined, classified by the categories of diagnosis, as following: Schizophrenia, schizotypal and delusional disorders (F20-F29), Mood (affective) disorders (F30-F39); Neurotic, stress-related and somatoform disorders neurotic, (F40-F48) and Disorders of adult personality and behavior (F60-F69). Four control scales are applied: Lie Scale (MMPI-L or L scale), Scale of bizarre and confusing thinking (MMPI-F or F scale) K scale of Defensiveness (MMPI-K), together with Bias-scale in Plutchik's Emotion Profile Index (EPI). Three-factorial MANOVA was used in the analysis of the main effects, while non-parametric tests in the analysis of differences for each independent variable. Results reflect characteristic statistically significant gender differences in validity scales of personality measuring instruments, in most of the independent variables (the main effects are found for the level of education and age group). These results were interpreted within the theoretical framework of simulation and dissimulation.

Key words: dissimulation, psychiatric diagnosis, response bias, simulation

Introduction

Numerous studies have shown that the distortion of responses to personality questionnaires is possible and that it happens in situations where there is a motivation for creating specific impressions^{1,2}. Except for the fact that respondents can create a positive or a negative impression, they can also distort the results of the questionnaire in the direction of a specific personality profile desired in a particular situation³. There are two opposite styles in distortion of responses in personality questionnaires. Simulation is an attempt to make one's own properties or state appear different than they are; especially imitating symptoms of mental illness and other commitments to avoid or achieve benefits⁴. Dissimulation is the deliberate suppression of an actually existing absence, for example diseases or some undesirable personality traits⁴. Thus, Pauls and Crost showed that in a situation where they were given general instructions to appear in the best possible light, the participants distorted their responses on all scales of

the Big Five-factors of personality questionnaire⁵. In contrast, respondents who were given specific instructions to imagine a situation of selection for managerial positions distort their scores on the dimensions of emotional stability, extroversion and conscientiousness, while in a situation of selection for the career, participants had high scores on the dimension agreeableness. Regarding the effects of response distortion on the validity of personality questionnaires and the selection decision, research results have shown that, although the construct validity of personality questionnaires was not significantly affected, the distortion in response reduced criterion validity and their strong impact on recruitment decisions^{6,7}. It is therefore important to reduce the negative effects of distortions to a minimum. In practice several strategies are used to cope with the problem of response distortion in personality questionnaires. The first strategy is detecting response distortion scales of socially desirable responses, and the second is based on trying to discourage candidates in the distortion, by warning them about the negative conse-

quences⁸. The largest range of control scales in the same place can be found in Minnesota Multiphasic Personality Inventory (hereinafter MMPI). Gordon describes the definitions of MMPI and Minnesota Multiphasic Personality Inventory-version 201 (hereinafter MMPI-2) scales, their validity and bias⁹. The support of the use of MMPI is important in assessing of the respondent's test-taking attitude, particularly in cases where the subject is attempting to exaggerate psychiatric symptomatology¹⁰.

For example, Test-Retest scale has repeated items⁹. It is independent of any other MMPI scale, independent of faking to look good or bad, while its scores higher than 4 indicate a possible scoring error, reading difficulties, cooperation problems, or confusion. Carelessness scale (CIs) has pairs of psychologically related items, while scores higher than 6 may be due to the same problems as the Test-retest Index, or due to conflicts or ambivalence⁹. True Response Inconsistency scale (TRIN) has pairs of items that are semantically inconsistent: high scores reflect responding style in a »yea-saying« test set, responding mostly »True«, while those with low scores respond mainly »False«⁹. Superlative Self-Presentation Scale has five subscales: Belief in Human Goodness, Serenity, Contentment with Life, Patience and Denial of Irritability and Anger, and Denial of Moral Flaws⁹. A high score accurately measures ego strength, but if the person's history does not support items of superior adjustment, responses can be considered as a faking to look good bias. Positive Malinger Scale (hereinafter Mp) may measure a conscious attempt to give a favorable impression⁹. It describes a conscious attempt to fake to look good. Social Desirability Scale (hereinafter Sd) highly correlates with Mp and L, and only slightly with K⁹. High scores are associated with items of assertiveness, confidence, and virtuousness. Scale – Cannot Say (? scale) describes omitted items⁹. High scores may be due to obsessiveness, defensiveness, difficulty in reading, confusion, hostility, or paranoia. It is important to look for a pattern that may exist in the items that are left blank. More than ten left unanswered may be of clinical significance. An approximation of this Cannot Say scale can be used in any research with the questionnaires that are using Likert-type scales¹¹. Dissimulation Scale (hereinafter Ds) is developed on true neurotics versus healthy (»normal«) individuals faking neurosis, measuring more exaggeration of neurotic symptoms. Infrequency-Psychopathology Scale (hereinafter Fp) was constructed of items endorsed by 20% or less by two separate groups of psychiatric patients and it is better than F or Fb in detecting faking serious psychopathology⁹.

However, in this research, only three types of control scales from MMPI were analyzed. Lie Scale (hereinafter MMPIL or L-scale) describes tendency to create a favorable impression as a response bias, conventional, rigid, moralistic, repression, denial, and insightful⁹. A high MMPIL can mean anything from a very well-mannered normal wanting to give a good impression, to a compensated paranoid. Defensiveness Scale (hereinafter MMPIK or K-scale) is a valuable correction for defensiveness⁹. A high MMPIK is associated with high education and socio-

economic status, in the sense that highly educated people should score moderately high on the MMPIK scale. It assumes psychopathology and it was derived from individuals who were hospitalized, having serious psychological problems, but tending to produce normal profiles. Scale of bizarre and confusing thinking (hereinafter MMPIF or F scale, sometimes mistakenly referred to as the Infrequency or Frequency scale) intends to detect unusual or atypical ways of answering the test items, as if a person were to randomly fill out the test⁹. It taps a number of strange thoughts, peculiar experiences, feelings of isolation and alienation, and a number of unlikely or contradictory beliefs, expectations and self-descriptions. If a person answers too many of the F and Fb scale items incorrectly, it will invalidate the entire test. More simplified, this scale asks questions designed to determine if test-takers are contradicting themselves in their responses. High scores on F Scale – Infrequency indicates possible random, exaggerated, or misscored profile⁹. Very high scores are commonly found with schizophrenic patients, overall psychopathology, resentment, acting out, moodiness, while low scores indicate possible fake good profile⁹. Back F scale (hereinafter Fb) is made up of items that are endorsed less than 10% of the time by healthy ('normal'), but frequently by disturbed individuals⁹. If Fb is above T999, and F is not high, then the individual may have randomly responded to the latter part of the test. Superlative Self-Presentation Scale highly correlated with the K scale. Mp is highly correlated with Sd and L scales. Ds measures more exaggeration of neurotic symptoms, whereas F and Fb assesses more exaggeration of psychotic or severe symptoms⁹. However, clinical profile interpretation can be more effective and the conclusions drawn more specifically to the case if relative frequency or base rate information is also available to put the profile into empirical context¹².

On the other side, the Emotions Profile Index (hereinafter EPI) questionnaire, based on the theory of emotions, proposed by Plutchik and Kellerman^{13–15}, is well known and widely used personality inventory, attractive because of an easy and fast data-collection procedure, with a clear graphical representation of the emotions profile. But simultaneously with its diagnostic application, there are some methodological and theoretical doubts about comprehensibility of the structure of EPI¹⁶. The subjects with high Bias score in EPI tend to have higher scores in »positive« emotions and lower scores in »negative« emotions, while the differences are approximately the same for both estimating conditions: »What am I like« and »What do others think I am like«¹⁷. The estimation of self as seen by somebody else's eyes is very likely disturbed by subjective self-image, which may not have much in common with reality^{17–20}.

Current evidence indicates that simulation of pathology is identifiable in MMPI-2 profiles²¹. The data demonstrate that it is possible to identify cases of defensive minimization. These results confirm the hypothesis that simulation is a dimensional characteristic of MMPI which can reach extreme values in both ways: worsening of slight problems or suppression of existing problems²¹.

Age can affect responses to measures of personality. Studies with the original MMPI inventory showed that the elderly do somewhat contradict the MMPI scales of young adults. Thus, for example, the elderly are often positively responsive to assertions made describing somatic changes, bad mood, reduced risk appetite and introverted opinion, and these differences affect the assessment in several standard scales²². For adolescents and persons under the age of 18, different standards have to be applied, too²³. The general conclusion for most research on the effect of age on MMPI / MMPI-2 results is that in fact there are only a few differences between individuals at different age levels. However, there are no specific standards for the elderly, or appear to be necessary²³. According to the original norms individuals of higher socioeconomic status were evaluated for their elevated K results as »more defensive«²⁴. Thus, new MMPI-2 standards are based on a representative sample of persons who mainly belong to the middle and higher socio-economic status. However, K results in people with very low socioeconomic status, which very often have a very modest education, should be interpreted cautiously, while socio-economic differences were not investigated in adolescents²³.

Basic MMPI scales (such as K scale) need to do certain interpretative adjustments, because the MMPI normative group had an average of only nine years of schooling. The normative sample for the MMPI-2 inventory has average education closer to the present level of clients who respond to the test (15.0 years for men and 14.4 for women). All educational levels except the lowest once provide average profiles that are fully in accordance with the MMPI-2 normative sample. For people with very low levels of education (6–11 grade) some adjustments may be need, because new MMPI-2 norms have somewhat fewer people with that level of education. Some scales, such as K and F should be interpreted with caution. Their reading and comprehension abilities are problematic as well²².

Probably much more could be said about the MMPI-2 and MMPI-A profiles and without additional information about the client, it is nevertheless true that the more we know about the customer life circumstances, the more specific interpretation of the test will be. Several demographic or situational variables may affect the achievement of the client in the charts personality²³. Clear gender differences are evident in the responses to the items of MMPI, and because of that, most of the personality scales, including those of the MMPI-2 and MMPI-A inventory, have separate standards for men and women²³. This means that it is important to use appropriate norms for members of both genders²³. It seems that most of the descriptors for the MMPI-2 standard scales and control scales are equally good for men and women. However, for certain is that scales need necessary adjustment to the gender. Thus, the interpretive rules for scales also differ according to the gender of the client²³.

The main goal of the research was to establish the differences among the psychiatric patients, in relations to their gender. Additional goals are to find the differences

among male and female the psychiatric patients, in relation to their age group, education level and type of psychiatric diagnosis.

Materials and Methods

Participants

In the »Dr. Ivan Barbot« Neuropsychiatric Hospital, the Minnesota Multiphasic Personality Inventory-version 201 (hereinafter MMPI-201) and EPI were applied to patients during hospital or outpatient treatment, in the period from the year 2009 to 2014. Study was conducted on a representative sample of 331 males (randomly selected from 1048 male patients), aged 45.64 ± 10.571 ($\bar{X} \pm SD$) and 331 females (all available) participants aged 45.16 ± 11.853 ($\bar{X} \pm SD$), with psychiatric diagnoses.

For the purpose of statistical analyses, patients are distributed in five age groups: aged 0–20 (7 (2.1%) males and 11 (3.3%) females), aged 21–35 (42 (12.7%) males and 53 (16.0%) females), aged 36–50 (166 (50.2%) males and 137 (41.4%) females), aged 51–65 (108 (32.6%) males and 122 (36.9%) females), and over 66 years of age (8 (2.4%) males and 8 (2.4%) females). The results of the χ^2 -test show that there is no statistical significant gender difference in their age groups ($\chi^2=5.790$; $p=0.215$).

According to their education level, patients are distributed in three groups: Drop-out primary school, primary school, semi-qualified worker (142 (44.1%) males and 120 (36.5%) females); Qualified worker, high school (174 (54.0%) males and 184 (55.9%) females); College, Higher education, Master's degree (6 (1.9%) males and 25 (7.6%) females).

The results of the Chi-Square test show that there is a statistical significant gender difference in their education level ($\chi^2=13.698$; $p=0.001$): female participants are more highly educated. Additionally, the results of the χ^2 -test show that there is a statistically significant difference in the education level among different age groups ($\chi^2=16.970$; $p=0.030$): age group from 21–35 years is the most educated, while the youngest age group is the least educated.

Except for the gender, the sample was equally stratified according to the categories of diagnoses. Both for males and females, in the analysis were included those patients who have the diagnosis of the following categories according to the 10th revision of the International Classification of Diseases (ICD-10)²⁵: Schizophrenia, schizotypal and delusional (F20-F29) (58 (17.5%) subjects); Mood (affective) disorders (F30-F39) (112 (33.8%) subjects); Neurotic, stress-related and somatoform disorders neurotic (F40-F48) (122 (36.9%) subjects) and Disorders of adult personality and behavior (F60-F69) (39 (11.8%) subjects). According to their educational level, there is no statistical significant difference in the categories of diagnoses ($\chi^2=5.317$; $p=0.504$). On the contrary, there is a statistically significant difference in the categories of diagnoses, according to the age group ($\chi^2=59.305$; $p=0.000$): for example, category of Mood (affective) disorders (F30-F39) is

the most frequent in the age group 51–65, while the category of Neurotic, stress-related and somatoform disorders neurotic (F40-F48) is the most frequent in the age group 36–50 years of age.

Measures

The results on three validity scales of Minnesota Multiphasic Personality Inventory-version 201 (MMPI-201), as well as one scale from Plutchik Emotions Profile Index (EPI), were analyzed. All MMPI-201 and EPI scales showed satisfactory reliability, in terms of Cronbach alpha coefficients. The Minnesota Multiphasic Personality Inventory (MMPI) is the most widely used and researched standardized psychometric test of adult personality and psychopathology MMPI-201 is a variant of the MMPI standardized for the population of the former Yugoslavia. It consists of 201 items, which are assessed with the »true« or »false«. Responses were grouped into 11 scales, and the answers may be indicative of one or more of them²⁶.

The test contains three validity scales – L, F and K, which measure the suitability and readiness of participants in this type of testing. L (lying scale) scale reflect the rigidity or naivety when replying or measure the extent to which the respondent could falsify their answers, choosing always the one which presents it in a socially acceptable light. F scale reflects a confusing and bizarre thinking, reduced understanding of test materials. Increased results on this scale may be the result of misunderstanding or indifference towards the material, or the tendency to simulate or exaggerate their problems, or a result of confusing and bizarre opinions as encountered in psychosis. K scale or scale correction reveals repression or defense of expression pathology. A high score on this scale means good control and preserved defense mechanisms, while low scores indicate the need for patients to express their pathology, or the tendency of self-criticism, but also consciously emphasizing pathology (when going with high F).

Clinical scales are used in defining patients with certain diagnoses. Hypochondriasis (Hs) measures a person's perception and preoccupation with their health and health issues. Depression (D) measures a person's depressive symptoms level; Hysteria (Hy): measures conversion symptoms, awareness of problems and vulnerabilities; Psychopathic Deviate (Pd): immaturity, impulsiveness and antisocial behavior; Paranoia (Pa): level of trust, suspiciousness, sensitivity, Psychasthenia (Pt): worry, anxiety, tension, doubts, obsessiveness; Schizophrenia (Sch) unusual/odd cognitive, perceptual, and emotional experiences; Hypomania (Ma): level of excitability. Interpretation of the results is based on the configuration of the profile because scales are psychometric and phenomenologically interconnected. Only scales with $T \geq 70$ are used in interpretation²⁶.

The Index profile of emotion (EPI) is a personality test made with the intent to provide information on certain basic personality traits and personality conflicts. EPI is directly based on the Plutchik's general theory of emo-

tions^{13–16,27,28}. The theory assumes eight basic dimensions of emotion, and EPI assesses the importance of these eight dimensions of a person's life. Dimensions are: confidentiality, shyness, depression, distrust, aggressiveness, sociability, exploration and unrestraint/orientation. EPI is a forced choice test and contains 62 items. It consists of 12 expressions of personality traits that are paired in all possible combinations. The terms are: sociable, friendly, fond of adventure, frustrated, impulsive, prone to arguing, biting the inside, shy, depressed, cautious, burdened him(her)self and became obedient. Respondents are asked to indicate which of the two paired words better describes them, for example if they are shyer or more depressed. Every time a participant makes a choice between two words that signify a trait, it increases their results on one or more of the basic dimensions of emotion. The scale bias on EPI is a measure of attitude toward testing. It reflects the tendency of individuals to choose from each pair of socially desirable items. If the gross score greater than 37 is considered to be an individual displays in socially preferred light²⁷.

Statistical analyses

The statistical analysis of data was performed using the statistical program IBM SPSS 20.0. Descriptive statistics were calculated for all the collected data. Total scores in subscales were calculated according to original subscales of the instruments, using simple linear combination method (sum of estimations for each subscale). To estimate the differences between the groups of patients in all control (validity) scales of MMPI-201 and EPI, multivariate analysis of the variance (MANOVA) was used. I.e., dependent variables were represented with the scores in all control (validity) scales of MMPI-201 and EPI. Several independent variables were put in MANOVA (to investigate 4-way interactions): gender (male/female), age group (0–20 / 21–35 / 36–50 / 51–65 / ≥ 66 years), educational category (Drop-out primary school, primary school, semi-qualified worker / Qualified worker, high school / College, Higher education, Master's degree) and categories of diagnosis (Schizophrenia, schizotypal and delusional (F20) / Mood (affective) disorders (F30) / Neurotic, stress-related and somatoform disorders neurotic (F40) / Disorders of adult personality and behavior (F60)). To ensure that each sub-sample (stratified by independent variables) has more than 30 participants, as a basic pre-condition for the application of parametrical statistical methods, only two variables were analyzed simultaneously, in order to find possible interactions among them. Due to the main goal of the research, gender differences in dependent variables are first considered directly, and then with respect to the other independent variables (stratifying subsamples by gender in comparisons): age group, educational levels and type of diagnosis. Whenever Levene's test for homogeneity of variance was significant at the $p < .01$ level, nonparametric statistics (Kruskal-Wallis) were used to confirm the effects obtained via the MANOVAs. The file was split by

the significant variable and Kruskal-Wallis was used to confirm the effects on the other variable.

Results

Among multivariate effects for the set of four control scales as dependent variables (Table 1), we have found only two statistically significant differences: first, for independent variable age group, and second, for independent variable educational category. The differences were not statistically significant for independent variables: categories of diagnosis and gender. Due to relatively small number of participants in each sub-category, none of the analyzed interactions appeared statistically significant.

Thus, we have firstly analyzed gender differences in scores of certain control scales. Significant gender differences were found in two control scales: MMPIL (higher means for females) and MMPIF (higher means for males). For remained two scales, BIAS and MMPIK, statistical significant differences were not revealed (Table 2).

Among age differences in control scales of personality tests, stratified by gender (Table 3), in males are found three statistically significant differences. First, in MMPIF, the largest difference is found among age group 0–20 (the lowest mean) and group 51–65 (the highest mean). Second, in MMPIK, the largest difference is found among age group 51–65 (the lowest mean) and group 0–20

(the highest mean). The same, in BIAS, the largest difference is found among age group 51–65 (the lowest mean) and group 0–20 (the highest mean). In females, two statistically significant differences are found. First, in MMPIF, the largest difference is found among age group 0–20 (the lowest mean) and group 66 and older (the highest mean). In BIAS, the largest difference is found among age group 51–65 (the lowest mean) and group 21–35 (the highest mean).

Among differences in education level in control scales of personality tests, stratified by gender (Table 4), no statistically significant differences are found in men. In women, two statistically significant differences are found: in scale MMPIF and MMPIK, with opposite trends. In MMPIF, the highest means are found in the lowest educated participants (Drop-out primary school, primary school, semi-qualified worker), while the lowest means are found in the highest educated females (College, Higher education, Master’s degree). In MMPIK, the lowest means are found in the lowest educated participants (Drop-out primary school, primary school, semi-qualified worker), while the highest means are found in the highest educated females (College, High education, Master’s degree).

Among differences in categories of diagnoses in control scales of personality tests, stratified by gender (Table 5), two statistically significant differences are found in men, with the same trends. Namely, in both scales (MMPIK and BIAS), the highest means are found in participants

TABLE 1
MULTIVARIATE EFFECTS FOR CONTROL SCALES IN PERSONALITY TESTS FOR THREE INDEPENDENT VARIABLES (MANOVA)

Variable(s)	Pillai’s Trace	F-test	Hypoth. DF	Error DF	Sig.
Males					
Categories of diagnosis	.027	.858	16	2008	.619
Gender	.006	.708	4	499	.587
Age group	.080	2.564	16	2008	.001**
Educational category	.035	2.198	8	1000	.025*
Gender * education	.014	.871	8	1000	.540
Gender * categories of diagnosis	.020	.822	12	1503	.628
Gender * age group	.034	1.078	16	2008	.370
Categories of diagnosis * age group	.079	.922	44	2008	.618
Categories of diagnosis * educational category	.080	1.273	32	2008	.141
Age group* educational category	.051	.929	28	2008	.572
Categories of diagnosis * age group * educational	.096	1.026	48	2008	.425
Gender * categories of diagnosis * age group	.048	.880	28	2008	.648
Gender * categories of diagnosis * educational	.020	.619	16	2008	.871
Gender * age group * educational category	.022	.679	16	2008	.817
Gender * age group * educational category * categories of diagnosis	.032	.822	20	2008	.689

Legend: ** significant at p<.01 level; * significant at p<.05 level

TABLE 2
GENDER DIFFERENCES FOR CONTROL SCALES IN PERSONALITY TESTS

Gender differences	Gender	\bar{X}	SD	t-test
mmpil	Male	4.80	2.586	-2.746**
	Female	5.32	2.433	
mmpif	Male	10.14	6.166	2.053*
	Female	9.21	5.874	
mmpik	Male	9.80	4.509	-1.835
	Female	10.41	4.242	
bias	Male	26.71	17.851	-1.527
	Female	28.73	15.219	

Legend: ** significant at $p < .01$ level; * significant at $p < .05$ level

MMPIL – Lie Scale; MMPIF – Scale of bizarre and confusing thinking;

MMPIK – Scale of Defensiveness; Bias – validity scale in Plutchik's Emotion Profile Index (EPI)

with Schizophrenia, schizotypal and delusional disorders (F20), while the lowest means are found in participants with Disorders of adult personality and behavior (F60). In women, four statistical significant differences are found. The results for scales MMPIK and BIAS were with the same trend as in men: the highest means are found in participants with Schizophrenia, schizotypal and delusional disorders (F20), while the lowest means are found in participants with Disorders of adult personality and behavior (F60). For the scale MMPIL, the highest means are found in participants with Schizophrenia, schizotypal and delusional (F20), while the lowest means are found in participants with Disorders of adult personality and behavior (F60). For the scale MMPIF, the lowest mean is found in participants with Neurotic, stress-related and somatoform disorders neurotic (F40), while the highest means are found in participants with Disorders of adult personality and behavior (F60).

Discussion and Conclusions

The main finding of the study was the fact that we have found only two statistically significant differences among four independent variables: age group and educational category showed strong enough multivariate effects. As we said before, moderately high scores in MMPIK are associated with high education and socio-economic status⁹. However, according to education level, the differences are found only in females: for MMPIF, the highest scores are found in lowest educated participants, while the females who are highest educated females had lowest scores. In MMPIK, the highest educated females had highest scores, while the lowest educated females had lowest scores. These findings are in line with expected trends⁹, but only in women. This finding can be explained in terms that highest educated females female patients tend to hide (or

TABLE 3
AGE DIFFERENCES IN CONTROL SCALES IN PERSONALITY TESTS STRATIFIED BY GENDER (ONLY SIGNIFICANT DIFFERENCES)

Males	Age group	\bar{X}	SD	Kruskal-Wallis test (p)
mmpif	0–20	7.43	4.198	.014*
	21–35	7.44	4.465	
	36–50	10.12	6.314	
	51–65	11.41	6.354	
mmpik	≥66	9.38	4.809	.000**
	0–20	14.71	5.024	
	21–35	11.87	5.115	
	36–50	9.76	4.588	
bias	51–65	8.67	3.736	.000**
	≥66	11.38	2.326	
	0–20	59.71	25.824	
	21–35	37.10	17.370	
Females	36–50	25.46	18.148	.003**
	51–65	21.79	12.502	
	≥66	30.25	8.995	
	0–20	6.54	5.109	
mmpif	21–35	7.35	5.375	.003**
	36–50	10.16	6.223	
	51–65	9.21	5.564	
	≥66	10.60	5.317	
bias	0–20	32.33	7.644	.001**
	21–35	35.34	17.367	
	36–50	27.56	14.365	
	51–65	26.12	15.008	
Females	≥66	32.67	7.174	

Legend: ** significant at $p < .01$ level; * significant at $p < .05$ level

MMPIL – Lie Scale; MMPIF – Scale of bizarre and confusing thinking; MMPIK – Scale of Defensiveness; Bias – validity scale in Plutchik's Emotion Profile Index (EPI)

to be evasive about, or to deny) their psychopathology more, while the »faking bad« profile is the trend in the lowest educated participants, who probably do not think about long-term consequences of the hospitalization, or tend to get some 'profit' from simulating psychopathology as well.

Univariate gender differences are found in two control scales: MMPIL (higher means for females) and MMPIF (higher means for males). As it was mentioned in the introduction, Social Desirability Scale (Sd) highly correlates with Mp and this (»faking good«) L scale, and only slightly with K scale⁹. Thus, it is possible that female psychiat-

TABLE 4
DIFFERENCES ACCORDING TO EDUCATION LEVEL FOR CONTROL SCALES IN PERSONALITY TESTS STRATIFIED BY GENDER

Educational differences		Males			Females		
		\bar{X}	SD	Kruskal-Wallis test (p)	\bar{X}	SD	Kruskal-Wallis test (p)
mmpil	Drop-out primary school, primary school, semi-qualified worker	4.97	2.467	.248	5.34	2.363	.910
	Qualified worker, high school	4.72	2.673		5.26	2.420	
	College, High education, Master's degree	3.33	3.204		5.28	2.568	
mmpif	Drop-out primary school, primary school, semi-qualified worker	10.39	5.768	.067	10.16	6.005	.001**
	Qualified worker, high school	9.96	6.458		9.01	5.786	
	College, High education, Master's degree	5.17	4.708		6.50	5.131	
mmpik	Drop-out primary school, primary school, semi-qualified worker	9.94	4.350	.559	9.95	3.930	.023*
	Qualified worker, high school	9.73	4.735		10.43	4.202	
	College, High education, Master's degree	10.83	3.764		12.19	4.941	
bias	Drop-out primary school, primary school, semi-qualified worker	26.87	17.721	.597	28.49	14.186	.116
	Qualified worker, high school	31.83	6.940		27.92	16.162	
	College, High education, Master's degree	27.01	17.938		32.59	10.261	

Legend: ** significant at $p < .01$ level; * significant at $p < .05$ level

MMPIL - Lie Scale; MMPIF - Scale of bizarre and confusing thinking;

MMPIK - Scale of Defensiveness; Bias – validity scale in Plutchik's Emotion Profile Index (EPI)

ric patients (independently of diagnosis and education level) tend to present themselves in a socially desirable (mentally healthy) manner, in comparison with males. On the other hand, males showed the directly opposite trend in scores in validity scale F: possibly, their motivation could be explained as different when compared with female patients. However, the same trends are not observed in men and women. It supports the previous findings that clear gender differences are evident in the responses to the items of MMPI, what is the reason for defining separate standards for men and women in the MMPI-2 and MMPI-A inventory.² For example, female subjects with attempted suicide obtained statistically significant lower results on the MMPI-201 control K scale than did female subjects without attempted suicide²⁹.

According to the age group, for the scale MMPIF, at male patients, the largest difference is found among age group 0–20 and group 51–65, where the group of the oldest patients shows highest simulation trend. The opposite trend in males is found in MMPIK, as same as in BIAS, where youngest age groups (0–20 in MMPIK or 21–35 in the case of BIAS) showed the highest levels of dissimulation, as compared with age group 51–65. Two statistically significant differences are found in females, with the same trends, with the only difference that differences in MMPIK were not statistically significant (differences are found only in scales MMPIF and BIAS).

According to the type of the diagnosis, in male patients, the highest means in two dissimulation scales (MMPIK

and BIAS) are found in participants with Schizophrenia, schizotypal and delusional disorders (F20), while this trend is the least observable in participants with Disorders of adult personality and behavior (F60). These results for scales MMPIK and BIAS are practically the same in women who are psychiatric patients, adding the fact that the same trend is obvious also for the scale MMPIL. The scale BIAS on the EPI is partly a measure of attitudes towards testing. It reflects the tendency of individuals to choose socially desirable items from each pair that is offered. It correlates positively with K scale (+0.38) from the MMPI. This result is consistent with the fact that the K scale made to measure facade 'all is well' that is obvious in some individuals²⁷. Finally, the lowest score for the scale MMPIF in female psychiatric patients is found at participants with Neurotic, stress-related and somatoform disorders neurotic (F40), while the highest scores are found in Disorders of adult personality and behavior (F60). Thus, it could be said that 'presenting themselves in socially desirable way or faking good way' is the strongest in females with Schizophrenia, schizotypal and delusional disorders (F20), while uncontrolled responding is mostly found in women with Disorders of adult personality and behavior (F60), who show contradictory beliefs, expectations and self-descriptions. Simultaneously, they show low self-control and defensiveness. In one research, Croatian war veterans with higher levels of Posttraumatic stress disorder (PTSD), tending to choose socially unacceptable answers, describing themselves as untrustworthy, aggressive and less socia-

TABLE 5
DIFFERENCES ACCORDING TO CATEGORIES OF DIAGNOSIS FOR CONTROL SCALES IN PERSONALITY TESTS STRATIFIED BY GENDER

Differences in diagnosis		Males			Females		
Diagnosis		\bar{X}	SD	Kruskal-Wallis test (p)	\bar{X}	SD	Kruskal-Wallis test (p)
mmpil	F20	5.42	2.699	.084	6.30	2.743	.002**
	F30	4.81	2.398		5.23	2.193	
	F40	4.75	2.692		4.99	2.230	
	F60	4.05	2.471		4.13	2.142	
mmpif	F20	8.76	5.106	.514	9.21	5.614	.039*
	F30	10.41	6.866		9.53	5.888	
	F40	10.56	6.322		8.31	5.407	
	F60	10.05	4.655		12.05	6.989	
mmpik	F20	12.25	4.261	.000**	11.95	5.320	.050*
	F30	9.56	4.293		9.79	3.228	
	F40	9.26	4.646		10.04	4.162	
	F60	8.68	3.912		9.08	3.264	
bias	F20	39.54	14.208	.000**	33.59	13.028	.003**
	F30	25.95	18.599		27.16	18.524	
	F40	23.57	18.080		29.41	13.470	
	F60	22.38	11.319		23.44	12.841	

Legend: ** significant at p<.01 level; * significant at p<.05 level

Schizophrenia, schizotypal and delusional (F20); Mood (affective) disorders (F30);

Neurotic, stress-related and somatoform disorders neurotic (F40);

Disorders of adult personality and behavior (F60)

MMPI-L – Lie Scale; MMPI-F – Scale of bizarre and confusing thinking;

MMPI-K – Scale of Defensiveness; Bias – validity scale in Plutchik's Emotion Profile Index (EPI)

ble³⁰. Thus, place and purpose of testing appear to be very important factors for the scores on both personality and validity scales of MMPI-2 or MMPI-A²²⁻²⁴. Hence, the evaluator of MMPI-2 or MMPI-A should be aware of factors that can distort answers in a particular environment, and try to mitigate their impact. The knowledge about these factors could help triage personnel in the interpretation and in preventing distortion responses, during employment interviews or testing for the determination of custody (of children)²³. In these situations tested people can try to give the best impression about themselves (e.g. to dissimulate), while in some other places or other times a possible opposite trend could be presented (the above-mentioned example of PTSD). In such circumstances an individual displays as seriously mentally ill people in need of attention and special assistance^{22,23}. Compared with the Dutch norms and the scale means of the non-Korsakoff alcoholics, Korsakoff patients showed an extraordinary flat profile, which is related to the levels of the various MMPI scales³¹.

Dissimulation is also a common phenomenon. Simulation or exaggerating symptoms (measured by F scale) may occur in cases where the disease can help to avoid or reduce the sentence, declaring that they are insane, or is

useful in the acquisition of certain rights and material benefits such as disablement or mental and physical impairments³². Minimizing evidence of psychic dysfunction, or dissimulation and defense of expression psychopathological events can occur when a person tries to maintain certain rights, wants to obtain or renew: restoring the capacity, when assessing conditional release, release from involuntary hospitalization or custody of children, when assessing mental capacity after the commission of criminal offenses³³. For the forensic psychiatrist it is especially important in assessing opportunities for discharge from forensic institutions³². Insight into the code of conduct in forensic institutions can unfortunately be a reason for a real mental patient to be afraid of staying in such institutions and to try to hide the symptoms³². The indicators of simulation indicate: the over-emphasis and dramatic presentation that includes theatrical style and emphasized desire of talking about symptoms; the inconsistency in the testimony; the inconsistency with the diagnosis³². The forensic psychiatrist, especially if some case is a clear simulation, can feel anger that they should not show: the best strategy is indirectly commenting against the respondent³². It could be possible that the simulation and dissimulation are dominant defense mechanisms³², especial-

ly in forensic institutions. Incorrect assumptions are that the person's antisocial disorder often simulates the forensic expert evaluation³⁴ and that simulation and chronic mental illness are mutually exclusive³⁵. Mentally ill people may try to brighten the image by adding fictitious symptoms or their intensity: thus, in practice, some forensics after simulating statement no longer talk about the disease, thinking that the simulation completely destroys the credibility of the patient as the person³². To get accurate conclusions about existing mental illnesses and disabilities, it is possible that the same person partly tends to simulate and partly to dissimulate. Hence, when we determine that a person simulates, we should not ignore the possibility of dissimulation³³.

Second plausible explanation could be focused on ethnic and cultural factors: for example, the impact of ethnicity on MMPI results is apparent and responsible for a major part of the variance in component MMPI scales²⁴. But in the MMPI-2, nearly representative samples of minorities were included in the new standards. All ethnic samples are very close to the mean of the MMPI-2 validity scales and standard charts. These data show that the MMPI-2 norms are very well applicable to people of different ethnic and educational backgrounds²⁴. Moreover, various authors indicate the possibility of systematic differences in response styles between countries or other populations defined in terms of culture^{35–37}. Response styles like acquiescence and extreme response style may affect specific styles of answers on rating scales. In three marketing studies, each conducted with representative samples from at least three out of six countries (Greece, Italy, Spain, France Germany and the UK), two response styles were found to be more often emphasized in the Mediterranean than in Northwestern Europe³⁷. These response style effects were not found only in response distributions on rating scales, but also in discrepancies of these distributions with national consumer statistics and self-reported actual behavior³⁷. Hence, rating scale scores did not match differences in actual behavior between countries. Therefore, ignoring national differences in response styles may lead to invalid inferences in cross-cultural research³⁷.

The advantage of this research is the fact that such issues (study of the scores on validity scales as the main goal of the research) are not so common in the Croatian population, especially in this specific group of forensic patients. However, including several independent variables simultaneously (together with gender as the main independent variable and stratification variable as well), provide more information about the features of these differences among forensic psychiatric patients.

REFERENCES

1. ELLINGSON JE, SACKETT PR, Consistency of personality scale scores across selection and development contexts. Summary from poster section presented on Annual Conference of the Society for Industrial and Organizational Psychology (San Diego, 2001). — 2. SMITH DB, ELLINGSON JE, *J Appl Psychol*, 87 (2002) 211. — 3. KRAHE B, *Pers Indiv Diffe*, 10 (1989) 437. — 4. PETZ B, *Psihologijski rječnik*, In *Croat (Prosvjeta, Zagreb, 1992)*. — 5. PAULS CA, CROST NW, *Pers Indiv Diffe*, 39 (2005) 297. — 6. BRADLEY KM, HAUENSTEIN NMA, *Psychol Sci*, 48 (2006) 313. — 7. MUELLER-HANSON R, HEGGESTAD ED, THORTON III

One shortcoming of the study is arising from the structure of the samples of forensic psychiatric patients. Initial sample sizes were equalized by two variables: gender and type of psychiatric diagnosis. Additionally, mainly depending on the number of female psychiatric patients with certain diagnoses, the number of patients with the same diagnosis is not equal, what could have affected the differences according to other independent variables (educational level, age group). Moreover, response bias which appears in cross-cultural studies could be reflected also in this research with these specific, Croatian forensic psychiatric patients. Thus, in future studies, more representative (yet more precise) stratified samples, according to several independent variables or/and relevant factors, have to be chosen. Additionally, response bias might be controlled to avoid differences caused by the influence of cultural factors.

Practical implications could be directed to improved carefulness in psychologists and psychiatrists, when considering the possibility that in certain circumstances some individuals tried to create a certain image of them. In these situations, the MMPI-2 validity scales are very important interpretative elements²³. Psychologists who work in places that encourage distortion response must be familiar with the typical or most common illogical conclusions in results of the validity scales in these circumstances. For example, customers who respond to questionnaire to obtain guardianship usually give profiles with higher scores in L scale, a small increase in F and high in K²³. On the other hand, if the profile is not elevated, and the testing is done in an environment that encourages a defensive way of answering, this does not necessarily mean that the individual is psychologically healthy. However, when in such environment the profiles with higher scores are obtained, and the results in validation scales are acceptable, then the profile is likely to be interpreted²³.

Results of this study lead us to the conclusions that results reflect characteristic statistically significant gender differences in validity scales of personality measuring instruments, in most of the independent variables. This finding supports the approach of defining specific standards for male and female populations for forensic psychiatric patients, but also in general population. The main effects are found for the level of education and age group. These results were interpreted within the theoretical framework of simulation and dissimulation, but also in terms of response bias in cross cultural studies, where forensic psychiatric patients (stratified with their diagnoses) can be seen as specific cultural groups. This direction can lead future researchers to specific approaches in choosing initial research samples.

GC, *J Appl Psychol*, 88 (2003) 348. DOI: 10.1037/0021-9010.88.2.348. — 8. DILCHERT S, ONES DS, VISWESVARAN C, DELLER J, *Psychol Sci*, 48 (2006) 209. — 9. GORDON RM, Definitions of MMPI/MMPI-2 scales: Scales of Validity and Bias, (2011). Available from: URL: <http://www.mmpi-info.com/mmpi-2/mmpidict1.html>. — 10. WALTERS GD, *J Pers Assess*, 52 (1988) 465. DOI: 10.1207/s15327752jpa5002_12. — 11. SINDIK J, *Školski vjesnik*, 55 (2006) 119. In *Croat*. — 12. BATHURST K, GOTTFRIED AW, GOTTFRIED AE, *Psychol Assess*, 9 (1997) 205. DOI: 10.1037/1040-3590.9.3.205 — 13. KELLERMAN H, PLUTCHIK

- R, Psychol Rep, 23 (1968) 1107. DOI: 10.2466/pr0.1968.23.3f.1107. — 14. KELLERMAN H, PLUTCHIK R, Group, 2 (1979) 14. — 15. PLUTCHIK R, KELLERMAN H, The Emotions Profile Index Manual (Western Psychological Services, Los Angeles, 1974). — 16. BUCIK V, BRENK KM, VODOPIVEC B, Psihološka obzorja, 4 (1995) 25. In Slovenian. — 17. FURNHAM A, Eur J Pers, 4 (1990) 319. DOI: 10.1002/per.2410040405. — 18. FURNHAM A, Pers Indiv Diffe, 7 (1986) 385. DOI: 10.1016/0191-8869(86)90014-0. — 19. FURNHAM A, Pers Indiv Diffe, 11 (1986) 711. DOI: 10.1016/0191-8869(86)90123-6. — 20. COWLES M, DARLING M, SKANES A, Pers Indiv Diffe, 13 (1992) 501. DOI: 10.1016/0191-8869(92)90191-Q. — 21. DI DONATO R, PELLEGRINO R, SABELLA L, BOTTICELI F, VITALE A, ACCATTATIS C, CAPASSO MT, FIORAVANTI M, Riv Psichiatr, 45 (2010) 163. — 22. BUTCHER JN, Frequency of MMPI-2 scores in forensic evaluations (MMPI-2 Newsletter: MMPI-2 Workshops, University of Minnesota, 1997). — 23. BUTCHER JN, WILLIAMS CL, Bitne odrednice interpretacija MMPI-2 i MMPI-A inventara, In Croat (Naklada Slap, Jastrebarsko, 2000). — 24. DAHLSTROM WG, WELSH GS, DAHLSTROM LE, An MMPI handbook: Vol. II. Research applications (Minneapolis: University of Minnesota Press, 1975). — 25. International statistical classification of diseases and related health problems. 10th revision (WHO, Geneva, 2003). — 26. BIRO M, BERGER J, Praktikum za primenu i interpretaciju, In Serbian (Savez društava psihologa SR Srbije, Beograd, 1985). — 27. PLUTCHIK R, KELLERMAN H, Priručnik za Indeks profila emocija, In Croat (Naklada Slap, Jastrebarsko, 2000). — 28. CONTE HR, PLUTCHIK R, J Psychiatr Res 10 (1974) 181. DOI: 10.1016/0022-3956(74)90002-8. — 29. DAUTOVIĆ M, Contemp Psychol, 4 (2001) 111. — 30. MRŠIĆ HUSAR S, BOGOVIĆ A, Contemp Psychol, 11 (2008) 273. — 31. JOS I, EGGER M, WESTER AJ, DE MEY HRA, DERKSEN JJJ, Acta Neuropsychiatrica, 14 (2002) 231. DOI: 10.1034/j.1601-5215.2002.140506.x. — 32. MARGETIĆ B, ŽARKOVIĆ PALIJAN T, KOVAČEVIĆ D. Simulacija. In: ŽARKOVIĆ PALIJAN T, KOVAČEVIĆ D (Eds), Iz forenzične psihijatrije 2, In Croat (Naklada Ceres, Zagreb, 2007). — 33. CARUSO KA, BENEDEK DM, AUBLE PM, BERNET W, J Am Acad Psychiatry Law, 31 (2003) 444. — 34. ROGERS R, BENDER SD, Evaluation of Malingering and Deception. In: GOLDSTEIN AM, WEINER IB (Eds), Handbook of Psychology – Volume XI – Forensic Psychology (John Wiley and Sons Inc, New York, 2003). — 35. REID WH, Jrnl Prac Psych and Behav Hlth, (1998) 373. — 35. BERRY JW, POORTINGA YH, SEGALL MH, DASEN PR. Cross-cultural psychology: Research and applications (2nd ed.) (Cambridge University Press, Cambridge, 2002). — 36. JOHNSON TP, VAN DE VIJVER FJR, Social desirability in crosscultural research. In: HARKNESS JA, VAN DE VIJVER, FJR, MOHLER PP (Eds.), Cross-cultural survey research (John Wiley & Sons, Hoboken, NJ, 2003). — 37. VAN HERK H, POORTINGA YH, VERHALLEN TMM, J Cross Cult Psychol, 35 (2004) 346. DOI: 10.1177/0022022104264126

J. Sindik

Institute for Anthropological, Ljudevita Gaja 32, 10000 Zagreb, Croatia

e-mail: josko.sindik@inantro.hr

RODNE RAZLIKE U KONTROLNIM SKALAMA NA UPITNICIMA LIČNOSTI KOD PSIHIJATRIJSKIH PACIJENATA

SAŽETAK

Glavni cilj istraživanja bio je utvrditi spolne razlike među psihijatrijskim bolesnicima, u kontrolnim skalama na upitnicima ličnosti. Dodatni ciljevi bili su su pronaći razlike među muškim i ženskim psihijatrijskim bolesnicima, u odnosu na njihove dobne skupine, razine obrazovanja i vrste psihijatrijske dijagnoze. Ukupno je ispitano 331 muških i 331 ženskih ispitanika (psihijatrijskih pacijenata), klasificiranih po sljedećim kategorijama dijagnoze: shizofrenija, shizotipni i sumanutni poremećaji (F20-F29); poremećaji afekta (raspoloženja) (F30-F39); neurotski, vezani uz stres i somatiformni poremećaji (F40-F48); te poremećaji ličnosti i ponašanja odraslih (F60-F69). Analizirani su rezultati na sedam kontrolnih skala; skala laganja (MMPI-L), F skala konfuznog i bizarnog mišljenja (MMPI-F), skala korekcije (MMPI-K) iz inventara MMPI-2, te skala pristranosti (BIAS) iz Plutchikovog indeksa profila emocija, (EPI). Trofaktorska MANOVA se koristila u analizi glavnih efekata, a neparametrijski testovi u analizama razlika za pojedine nezavisne varijable. Rezultati odražavaju karakteristične statistički značajne rodne razlike za većinu nezavisnih varijabli, u kontrolnim skalama mjernih instrumenata ličnosti (s glavnim učincima pronađenim za razine obrazovanja i dobne grupe). Razlike su protumačene unutar teorijskih okvira simulacije i disimulacije.