

# Research of Psychometric Characteristics of Inventory of Psychological Gender Estimation and Thematic Validity Analysis with Musical Identity Test in Population with Mental Disorders

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**ABSTRACT** — *The article describes the clinical psychometrical research about internal reliability of Inventory of Psychological Gender Estimation with established normalized scales for population with mental disorders, and its thematic validity with Musical Identity Test scales for condition and independence between 2 diagnostic tools' scores, for the duration of clinical musical psychological diagnosis and clinical music therapy for mental disorders.*

**Keywords** — Clinical musical-psychological diagnosis, Psychometrics of clinical population data, Features of psychological identity, Self-Identification of psychological gender.

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## 1. INTRODUCTION

A current practical clinical problem in modern psychiatry concerns the patients' effective treatment and diagnosis from gender self-identification background for the estimation of behavior that is consistent with biological gender and with accepted cultural patterns of gender behavior. This applies especially to the nosology basis of the cause of the development of human mental changes. Used research diagnostic tools focus on the issue of psychological gender self-identification. Psychometric analysis of used tools in clinical research is obvious, purposeful, and necessary for this reason in determining the nature of the subject measured with these tools for direction of clinical diagnosis and psychotherapy effectiveness. Psychometric properties of the IPGE and MIT tools [as subject of the methodological study] determine the practical direction of clinical psychological-musical diagnosis and the area of recommendations with arrangements for psychodrama, music therapy and psychotherapy sessions in mental disorders' treatment. The complementary subject of the research is clinical psychological-musical diagnosis for the purposes of targeted conscious therapy from the art therapy [including music therapy] and psychotherapy, touching on the areas of 1) biography diagnosis with psycho-traumatology background, and 2) usable therapeutic projection function of music for psychotherapy. Psychological identity is taken here into account as a component of the human structure, which also includes self-identification of psychological gender. Purposefulness of clinical diagnosis with the combined IPGE and MIT tools usage determines the possibility of obtaining the projective information data from patients [from aural MIT and additional verbal interview to MIT] with subsequent its confirmation and unification with the data from the patient's biography and IPGE tool.

## 2. CLINICAL RESEARCH DESCRIPTION

Present empirical article was created as part of scientific cooperation of Elżbieta Galińska [Ph.D. in humanitarian sciences, psycho-musicologist, music therapist and psycho-therapist certified by the Scientific Section of Psychotherapy of the Polish Psychiatric Association] and Maria Dymnikowa [Ph.D. in psychology with MA in musical art] at the Institute of Psychiatry and Neurology in Warsaw for purposes to checking in the population with mental disorders: I. Psychometric properties of IPGE tool [original title 'Inwentarz do Oceny Płci Psychologicznej'] with 35 items (written adjectives) and 2 scales [Masculinity 'M' \ Femininity 'F' - these letter symbols are used in tables with empirical statistical data presentation] for: 1) determining the ranges of high and low range scores of 2 scales in 3 clinical age groups [younger minor, early adult, late adult and older]; 2) estimation analysis [for confidence interval at 85 % and 95 %] of mean values and distribution in 2 scales including grouping by 4 types of psychological gender. Here 4 psychological gender types [52] are: both 1. low scores [undefined humans] or 2. high scores [androgynous humans] in 2 scales [Masculinity \ Femininity], 3. homogeneous humans [Males with Male psychological gender, Females with Female psychological gender], 4. cross humans [Males with Female psychological gender, Females with male psychological gender]; 3) content reliability [i.e. internal consistency] analysis of 2 scales with the discriminatory power of selected scales' items [i.e. correlation with the scale's score for the condition of excluding an item from the scale] in 3 age groups; 4) factor analysis [i.e. theoretical and structural validity] of measurement's object. Here, the updated content scales of the tool were created in the empirical emergence of differences in the scales' content structure in 3 age groups.

II. Content thematic validity of MIT tool [*original title 'Muzyczny Test Tożsamości'*] with 31 single aural tasks and 25 scales [6 psychological, 19 musical] in relation to IPGE indicators, as part of analysis of conditioning vs. independence properties of MIT scores from the psychological gender factor and Masculinity \ Femininity scales in the population with mental disorders, in intergroup analysis:

- of variance [i.e. analysis of mean values' differences] of 25 MIT scales [6 psychological, 19 musical] and of distribution of qualitative scores of 31 single tasks of 5 psychological scales [based on the % frequency analysis of 101 structural indices] – for psychological gender and age groups (totally 7);

- of correlation [i.e. analysis of relationships] of 25 MIT scales with 8 IPGE scales – 2 quantitative, 2 range of low \ high Masculinity \ Femininity scores, 4 binary ('yes-no') for 4 psychological gender types - in 3 age groups.

MIT psychological scales measure 5 psychological identity's features [ gender 'G', age 'A', emotion [i.e. emotional state] 'E', erotic sensuality 'ES' [i.e. bodily aspect of identity], depth of emotionality 'DE', and 6<sup>th</sup> scale of MIT total score 'TS' - describing the level of intensity of psychological-musical associations in the process of projective perception of music, on a 5-point Likert scale for single task. The letter symbols are used in tables with empirical statistical data presentation. The low\high results of single task might be defined in 2 directions: 1-2 \ 3-5 and 1-3 \ 4-5. Three Gender-Age-Emotion scales are structured as a multiple choice test to determine the strongest psychological-musical association. Gender Scale has qualitative subcategories: female, male, unspecified gender and features of both genders. Age Scale has qualitative subcategories: child, teenager, adult, old man and unspecified age. Emotions scale has qualitative subcategories: positive emotions, negative emotions, mixed emotions and emotional fullness. The source of the differential research here [i.e. grouping factor for psychometric analysis] is the selection of a specific qualitative category as the diagnostic task's answer. Two Erotic sensuality and Depth of emotionality scales are structured as an imposed single directional choice to determine the level of psychological-musical association's intensity. They are measured simultaneously \ together in the perception of a single musical auditory diagnostic stimulus' item. The source of the differential research here is the division of the 5-point Likert scale into a range of high and low scores for single tasks of the tool, in 2 methodological directions [low 1-2, high 3-5 vs. low 1-3, high 4-5]. The Gender - Erotic sensuality - Depth of emotionality scales have 7 diagnostic tasks, where Erotic sensuality - Depth of emotionality scales have the same musical content in single tasks [i.e. total 14 musical trials for these 3 scales]. The Age - Emotion scales have 5 diagnostic tasks [i.e. total 10 musical trials for these 2 scales].

MIT has 12 tracks in total [aural music trials], with 24 music trials for psychological 5 scales. Here, 6 tracks occur singly, another 6 are replicated in different amounts [i.e. repeated tracks – Brahms 'B', Debussy 'D', Jazz 'J', Pop 'P', Rachmaninov 'R', Saint-Saëns 'SS', these letter symbols are used in tables with empirical statistical data presentation], where 3 out of 6 pieces have a 5 time diagnostic presentation, i.e. in all 5 psychological scales. 19 MIT musical scales concern the repeated structure of diagnostic material (i.e. tracks) for the psychological-musical associations measure - 6 scales of repeated tracks, 13 scales of repeated single musical features of tracks in accordance with the background of the theory of music [rhythm, tempo, harmony, structure, dynamics, character of music for projection]. Thus, a single musical track is characterized by 6 features [with a total of 24 music trials inside 1 group]:

- 1) homogeneous (15) or various (9) rhythm; - 2) fast (12) or medium (6) or slow (6) tempo; - 3) dissonant (13) or consonant (11) harmony; - 4) periodic (14) or evolutionary (10) structure; - 5) homogeneous (16) or various (8) dynamics; - 6) stimulating music (14) or calming music (10) in character of music for projection.

Totally 101 qualitative indices of MIT individual tasks are created in 5 psychological scales: Gender scale - 4 features in 7 tasks (i.e. 28); Age scale - 5 features in 5 tasks (i.e. 25); Emotion scale - 4 features in 5 tasks (i.e. 20); Erotic sensuality \ Depth of emotionality scales - 2 features (division of low \ high score ranges by 2 classifications) in 7 tasks (i.e. 28). Each single diagnostic task has 2 superimposed factor components (except the music estimation factor, omitted in this research): 1 – subject of diagnosis [semantic associations of psychological identity features in the process of projective perception of music]. 2 – content of diagnostic material [various musical tracks occurring once within the psychological scales of psychological identity's features]. Here 6 from 12 tracks [aural musical tracks] due to their replications in the tool determine the repeated musical scales in relation to the factor of the same diagnostic material, with a different subject of measurement [different psychological identity features].

The repeatability of the measurement is therefore ensured in 50% (2-factor structure) in relation to 31 single diagnostic tasks in the tool with the background of 24 musical auditory tracks. Here, psychometric analysis concerns 5 scales of psychological identity features and 19 scales of identical single musical features (from theory of music) of repetitive diagnostic material of the content of musical auditory tracks, with a total of 24 psychological-musical diagnostic scales in accordance with the criterion of classical psychometric measurement's repeatability. Within research for psychometric control of MIT tool [i.e. criteria of psychological tests [23] - objectivity, standardization, reliability, validity, normalization], a supplementary diagnosis with the IPGE tool [for purpose of examining thematic accuracy] was used in the population with mental disorders, where the trends of psychotherapy effectiveness include the areas of music therapy and projective psycho-musical diagnosis.

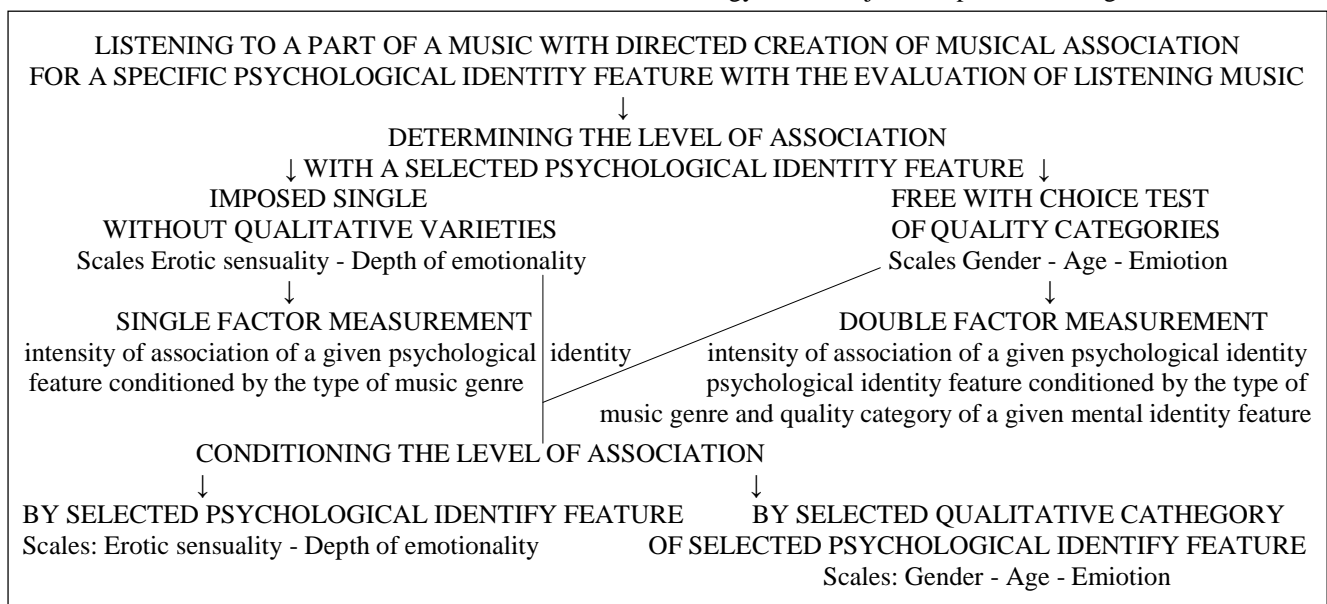
### 3. SCIENTIFIC BACKGROUND OF DIAGNOSTIC METHODS

The Inventory of Psychological Gender Estimation [IPGE] was based on assumptions of Gender Schema Theory of Sandra Lipsitz Bem authority [2, 3], where the dimensions of Masculinity and Femininity are independent of each other and constitutes a separate personality's dimensions. The feature of psychological gender indicates the direction of social cognitive self-identification based on gender stereotypes and behaviors assigned to biological sex and functioning in a particular culture. The concept of self-identification can be formed on the basis of: 1. social definitions \ stereotypes of Masculinity and Femininity features - refers to the state of dominance of Masculinity or Femininity in a human being i.e. homogeneous and cross humans, or 2. regardless of cultural influence when the social gender scheme does not determine self-identification - refers to the state of lack of dominance of Masculinity or Femininity in a human being with an equal low (undefined humans) or high (androgynous humans) level of these features [2].

Social stereotypes are acquired and learned here in the process of growth and socialization on the background of species knowledge of an adaptive nature, that enabling human survival [33]. They are conditioned by biological (permanent) factors and sociological (changeable across cultures). Scientific data prove the possibility of changing the Masculinity \ Femininity stereotypes [32, 33], or their maintaining relatively social customary constancy and content consistency [4]. This proves the purposefulness of updating the psychometric research of the IPGE tool scales, including a separate analysis of the population with mental disorders. Because empirical studies have confirmed the impact of psychological gender self-identification state on human functioning, the possibility of human development and psychological adaptation, including the recognition and interpretation of statements of people with opposite gender [15, 28, 38], what all determine different directions of individual psychotherapy effectiveness.

The Musical Identity Test [MIT] is a clinical psychological-musical and music-therapy tool. It is used to measure certain aspects of a person psychological identity's features, through the process of projective perception of music, with auditory categorical psychological-musical associations for such features. Perception of music takes place here in the context and for therapeutic and diagnostic aim, while the nature of projective perception of music is conditioned by the type of tool's instruction and clinical application usage. It is intended for practical use in the areas of clinical psychological diagnosis, psychiatry, psychotherapy, art therapy (music-therapy), for patients with depression, neurotic (anxiety), personality, nutrition disorders, and within a narrow limit for psychotic disorders state in clinical remission. The detailed methodology of the subject of measurement and of the diagnosis process activated in MIT tool is presented below in Scheme I.

Scheme 1. Methodology of the subject and process of diagnosis with MIT tool



Personal identity is a state of self-feeling, self-identification, and self-awareness in a specific time and social space, relatively stable despite developmental changes [25]. For social psychiatry and developmental psychology direction it is the "ego", i.e. a part of the structure of the psyche developed on the background of innate resources and acquired capabilities resulting from social roles [11]. This affects the basis of conscious feelings of emotions and the evaluation of experienced emotions, psycho-physiological, erotic and emotional needs. Here, the psychological characteristics of gender and age may differ from these biological characteristics, which are conditioned by the quality of human fate and individual experiences. Identity is a feature of regulation of human's psychosocial functioning [5, 12, 51]. It is characterized by the pursuit of coherence, individuality, and self-awareness of the basic manifestations of the internal personal self 'I \ Me' - as indicators of life adaptation effectiveness and mental health [24, 34, 54].

Scientific classifications of the division of 'I \ Me' important for the trend of clinical psychotherapy, for the structural basis of the 'My hidden self' (i.e. internal personal) have been established and identified empirically in the following trends: 1) social psychology - distinguishing the private 'I' from the public 'I' [13, 14, 48]; 2) psychoanalysis within the framework of the ego and superego structures - distinguishing the real - ideal and duty 'I' [20, 21]; 3) clinical psychology with the determination of conflicts between the varieties of 'I' true and false [29, 30], also of 'I' possible [35] and unwanted [44].

MIT tool was originally developed by Elżbieta Galińska in 2006 with additional co-authorship by M. Dymnikowa since 2018. It could be more precisely called the Test of Musical Meanings of Mental Identity Features, or the Musical Test of Meanings of Mental Identity Features. And since the issues of psychological self-identity feeling are included in personality theory in psychological science area [18, 45], then the definition of etiology of MIT as a projective musical test of personality can also be established. Elżbieta Galińska and Elżbieta Aranowska [16] prepared MIT validity analysis by competent judges' method to determine the most frequent perception and feeling of the category of mental identity features through projective perception of the music used in the tool, as key of qualitative answers of tasks of Gender - Age - Emotion scales. This tool provides information about the patient's current mental state that changes during the treatment process. Therefore, it touches the clinical psychotherapy area, including hidden, no-over aspect of own-self. It is diagnostic for the purposes of psychotherapeutic work. It was created and is based on over 45 years of Elżbieta Galińska clinical experience with her complex method of the Musical Portrait – 'Mirror' of the musical 'I', concerning the therapy of the disturbed structure of the 'I' and, consequently, about gaining the ability to translate the patient's characteristics into the perception of music. The method was recognized in 2021 by the World Music Therapy Organization as the achievements of world music therapy and is included in the list of world music therapy practices, as an original new model of clinical music-therapy.

#### 4. CLINICAL SAMPLE DESCRIPTION WITH METHODOLOGICAL INTERPRETATION OF STATISTIC PSYCHOMETRIC DATA

Clinical Research was carried out in 2017-2022 in the Department of Neurosis, Personality, and Nutrition Disorders of the Institute of Psychiatry and Neurology and the Gedeon Medica Specialized Psychiatric Clinic in Warsaw. Research included sample with 358 patients [62 Males, 296 Females] aged 12-71 and having a formal psychiatric diagnosis, with their voluntary consent to participate in the research by completing visual written IPGE and aural MIT diagnostic tools in written responses form of behavioral feedback. Middle age of Females [ M 25,274; SD 11.952; ] i Males [ M 29,13; SD 11.368; ] was statistically different [ $U_{\text{MANNNA-WHITNEY}} 6923.5$ ;  $\sum_{\text{RANKS FEMALE}} 50879.5$ ;  $\sum_{\text{RANKS MALES}} 13381.5$ ;  $Z 3.042$ ;  $p 0.002$ ;], but for medical sciences requirement [ $>0.5$ ] there is no age difference for gender groups [ $G_{\text{HEDGES}} 0.325$ ;], i.e. the distribution of age data in Females and Males groups is equalized and approximated. Due to the large age range of the clinical sample, it was divided into 3 equal periodic age groups (N). [ younger minor, (age 12 – 17) N-120; 33,52 % of sample; early adult, (age 18 – 28) N-117; 32,68 % of sample; late adult and older (age 29 – 71) N-121; 33,8 % of sample; with relational statistical significance ( $p$ ) between groups' size (required  $>0.05$ ) :  $1 \leftrightarrow 2 = 0.811$ ;  $1 \leftrightarrow 3 = 0.937$ ;  $2 \leftrightarrow 3 = 0.75$ ; ] The age ranges of the clinical subgroups coincide with the periods of political, social and cultural changes in Poland [the period of the Polish National Republic with the beginning of political changes 1951 - 1993; the period after that historical state with Poland's access to NATO 1994 - 2004; the period of Poland's membership in the European Union 2005 – 2022].

The methodology for interpreting psychometric and psychological statistical results was based on the following classifications with requirements for medical sciences:

I. For interpretation of statistical results in the clinical medical literature, to demonstrate empirical evidence of a difference [mean, frequency % distribution of scores] or relationship (correlation), such terms are applied as 'minimal clinically important difference' [6], 'minimally detectable difference' [41], and 'minimal important difference' [26]. The significant effect size was determined here with a requirement of a level 0.5 or higher [36, 40, 42] in the field of health sciences for the interpretation of health-related quality of life and patient-reported results \ outcomes.

II. For interpretation of the effect size of mean values' difference of the variables (with statistical significance  $p < 0.05$ ), the calculation of the  $G_{\text{HEDGES}}$  [19] was used as a variation of Cohen's d with correction of calculations for small and different size research groups – with the classification of the difference: medium (0.5-0.8), large (0.8-1.2), very large (1.2-2.0) and huge ( $>2.0$ ) [7, 8, 49].

III. For the interpretation of the size of the relationship (correlation) between quantitative and ordinal binary variables [0-1 yes\no] the calculation of Rho Spearman's non-parametric index was used with the classification of the relationship (with including the independent area up to 10% covariance of results for Rho in the range  $<-0.35, +0.35>$ ) with statistical significance of  $p < 0.05$  : medium 0.5 - 0.7 (with a covariance of results in the range of 25% - 50% of the scale of results), high 0.7 - 0.9 (with a covariance of results in the range of 50% - 80% of the scale of results), almost complete 0.9 - 1 (with a covariance of scores  $>80\%$  of the scale of scores) [22, 46, 47].

IV. An exploratory content factor analysis of the IPGE tool's structure was conducted:

1. - with separation of 2 theoretical factors of the tool with the principal component analysis method, which determines the maximization of the variance of the factors' explanation;
2. - with the control of the Kaiser's criterion for extracting the eigenvalues of factors with level at >1, with normalized Varimax orthogonal rotation conditioning high factor loading of variables (tool's items);
3. - with factors supplied by variables with a factor loading at > 0.3, i.e. about  $\geq 10\%$  of the determination index for the covariance of factor results as a scale's content;
4. - with the classification of variables as neutral with a factor loading at < 0.3 in both theoretical factors of the IPGE tool [7].

V. For the interpretation of the size of internal consistency \ internal content reliability the standardized Cronbach's Alpha value was used, that determines the reliability of the whole scale. The classification of the minimum acceptable index (with statistical significance  $p < 0.05$ ) was used such as values 0.6 - 0.7 for quantitative scales [1, 9, 17, 31, 37, 39, 43, 50, 53, 55].

VI. For the interpretation of discrimination index of single scale's items as diagnostic differentiation of the results - here the single item's reliability index is the correlation between the result of a single item (after removal from the scale) with the result of the scale [23], with the classification of the discriminatory power of a single task with level >0.3 as good enough and with level >0.4 as very good [10].

VII. For the interpretation of the Cohen's h effect size of the difference in the % proportion, as structure \ frequency indicators (with statistical significance of  $p < 0.05$ ), the classification of the difference was used as: medium (0.5 - 0.8) and large (0.8 - 1) [7, 8, 47, 49].

### 5. RESULTS WITH METHODOLOGICAL EXPLANATION

Table 1 Psychometric results of IPGE tool in younger minor group (age 12 – 17)

LEGEND: Factor loading → Item's correlation value with tool structure's thematic factor Neutral → Tool's item not belonging to thematic scales, with a correlation at < 0.3; Discrimination value → Correlation value of item's score with scale's score, Cronbach's Alpha value after item's removing from the scale; % S.E.V. → Scale's total % explained variance; E.S.F. → Eigenvalue of scale's factor; S.C.A.S. → Standardized Cronbach's Alpha value of scale; M → Scale's mean value; S.D. → Scale's standard deviation value; C.I. 85 % → Confidence interval for the scale's mean value for 85% C.I. 95 % → Confidence interval for the scale's mean value for 95%								
Item's №	Factor loading	Factor scale	Discrimina-tory value	Item's №	Factor loading	Factor scale	Discrimina-tory value	
1	0.59	Masculinity	0.779	19	0.32	Masculinity	0.795	
2	0.59	Femininity	0.825	20	Neutral		-	
3	0.43	Masculinity	0.79	21	0.68	Femininity	0.816	
4	0.37	Femininity	0.842	22	0.66	Femininity	0.82	
5	0.74	Femininity	0.815	23	0.76	Femininity	0.813	
6	0.38	Masculinity	0.79	24	0.36	Masculinity	0.801	
7	0.56	Masculinity	0.778	25	0.48	Masculinity	0.789	
8	0.38	Femininity	0.838	26	0.68	Masculinity	0.777	
9	0.45	Femininity	0.834	27	0.76	Masculinity	0.766	
10	0.72	Masculinity	0.772	28	Neutral		-	
11	0.64	Femininity	0.829	29	0.46	Femininity	0.833	
12	0.32	Masculinity	0.792	30	0.68	Femininity	0.821	
13	0.51	Masculinity	0.79	31	0.59	Femininity	0.829	
14	Neutral		-	32	0.58	Masculinity	0.786	
15	0.34	Masculinity	0.791	33	0.33	Masculinity	0.795	
16	0.51	Masculinity	0.787	34	-0.46	Masculinity	0.833	
17	0.52	Masculinity	0.791	35	0.61	Masculinity	0.78	
18	0.36	Femininity	0.838					
IPGE scale		% S.E.V.	E.S.F.	S.C.A.S.	M	S.D.	C. I. 85 %	C. I. 95 %
Masculinity		16.74	5.859	0.803	55.68	10.551	54.29-57.08	53.78-57.59
Femininity		15.21	5.323	0.838	51.05	7.791	50.02-52.08	49.64-52.46

Factor analysis of IPGE tool's theoretical structure (Tables 1-3) revealed the content structure of Masculinity and Femininity scales with 32 - 34 items (91.4% - 97% of the tool's content) with the explained variance at the level of 31.86 - 31.95 - 33 %, approximate to the data of the 1992 tool's source handbook [27], with certifying of maintaining the updated diagnostic model for the population with mental disorders.

Table 2 Psychometric results of IPGE tool in early adult group (age 18 – 28)

<p>LEGEND: Factor loading → Item's correlation value with tool structure's thematic factor                  Neutral → Tool's item not belonging to thematic scales, with a correlation at &lt; 0.3; Discrimination value → Correlation value of item's score with scale's score, Cronbach's Alpha value after item's removing from the scale;                  % S.E.V. → Scale's total % explained variance; E.S.F. → Eigenvalue of scale's factor; S.C.A.S. → Standardized Cronbach's Alpha value of scale; M → Scale's mean value; S.D. → Scale's standard deviation value;                  C.I. 85 % → Confidence interval for the scale's mean value for 85%                  C.I. 95 % → Confidence interval for the scale's mean value for 95%</p>							
Item's №	Factor loading	Factor scale	Discriminatory value	Item's №	Factor loading	Factor scale	Discriminatory value
1	0.72	Masculinity	0.849	19	0.32	Masculinity	0.862
2	0.47	Femininity	0.835	20	Neutral		-
3	0.51	Masculinity	0.856	21	0.81	Femininity	0.815
4	0.33	Femininity	0.842	22	0.76	Femininity	0.82
5	0.7	Femininity	0.823	23	0.81	Femininity	0.817
6	0.63	Masculinity	0.853	24	0.52	Masculinity	0.856
7	0.52	Masculinity	0.857	25	0.59	Masculinity	0.854
8	0.42	Femininity	0.837	26	0.63	Masculinity	0.852
9	0.73	Femininity	0.82	27	0.64	Masculinity	0.852
10	0.75	Masculinity	0.845	28	0.42	Masculinity	0.86
11	0.34	Femininity	0.843	29	0.58	Femininity	0.827
12	0.53	Masculinity	0.855	30	0.62	Femininity	0.826
13	0.49	Masculinity	0.858	31	0.73	Femininity	0.82
14	0.42	Femininity	0.836	32	0.4	Masculinity	0.86
15	0.51	Masculinity	0.857	33	0.47	Masculinity	0.859
16	0.42	Masculinity	0.858	34	0.31	Femininity	0.846
17	0.34	Femininity	0.839	35	0.67	Masculinity	0.849
18	0.31	Femininity	0.841				
IPGE scale	% S.E.V.	E.S.F.	S.C.A.S.	M	S.D.	C. I. 85 %	C. I. 95 %
Masculinity	18.63	6.521	0.863	53.26	11.423	51.73-54.79	51.16-55.35
Femininity	14.37	5.029	0.845	60.99	8.779	59.82-62.17	59.38-62.6

Masculinity and Femininity scales' content was updated with established estimation of the mean values and distribution of standardized ranges of low and high scores for those 2 scales in concrete generational age groups (Table 4). The indices of mean and median values with the percentage range of Masculinity and Femininity scales in 3 age groups are here approximated and equalized ( $p > 0.05$ ).

The analysis of content reliability in 3 age groups (Tables 1-3) revealed the required internal consistency of Masculinity and Femininity scales for psychological tests with standardized Cronbach's Alpha indices of scales at the level > 0.7 in the range of 0.776 - 0.863, with presented required discriminating power of single tool's items at the level > 0.7 in the range of 0.727 - 0.862.

In global scheme:

1.) 13 items in each of 2 scales [74% of the tool's content] determines the structural uniformity of the tool in 3 age groups, confirming the universal diagnostic object of the content of psychological gender self-identification, unaffected by changes and generational influences in the Polish population with mental disorders.

2.) 9 items [26% of the tool's content] belong to 2 different scales between 3 age groups, confirming the adaptive diagnostic function of the tool for generational changes in the population with mental disorders, i.e. maintaining the cultural and content updating of psychological gender self-identification.

In the generational trend [between the oldest and the youngest groups], the content of the items was shifted from Femininity's scale [reduction by 5 items, from 18 in the oldest group to 13 in the youngest group] to Masculinity's scale [increase by 4 items, from 15 in the oldest group to 19 in the youngest group]. While the number of neutral items in the 3 age groups shows an equal distribution in the generational dynamics [2 items in the oldest group, 3 items in the youngest group, 1 item in the middle group].

Table 3 Psychometric results of IPGE tool in late adult and older group (age 29 – 71)

Item's №	Factor loading	Factor Scale	Discriminatory value	Item's №	Factor loading	Factor scale	Discriminatory value	
1	0.71	Masculinity	0.797	19	0.34	Femininity	0.753	
2	0.36	Femininity	0.753	20	-0.45	Femininity	0.808	
3	0.45	Masculinity	0.808	21	0.68	Femininity	0.727	
4	0.44	Femininity	0.752	22	0.66	Femininity	0.732	
5	0.64	Femininity	0.729	23	0.73	Femininity	0.727	
6	0.41	Masculinity	0.813	24	0.35	Masculinity	0.815	
7	Neutral		-	25	0.45	Masculinity	0.803	
8	0.56	Femininity	0.738	26	0.55	Masculinity	0.796	
9	0.62	Femininity	0.737	27	0.77	Masculinity	0.785	
10	0.79	Masculinity	0.783	28	0.56	Masculinity	0.8	
11	0.61	Femininity	0.738	29	0.41	Femininity	0.749	
12	0.52	Masculinity	0.801	30	0.58	Femininity	0.736	
13	0.55	Masculinity	0.803	31	0.62	Femininity	0.735	
14	0.45	Femininity	0.751	32	0.49	Femininity	0.748	
15	-0.59	Femininity	0.805	33	0.38	Masculinity	0.815	
16	0.31	Masculinity	0.815	34	Neutral		-	
17	0.33	Masculinity	0.815	35	0.56	Masculinity	0.8	
18	0.53	Femininity	0.742					
IPGE scale		% S.E.V.	E.S.F.	S.C.A.S.	M	S.D.	C. I. 85 %	C. I. 95 %
Masculinity		13.36	4.675	0.816	45.3	9.009	44.11-46.48	43.68-46.92
Femininity		18.50	6.475	0.776	67.72	7.551	66.72-68.71	66.36-69.08

Table 4 Distribution of standardized ranges of low and high scores of IPGE scales in 3 age groups

IPGE scale	Age group	N	A.I.\M.V.	Me	M.V.\Me	Ran. Low	Ran. High
Masculinity	younger minor	120	19 \ 95	55	0.58	0 - 56	57 – 95
Femininity	younger minor	120	13 \ 65	51	0.78	0 - 51	52 – 65
Masculinity	early adult	117	18 \ 90	53	0.59	0 - 53	54 – 90
Femininity	early adult	117	16 \ 80	62	0.775	0 - 62	63 – 80
Masculinity	late adult and older	121	15 \ 75	47	0.63	0 - 47	48 – 75
Femininity	late adult and older	121	18 \ 90	67	0.74	0 - 67	68 – 90

Statistical significance *p* values of '% of scale range for Median value' and 'Group volume' → the condition of uniformity of distribution of results at  $p > 0.05 =$  difference between highest and lowest quotient factor  $< 10\%$  from the highest value ;  
 Masculinity: 0.58 {N120} ↔ 0.59 {N117} →  $p$  0.876; 0.58 {N120} ↔ 0.63 {N121} →  $p$  0.427;  
 0.59 {N117} ↔ 0.63 {N121} →  $p$  0.527; Femininity: 0.78 {N120} ↔ 0.775 {N117} →  $p$  0.926;  
 0.78 {N120} ↔ 0.74 {N121} →  $p$  0.467; 0.775 {N117} ↔ 0.74 {N121} →  $p$  0.529;

Analyses of mean values of Masculinity and Femininity scales in 3 age groups (table 5) with using a uniform standardized 100-point scale [multiplied values for scales' conversion → 1.539 for 13 questions, 1.334 for 15 questions, 1.25 for 16 questions, 1.112 for 18 questions, 1.053 for 19 questions] revealed uniform trends in all age groups of clinical sample characterizing the population with mental disorders:

1.) - equalized mean values of the 2 scales in accordance with the requirements of medical sciences [ $G_{HEDGES} < 0.5$ , in the range  $< 0.096 - 0.316 >$ ] between the groups, with the same distribution of these scales' scores in the 3 age groups.

2.) - very large difference ( $G_{\text{HEDGES}}$  in the range of 1.2-2.0, precisely <1.434 - 1.725>) with a higher mean value and higher Femininity scale scores compared to a lower mean value and lower Masculinity scale scores in 3 age groups.

3.) - approximated values in groups ( $p > 0.05$ ) of central tendency's measures - median, lower and upper quartiles, confirming the properties of those 2 scales as psychological features with a stable generational distribution (with different ages) in the population with mental disorders.

Table 5 Distribution of IPGE scales at uniform standardized 100-point scale with analysis of mean values' differences in 3 age groups

LEGEND: Groups: Younger {younger minor}, Middle {early adult}, Older {late adult and older}.							
N → Group volume ; M → Scale's mean value; S.D. → Scale's standard deviation value;							
Me → Scale's median value; L.Q. → Scale's lower quartile value; U.Q. → Scale's upper quartile value;							
T Student's value → of compared independent \ dependent groups for scale mean values;							
Independent measurement → 1 scale of 2 different age groups;							
Dependent measurement → 2 different scales of 1 age group; $p$ → T Student's statistical significance value;							
$G_{\text{HEDGES}}$ value → effect size of difference between mean values;							
IPGE scale	Group	N	M	S.D.	Me	L.Q.	U.Q.
Masculinity	Younger	120	58.63	11.11	58	52.65	66.34
Femininity	Younger	120	78.57	11.991	79	72.33	87.72
Masculinity	Middle	117	59.22	12.702	59	51.15	66.72
Femininity	Middle	117	76.24	10.974	78	68.75	85
Masculinity	Older	121	60.43	12.018	63	54.69	68.03
Femininity	Older	121	75.3	8.397	75	70.06	81.18
IPGE scale	Compared groups			T.Student value	$p$	$G_{\text{HEDGES}}$ value	
Masculinity	Younger – Middle			$T_{(235)} 0.379$	0.705	0.049	
Masculinity	Younger – Older			$T_{(239)} 1.202$	0.231	0.156	
Masculinity	Middle – Older			$T_{(236)} 0.752$	0.453	0.098	
Femininity	Younger – Middle			$T_{(235)} 1.557$	0.121	0.203	
Femininity	Younger – Older			$T_{(239)} 2.448$	0.015	0.316	
Femininity	Middle – Older			$T_{(236)} 0.74$	0.46	0.096	
Group	Compared scales			T.Student value	$p$	$G_{\text{HEDGES}}$ value	
Younger	Masculinity – Femininity			$T_{(119)} 13.673$	<0.001	1.725	
Middle	Masculinity – Femininity			$T_{(116)} 11.602$	<0.001	1.434	
Older	Masculinity – Femininity			$T_{(120)} 12.853$	<0.001	1.434	

Table 6 Distribution of % psychological gender 'PG' types in whole clinical sample with estimation analysis of confidence intervals at level 85 % and 95 % in 3 age groups, with intergroup analysis of % psychological gender types' distribution.

PG types	% clinical sample	confidence 85 %	confidence 95 %
Undefined	28.49	25 – 32.2	23.9 – 33.5
Androgynous	21.23	18.1 – 24.6	17.1 – 25.8
Homogeneous	29.33	25.8 – 33	24.7 – 34.3
Cross	20.95	17.9 – 24.3	16.9 – 25.5
<i>Analysis of the statistical significance of Psychological gender types' distribution in whole clinical sample <math>p &gt; 0.05</math> → significant aligned distribution; <math>p &lt; 0.05</math> → significant differentiated distribution;</i>			
<i><math>p \{28.49 \leftrightarrow 21.23\} \rightarrow 0.025</math>; <math>p \{28.49 \leftrightarrow 29.33\} \rightarrow 0.804</math>; <math>p \{28.49 \leftrightarrow 20.95\} \rightarrow 0.019</math>;</i>			
<i><math>p \{21.23 \leftrightarrow 29.33\} \rightarrow 0.013</math>; <math>p \{21.23 \leftrightarrow 20.95\} \rightarrow 0.927</math>; <math>p \{29.33 \leftrightarrow 20.95\} \rightarrow 0.01</math>;</i>			
PG types	% younger group	% middle group	% older group
Undefined	28.33	25.64	31.4
Androgynous	25	17.09	21.49
Homogeneous	28.33	30.77	28.93
Cross	18.34	26.5	18.18
<i>Analysis of the statistical significance of Psychological gender types' distribution in 3 age groups</i>			
Undefined	$p \{1 \leftrightarrow 2\} \rightarrow 0.641$	$p \{1 \leftrightarrow 3\} \rightarrow 0.603$	$p \{2 \leftrightarrow 3\} \rightarrow 0.325$
Androgynous	$p \{1 \leftrightarrow 2\} \rightarrow 0.136$	$p \{1 \leftrightarrow 3\} \rightarrow 0.519$	$p \{2 \leftrightarrow 3\} \rightarrow 0.39$
Homogeneous	$p \{1 \leftrightarrow 2\} \rightarrow 0.681$	$p \{1 \leftrightarrow 3\} \rightarrow 0.918$	$p \{2 \leftrightarrow 3\} \rightarrow 0.756$
Cross	$p \{1 \leftrightarrow 2\} \rightarrow 0.132$	$p \{1 \leftrightarrow 3\} \rightarrow 0.974$	$p \{2 \leftrightarrow 3\} \rightarrow 0.123$



The population distribution of the single types of psychological gender (Table 6) in all age groups is stable and aligned ( $p>0.05$ ). This proves the properties of psychological gender self-identification as a stable psychological feature, regardless of generational changes. Population estimation areas from the % distribution of the whole clinical sample were established here. At the same time, the % prevalence of homogeneous and unspecified type of psychological gender in all age groups was obtained, which may confirm the specificity of such a universal tendency for the Polish population with mental disorders.

Table 7. Kruskal-Wallis H variance statistics in 75 clinical part-groups – with 25 MIT scales (of 4 psychological gender types' grouping factor) in 3 age groups.

LEGEND: № → order number; H Kruskal-Wallis statistics → with differences Gr → Age group {I - younger (age 12-17 lat); II - middle (age 18-28); III - older (age 29-71)} S <sub>MIT</sub> → MIT scale: psychological (6) : { 1. Gender; 2. Age; 3. Emotion; 4. Erotic sensuality; 5. Depth of emotionality; 6. MIT total score; } musical (13) : { repeated musical material (6) : 7. Brahms; 8. Debussy; 9. Jazz; 10. Pop; 11. Rachmaninow; 12. Saint-Saens; single musical feature in theory of music (13) : 13. homogeneous rhythm; 14. various rhythm; 15. fast tempo; 16. medium tempo; 17. slow tempo; 18. dissonant harmony; 19. consonant harmony; 20. periodic structure; 21. evolutionary structure; 22. homogeneous dynamics; 23. various dynamics; 24. character of stimulating music for projection; 25. character of calming music for projection;							
№	S <sub>MIT</sub>	Gr	H Kruskal-Wallis statistics	№	S <sub>MIT</sub>	Gr	H Kruskal-Wallis statistics
1	1	I	H(3,N=120)=4.688 p=0.196	40	14	I	H(3,N=120)=1.482 p=0.687
2		II	H(3,N=117)=8.105 p=0.054	41		II	H(3,N=117)=2.134 p=0.545
3		III	H(3,N=121)=3.869 p=0.276	42		III	H(3,N=121)=10.294 p=0.016
4	2	I	H(3,N=120)=4.186 p=0.242	43	15	I	H(3,N=120)=2.887 p=0.409
5		II	H(3,N=117)=2.698 p=0.441	44		II	H(3,N=117)=5.423 p=0.143
6		III	H(3,N=121)=6.716 p=0.082	45		III	H(3,N=121)=0.626 p=0.891
7	3	I	H(3,N=120)=3.011 p=0.389	46	16	I	H(3,N=120)=7.366 p=0.049
8		II	H(3,N=117)=2.336 p=0.506	47		II	H(3,N=117)=1.461 p=0.691
9		III	H(3,N=121)=2.018 p=0.569	48		III	H(3,N=121)=12.496 p=0.006
10	4	I	H(3,N=120)=10.429 p=0.015	49	17	I	H(3,N=120)=3.848 p=0.278
11		II	H(3,N=117)=2.303 p=0.512	50		II	H(3,N=117)=2.817 p=0.421
12		III	H(3,N=121)=3.249 p=0.355	51		III	H(3,N=121)=5.341 p=0.149
13	5	I	H(3,N=120)=0.712 p=0.871	52	18	I	H(3,N=120)=5.631 p=0.049
14		II	H(3,N=117)=4.808 p=0.186	53		II	H(3,N=117)=4.211 p=0.239
15		III	H(3,N=121)=5.316 p=0.151	54		III	H(3,N=121)=7.704 p=0.039
16	6	I	H(3,N=120)=4.064 p=0.255	55	19	I	H(3,N=120)=1.749 p=0.626
17		II	H(3,N=117)=4.243 p=0.236	56		II	H(3,N=117)=4.266 p=0.234
18		III	H(3,N=121)=7.661 p=0.054	57		III	H(3,N=121)=9.139 p=0.028
19	7	I	H(3,N=120)=7.924 p=0.048	58	20	I	H(3,N=120)=4.967 p=0.174
20		II	H(3,N=117)=3.906 p=0.272	59		II	H(3,N=117)=3.539 p=0.316
21		III	H(3,N=121)=5.069 p=0.167	60		III	H(3,N=121)=7.124 p=0.068
22	8	I	H(3,N=120)=1.712 p=0.634	61	21	I	H(3,N=120)=3.663 p=0.301
23		II	H(3,N=117)=2.019 p=0.568	62		II	H(3,N=117)=4.622 p=0.202
24		III	H(3,N=121)=3.957 p=0.266	63		III	H(3,N=121)=7.981 p=0.046
25	9	I	H(3,N=120)=2.594 p=0.459	64	22	I	H(3,N=120)=5.172 p=0.159
26		II	H(3,N=117)=1.369 p=0.713	65		II	H(3,N=117)=5.052 p=0.168
27		III	H(3,N=121)=11.525 p=0.009	66		III	H(3,N=121)=7.012 p=0.072
28	10	I	H(3,N=120)=2.145 p=0.543	67	23	I	H(3,N=120)=1.498 p=0.683
29		II	H(3,N=117)=4.418 p=0.219	68		II	H(3,N=117)=1.567 p=0.667
30		III	H(3,N=121)=3.333 p=0.343	69		III	H(3,N=121)=6.546 p=0.088
31	11	I	H(3,N=120)=2.119 p=0.548	70	24	I	H(3,N=120)=3.911 p=0.271
32		II	H(3,N=117)=3.738 p=0.291	71		II	H(3,N=117)=3.574 p=0.311
33		III	H(3,N=121)=4.398 p=0.222	72		III	H(3,N=121)=3.612 p=0.307
34	12	I	H(3,N=120)=5.943 p=0.114	73	25	I	H(3,N=120)=2.831 p=0.419
35		II	H(3,N=117)=1.552 p=0.671	74		II	H(3,N=117)=4.405 p=0.221
36		III	H(3,N=121)=6.179 p=0.103	75		III	H(3,N=121)=9.719 p=0.021
37	13	I	H(3,N=120)=5.988 p=0.112	20 differences - H Kruskal-Wallis variance statistics with p<0.05 described in table 8			
38		II	H(3,N=117)=3.727 p=0.293				
39		III	H(3,N=121)=3.538 p=0.316				

Non-parametric intergroup analyzes were performed thematic validity of IPGE tool with MIT toll, due to the different number of MIT tasks in the musical scales, the trends in the non-parametric distribution of individual MIT tasks in the Gender-Age-Emotions scales with a multiple-choice test for the highest intensity of psychological-musical association, and the variable distribution of the % of groups of psychological gender types in the whole clinical sample, for empirical verification the conditioning properties of the results or their independence in 2 tools.

Kruskal-Wallis H variance analysis test in 75 directions - distribution of 25 MIT scales (6 psychological, 19 musical) with 4 psychological gender types (i.e. 6 intergroup comparisons) in 3 separate age groups - with a total amount of 450 pairwise comparisons - (tables 7-8, scheme 2) - revealed 20 (4.5% of the total number of comparisons) statistically significant ( $p < 0.05$ ) differences (13 medium and 7 large)  $G_{HEDGES}$  effect size of difference for requirement of medical science ( $\geq 0.5$ ) in the range of 0.49 - 0.878. This is proof that the obtained differences may be diagnostic markers of specific MIT scales for purposes and directions of music therapy in selected age groups of the population with mental disorders.

The differences were obtained:

- in 8 MIT scales (32% of tool structure) - 1 psychological scale (Erotic sensuality) and 7 musical scales (Jazz, various rhythm, medium tempo, consonant and dissonant harmony, evolutionary structure, character of calming music for projection).
- in 10 age groups - 3 in younger (age 12-17), 7 in older (age 29-71).

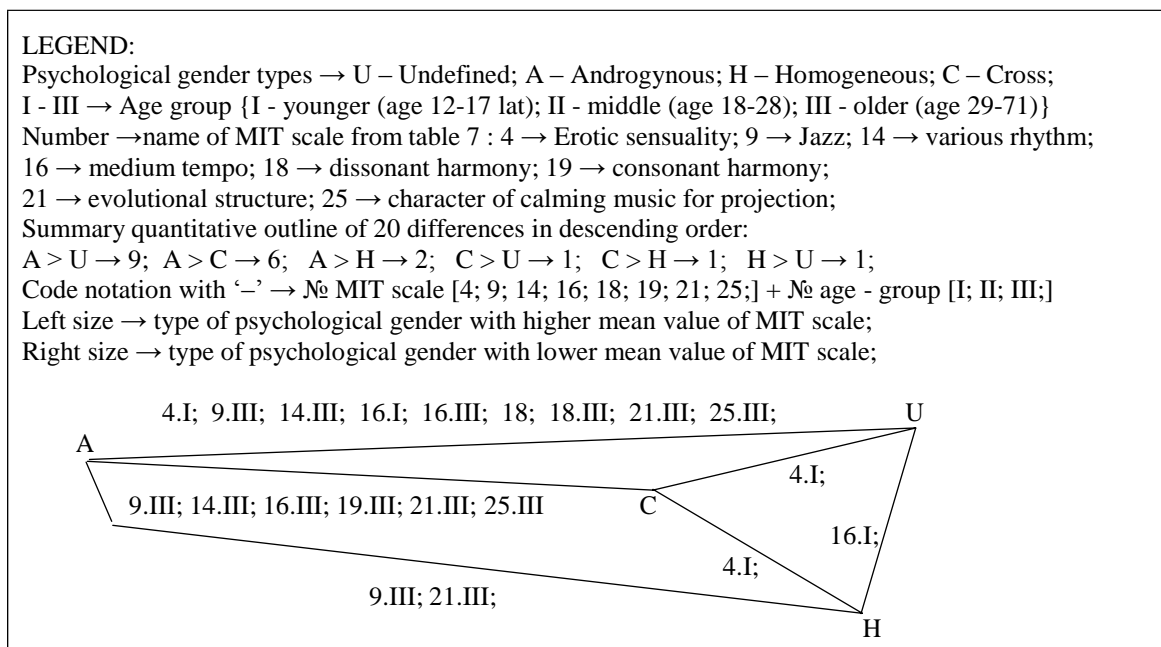
In younger group - 4 differential tendencies in distribution of types of psychological gender were revealed: cross humans > homogeneous humans; undefined humans < the rest of 3 types (androgynous, homogeneous, cross) humans.

In older group - 3 differential tendencies in distribution of types of psychological gender were revealed: androgynous humans > the rest of 3 types (undefined, homogeneous, cross) humans.

Table 8. List of 20 differences for MIT scales – 8 in groups of psychological gender types, 10 in age groups (3 younger, 7 older) from data in table 7.

LEGEND:											
№ <sub>i</sub> → order number; S <sub>MIT</sub> → Number i name of MIT scale from table 7;											
Gr → Age group {I - younger (age 12-17 lat); II - middle (age 18-28); III - older (age 29-71)}											
Psychological gender types: U – Undefined; A – Androgynous; H – Homogeneous; C – Cross;											
Data for group with lower mean value of scale P <sub>GL</sub> → type of psychological gender;											
N <sub>L</sub> → Group volume; M <sub>L</sub> → Mean value of scale; SD <sub>L</sub> → Standard deviation value of scale;											
Data for group with higher mean value of scale P <sub>GH</sub> → type of psychological gender;											
N <sub>H</sub> → Group volume; M <sub>H</sub> → Mean value of scale; SD <sub>H</sub> → Standard deviation value of scale;											
G <sub>HEDGES</sub> → effect size of difference between mean values: medium (0.5-0.8), large (0.8-1.2).											
№ <sub>i</sub>	S <sub>MIT</sub>	Gr	P <sub>GL</sub>	N <sub>L</sub>	M <sub>L</sub>	SD <sub>L</sub>	P <sub>GH</sub>	N <sub>H</sub>	M <sub>H</sub>	SD <sub>H</sub>	G <sub>HEDGES</sub>
1	4	I	U	34	13.353	4.227	C	22	16.727	4.014	0.814
2			U	34	13.353	4.227	A	30	15.933	5.099	0.554
3			H	34	14.088	3.554	C	22	16.727	4.014	0.706
4	9	III	U	38	16.605	3.665	A	26	19.538	3.114	0.849
5			H	35	17.429	3.319	A	26	19.538	3.114	0.652
6			C	22	16.591	3.936	A	26	19.538	3.114	0.839
7	14	III	U	38	37.816	5.447	A	26	42.115	4.71	0.833
8			C	22	37.636	6.842	A	26	42.115	4.71	0.775
9	16	I	U	34	21.324	4.353	H	34	23.618	5.003	0.49
10			U	34	21.324	4.353	A	30	23.833	3.395	0.638
11	16	III	U	38	24.395	4.481	A	26	27.769	3.491	0.821
12			C	22	24.364	4.293	A	26	27.769	3.491	0.878
13	18	I	U	34	50	9.531	A	30	55.333	8.277	0.595
14	18	III	U	38	54.342	7.624	A	26	59.769	6.802	0.743
15	19	III	C	22	46.364	6.659	A	26	50.346	6.841	0.589
16	21	III	U	38	42.368	6.466	A	26	46.808	5.571	0.725
17			H	35	43.714	5.372	A	26	46.808	5.571	0.567
18			C	22	43.182	6.154	A	26	46.808	5.571	0.62
19	25	III	U	38	43.132	6.103	A	26	47.231	6.16	0.669
20			C	22	41.818	6.652	A	26	47.231	6.16	0.847

Scheme 2. Graphical list of 20 differences from table 8.



Analysis of % distribution of 540 compared groups of qualitative indicators of single tasks of MIT psychological scales: Gender (7 items), Age (5 items), Emotions (5 items), Erotic sensuality \ Depth of emotionality [ 7 tasks with 2 types of low \ high interval indicators ] for 4 groups of psychological gender in 3 age groups - (tables 9.1-9.3) - revealed 216 [ 40.00% of the total number of comparisons ] statistically significant ( $\geq 50\%$ ) differences in the distribution of results [ with a statistically equal number of medium differences [115, i.e. with 46.76% of the size ] and large differences [101, i.e. with 53.24% of the size ] with the identification of qualitative responses that are dominant and constitute characteristic trends of the population with mental disorders.

The differences were revealed:

- 1) - with an equal amount in 4 MIT scales: Gender (32), Age (37), Emotions (29) and Depth of emotionality (33);
- 2) - in the Depth of emotionality scale with an equal number of differences in the low \ high scale ranges 1-2 and 3-5 (18) and 1-3 and 4-5 (15);
- 3) - in the Erotic sensuality scale with a significant predominance of the number of differences in the low \ high scale ranges 1-3 and 4-5 (47) compared to the low \ high scale ranges 1-2 and 3-5 (28), also with a significant predominance of the total number of differences (75) in relation to the Depth of emotionality scale (33);
- 4) - in the Gender scale, more differences (11) with the homogeneous psychological gender type versus a similar smaller distribution of the other 3 psychological gender types (6-8);
- 5) - in the Depth of emotionality and Age scales more differences (10-11) with the cross psychological gender type compared to a similar smaller distribution of the other 3 psychological gender types (7-8 and 8-9);
- 6) - in the Emotions scale, aligned distribution of all 4 psychological gender types (6-8);
- 7) - in the Erotic sensuality scale, significantly fewer differences (14) with the cross psychological gender type compared to a similar, much larger distribution of the other 3 psychological gender types (23-24);
- 8) - with fewer differences in the older age group (67) compared to a similar number of differences in the younger (73) and middle (76) age groups;
- 9) - with more differences with the homogeneous psychological gender type (60) compared to a similar number of differences in the other 3 psychological gender types - cross (49), androgynous (53) and undefined (54);
- 10) - in 2-factor groups (age with the type of psychological gender), there is aligned distribution of differences in all 4 psychological gender types in the older age group (16, 17, 18, 19), and a slight advantage:
  - of the number of differences for the undefined psychological gender type in the younger age group (21) from the similar one smaller distribution of the other 3 psychological gender types (15 and 18).
  - of the number of differences for the homogeneous psychological gender type in the middle age group (23) against a similar smaller distribution of the other 3 psychological gender types (16 and 19).

In aggregate analysis, the types of psychological genders reveal the distribution tendencies of smaller \ larger amounts of qualitative differences characterizing the population with mental disorders also by age groups' factor.

Table 9.1. % Distribution of 216 dominant qualitative results of MIT scales in age and psychological gender groups, list of results 1 - 72.

LEGEND:													
№ → order number;													
Gr → Age group {I - younger (age 12-17 lat); II - middle (age 18-28); III - older (age 29-71)}													
PG → Psychological gender types → U – Undefined; A – Androgynous; H – Homogeneous; C – Cross;													
MIT → scales: G - gender; A – age; E – emotion; № t → number of scale's item;													
DA → qualitative population dominant answer {Number of categories: Gender 1-4;													
Age 1-5; Emotion 1-4;} % → level of % intensity in group (≥ 50);													
№	Gr	PG	MIT	№ t	DA	%	№	Gr	PG	MIT	№ t	DA	%
1	I	H	G	1	1	61.76	37	II	H	A	1	1	80.56
2	I	U	G	1	1	70.59	38	II	U	A	1	1	70
3	I	A	G	1	1	70	39	II	A	A	1	1	90
4	II	H	G	1	1	63.89	40	III	C	A	1	1	72.73
5	III	C	G	1	1	68.18	41	III	H	A	1	1	82.86
6	III	H	G	1	1	62.86	42	I	C	A	2	3	59.09
7	I	H	G	2	2	70.59	43	II	C	A	2	3	61.29
8	I	C	G	2	2	59.09	44	II	A	A	2	3	55
9	I	U	G	2	2	79.41	45	III	C	A	2	3	54.55
10	I	A	G	2	2	60	46	III	U	A	2	3	52.63
11	II	C	G	2	2	77.42	47	III	U	A	2	3	61.54
12	II	A	G	2	2	90	48	III	U	A	2	3	60
13	II	H	G	2	2	83.33	49	II	H	A	3	4	55.88
14	II	U	G	2	2	73.33	50	II	U	A	3	4	58.82
15	III	C	G	2	2	86.36	51	II	C	A	3	4	64.51
16	III	U	G	2	2	76.32	52	II	U	A	3	4	53.33
17	III	A	G	2	2	92.31	53	II	H	A	3	4	55.56
18	III	H	G	2	2	80	54	III	A	A	3	4	80.77
19	I	H	G	4	4	55.88	55	III	H	A	3	4	62.86
20	I	C	G	4	4	59.09	56	II	C	A	4	2	58.06
21	II	C	G	4	4	61.29	57	II	H	A	4	2	61.11
22	II	A	G	4	4	50	58	III	C	A	4	2	54.55
23	II	H	G	4	4	61.11	59	III	A	A	4	2	65.38
24	III	U	G	4	4	55.26	60	III	H	A	4	2	71.43
25	III	A	G	4	4	61.54	61	I	C	A	5	3	63.64
26	III	H	G	4	4	82.86	62	I	A	A	5	3	66.67
27	I	U	G	5	3	58.82	63	II	C	A	5	3	64.52
28	II	H	G	6	2	52.78	64	II	A	A	5	3	90
29	III	U	G	6	2	57.89	65	II	H	A	5	3	58.33
30	III	H	G	6	2	57.14	66	II	U	A	5	3	53.33
31	I	U	G	7	1	55.88	67	III	C	A	5	3	77.27
32	I	A	G	7	1	60	68	III	U	A	5	3	65.79
33	I	H	A	1	1	82.35	69	III	A	A	5	3	73.08
34	I	C	A	1	1	68.18	70	I	H	E	1	1	76.47
35	I	U	A	1	1	79.41	71	I	C	E	1	1	68.18
36	I	A	A	1	1	86.67	72	I	U	E	1	1	61.76

Table 9.50. % Distribution of 216 dominant qualitative results of MIT scales in age and psychological gender groups, list of results 73 - 144.

LEGEND:													
№ → order number;													
Gr → Age group {I - younger (age 12-17 lat); II - middle (age 18-28); III - older (age 29-71)}													
PG → Psychological gender types → U – Undefined; A – Androgynous; H – Homogeneous; C – Cross;													
MIT → scales: E – emotion; Es - Erotic sensuality: 'I' (low1-2\high3-5)   'II' (low1-3\high4-5);													
№ t → number of scale's item;													
DA → qualitative population dominant answer {Number of categories: Emotion 1-4;													
Erotic sensuality: I (low) or II (high) scores' ranges by classification 'I' or 'II';}													
% → level of % intensity in group (≥ 50);													
№	Gr	PG	MIT	№ t	DA	%	№	Gr	PG	MIT	№ t	DA	%
73	I	A	E	1	1	70	109	II	H	Es-II	1	1	86.11
74	II	C	E	1	1	80.65	110	III	U	Es-II	1	1	84.21
75	II	A	E	1	1	55	111	III	A	Es-I	2	2	80.77
76	II	H	E	1	1	61.11	112	III	H	Es-I	2	2	80
77	II	U	E	1	1	66.67	113	I	U	Es-II	2	1	79.41
78	III	C	E	1	1	72.73	114	I	A	Es-II	2	1	80
79	III	U	E	1	1	63.16	115	II	A	Es-II	2	1	75
80	III	A	E	1	1	65.38	116	I	A	Es-I	3	2	76.67
81	III	H	E	1	1	77.14	117	II	H	Es-I	3	2	75
82	I	C	E	2	3	63.64	118	II	A	Es-I	3	2	75
83	III	H	E	2	3	60	119	III	H	Es-I	3	2	74.29
84	I	H	E	4	2	67.65	120	III	C	Es-II	3	1	77.27
85	I	C	E	4	2	59.09	121	I	H	Es-I	4	1	82.35
86	I	U	E	4	2	70.59	122	I	C	Es-I	4	1	77.27
87	I	A	E	4	2	66.67	123	I	U	Es-I	4	1	97.06
88	II	C	E	4	2	74.19	124	III	U	Es-I	4	1	78.95
89	II	H	E	4	2	72.22	125	I	H	Es-II	4	1	97.06
90	III	C	E	4	2	59.09	126	I	C	Es-II	4	1	90.91
91	III	U	E	4	2	60.53	127	I	U	Es-II	4	1	100
92	III	A	E	4	2	61.54	128	I	A	Es-II	4	1	90
93	III	H	E	4	2	71.43	129	II	C	Es-II	4	1	87.1
94	II	C	E	5	1	58.06	130	II	A	Es-II	4	1	80
95	II	A	E	5	1	55	131	II	U	Es-II	4	1	86.67
96	II	U	E	5	1	63.33	132	II	H	Es-II	4	1	83.33
97	III	A	E	5	1	57.69	133	III	U	Es-II	4	1	92.11
98	III	H	E	5	1	54.29	134	III	A	Es-II	4	1	84.62
99	I	H	Es-I	1	1	85.29	135	III	H	Es-II	4	1	82.86
100	I	U	Es-I	1	1	79.31	136	I	H	Es-I	5	1	82.35
101	I	A	Es-I	1	1	80	137	I	U	Es-I	5	1	82.35
102	I	H	Es-II	1	1	97.06	138	I	A	Es-I	5	1	80
103	I	C	Es-II	1	1	77.27	139	II	A	Es-I	5	1	85
104	I	U	Es-II	1	1	88.23	140	II	U	Es-I	5	1	80
105	I	A	Es-II	1	1	90	141	II	H	Es-I	5	1	77.78
106	II	C	Es-II	1	1	83.87	142	II	C	Es-I	5	1	86.36
107	II	A	Es-II	1	1	85	143	III	U	Es-I	5	1	76.32
108	II	U	Es-II	1	1	76.67	144	III	H	Es-I	5	1	88.57

Table 9.3. % Distribution of 216 dominant qualitative results of MIT scales in age and psychological gender groups, list of results 145 - 215.

LEGEND:													
№ → order number;													
Gr → Age group {I - younger (age 12-17 lat); II - middle (age 18-28); III - older (age 29-71)}													
PG → Psychological gender types → U – Undefined; A – Androgynous; H – Homogeneous; C – Cross;													
MIT → scales: Es - Erotic sensuality; De - Depth of emotionality;													
Variants: 'I' (low1-2\high3-5)   'II' (low1-3\high4-5); № t → number of scale's item;													
DA → qualitative population dominant answer {Erotic sensuality \ Depth of emotionality:													
I (low) or II (high) scores' ranges by classification 'I' or 'II'; % → level of % intensity in group (≥ 50);													
№	Gr	PG	MIT	№ t	DA	%	№	Gr	PG	MIT	№ t	DA	%
145	I	H	Es-II	5	1	94.11	181	III	U	Es-II	7	1	78.95
146	I	C	Es-II	5	1	86.36	182	III	A	Es-II	7	1	80.77
147	I	U	Es-II	5	1	94.11	183	III	H	Es-II	7	1	80
148	I	A	Es-II	5	1	83.33	184	I	U	De-I	1	2	88.24
149	II	C	Es-II	5	1	83.87	185	II	C	De-I	1	2	96.77
150	II	A	Es-II	5	1	95	186	II	A	De-I	1	2	75
151	II	U	Es-II	5	1	93.33	187	II	U	De-I	1	2	80
152	II	H	Es-II	5	1	83.33	188	II	H	De-I	1	2	86.11
153	III	C	Es-II	5	1	95.45	189	III	U	De-I	1	2	84.21
154	III	U	Es-II	5	1	84.21	190	III	A	De-I	1	2	88.46
155	III	A	Es-II	5	1	80.77	191	III	H	De-I	1	2	88.57
156	III	H	Es-II	5	1	94.29	192	II	H	De-II	1	2	75
157	I	H	Es-I	6	1	88.24	193	I	A	De-II	2	1	80
158	I	U	Es-I	6	1	79.41	194	II	C	De-II	2	1	80.65
159	II	A	Es-I	6	1	75	195	II	A	De-II	2	1	80
160	III	A	Es-I	6	1	76.92	196	III	C	De-II	2	1	77.27
161	I	H	Es-II	6	1	97.06	197	I	H	De-II	3	1	79.41
162	I	U	Es-II	6	1	91.18	198	I	C	De-II	3	1	77.27
163	I	A	Es-II	6	1	80	199	II	A	De-II	3	1	75
164	II	C	Es-II	6	1	83.87	200	II	A	De-II	4	1	75
165	II	A	Es-II	6	1	90	201	III	C	De-II	4	1	81.82
166	II	U	Es-II	6	1	80	202	I	H	De-I	5	2	82.35
167	II	H	Es-II	6	1	75	203	I	U	De-I	5	2	88.24
168	III	U	Es-II	6	1	84.21	204	I	A	De-I	5	2	76.67
169	III	A	Es-II	6	1	84.62	205	II	C	De-I	5	2	87.1
170	III	H	Es-II	6	1	80	206	II	U	De-I	5	2	90
171	I	C	Es-I	7	1	81.82	207	II	H	De-I	5	2	77.78
172	I	U	Es-I	7	1	88.24	208	III	C	De-I	5	2	86.36
173	I	H	Es-II	7	1	94.12	209	III	A	De-I	5	2	80.77
174	I	C	Es-II	7	1	95.45	210	II	U	De-I	6	2	83.33
175	I	U	Es-II	7	1	97.06	211	II	H	De-I	6	2	86.11
176	I	A	Es-II	7	1	93.33	212	I	H	De-II	7	1	79.41
177	II	C	Es-II	7	1	83.87	213	I	C	De-II	7	1	86.36
178	II	U	Es-II	7	1	83.33	214	I	U	De-II	7	1	76.47
179	II	H	Es-II	7	1	75	215	II	C	De-II	7	1	87.1
180	III	C	Es-II	7	1	86.36	216	III	C	De-II	7	1	81.82

Spearman's *Rho* linear correlation analysis of 25 MIT scales (6 psychological, 19 musical) with 8 IPGE scales in 3 age groups (with 24 indicators for 1 MIT scale, with a total of 840 indices) - revealed the independence of 2 tools' results (all revealed values with  $p > 0.05$  or in the area of independence  $< -0.35; +0.35 >$  for  $p < 0.05$ ) in whole research sample of mental disorders. It confirms the difference in content of measurement in 2 tools and independence of such human characteristics as psychological gender self-identification and mental identity in the process of projective perception of music.

## 6. METHODOLOGICAL CONCLUSION

IPGE tool in empirical evidences on clinical research on humans with mental disorders:

- 1.) meets the diagnostic psychometric content requirements for measurement and diagnosis of the population with mental disorders.
- 2.) indicates a universal population background both for the content of psychological gender self-identification and for the content of intergenerational influences, social changes.
- 3.) retains the adaptive diagnostic function in revealing changes in the content of the Femininity \ Masculinity scales in different age groups.
- 4) indicates the basis of the same stable intergenerational % distribution of the central tendency of diagnostic scales and types of psychological gender in the population with mental disorders.

IPGE tool for statistically significant functions:

5. differentiates (in accordance with the requirements for medical sciences) the distribution of results:
  - 5.1. selected quantitative psychological and musical MIT scales in groups of psychological gender types for younger and older age groups in the clinical research sample.
  - 5.2. for population tendencies and dominant answers in selected psychological qualitative scales of single MIT tasks in all groups of psychological gender types and age ranges.

For condition 5.1 – 5.2 it fulfills a prognostic function in the direction of the effectiveness of music therapy of mental disorders.

6. confirms the independence of the results of the quantitative scales of the IPGE and MIT tools in all age groups, and thus the difference in the subject of measurement with these tools – the characteristics of psychological gender self-identification and psychological identity in the projective perception of music.

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