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COSINE SIMILARITY APPROACHES TO RELIABILITY OF LIKERT SCALE AND ITEMS

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Abstract

Based on cosine similarities, the paper proposes two non-parametric methods of finding reliability of Likert items and Likert scale from single administration of the questionnaire, considering only the frequency or proportion for each cell of the Item-Response category matrix without involving any assumptions of continuous nature or linearity or normality for the observed variables or the underlying variable being measured. Each method enables to find reliability irrespective of distribution of the observed or underlying variables and avoiding test of uni-dimensionality or assumption of normality for Cronbach's alpha or bivariate normality for polychoric correlations. The proposed methods thus are considered as improvement over the existing ones. Reliability as per Bhattacharyya's measure appears to be preferred over the Angular Association method as the former expresses test reliability as a function of item reliabilities. In addition to offering the computational steps, empirical verification with real data is given to illustrate the concepts and usefulness of the proposed non-parametric reliability procedures.

Keywords: Reliability; item-response category matrix; polychoric correlation; angular association; Bhattacharyya's measure.

1. Introduction

Estimation of reliability of a Likert scale by most of the existing methods with different sets of assumptions deviates differently and thus gives different values for a single Likert scale. Reliability in terms of product moment correlation assumes at least

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interval measurement of the variables; continuous and normally distributed data. Cronbach's alpha makes additional, assumption of uncorrelated errors.

The assumptions are generally not satisfied by data generated from Likert scale. If the assumption of continuous nature of data and normality are violated, the variance -covariance matrix can be substantively distorted especially when two variables manifest themselves in skewed distribution of observed responses (e.g., Flora and Curran, 2004). Sheng and Sheng (2012) observed that skewed distributions produce a negative bias when the coefficient alpha is calculated. Green and Yang (2009) found similar results in an analysis of the effects of non-normal distributions in estimating reliability. Value of Cronbach's alpha can be increased by adding more number of items. However, increase in alpha on deletion of few items is common. Streiner (2003) observed that too high value of alpha probably indicates redundancy of items. Cronbach's alpha has been repeatedly misinterpreted and misused, Sijtsma, (2009). Limitations of this method have also been reported by Eisinga, Te Grotenhuis & Pelzer (2012) and Ritter (2010). The level of scaling obtained from Likert procedure is clearly at least ordinal. Response categories tend to be sequential but not linear. In order to achieve an interval scale, distance between a successive pair of response categories must be same. But it seems unlikely that the categories formed by the misalignment of a finite number of responses will all be equal. Thus, the interval scale assumption seems unlikely to hold. Parametric statistical methods like factor analysis, hierarchical linear models, structural equation models, t-test, ANOVA, etc. are based on assumption of normally distributed interval-level data. Similarly, generalizability theory based on ANOVA requires satisfaction of those assumptions. Lantz (2013) observed that respondents generally did not perceive a Likert-type scale as equidistant. A number of methods for "rescaling" ordinal scales to get interval properties have been proposed (e.g. Granberg-Rademacker, 2010; Wu, 2007; King et al., 2003). But use of such methods in practical analysis of Likert-type data seems to be rare. In addition to interval properties, assumptions regarding normality and homoscedasticity also need to be addressed. Chien-Ho Wo (2007) observed that transformation of Likert-scale data to numerical scores based on Snell's (1964) scaling procedure does not do much to pass the normality test. Granberg-Rademacker, (2010) proposed Monte Carlo Scaling method based on multivariate normal distribution. Muraki (1992) observed that if the data fits the Polytomous Rasch Model and fulfill the strict formal axioms of the said model, it may be considered as a basis for obtaining interval level estimates of the continuum.

Gadderman, Guhn and Zumbo (2012) proposed ordinal alpha for ordinal data based on the polychoric correlation matrix and defined ordinal alpha as $\alpha =$

$(\frac{p}{p-1})(1 - \frac{p}{p + \sum \sum r_{ij}})$ where p denotes the number of items and r_{ij} denotes the polychoric correlation between items i and j . Polychoric correlation assumes that the two items follow bivariate normal distribution which needs to be tested by goodness of fit tests like the likelihood ratio, χ^2 test, G^2 test, etc. making further assumptions that under the null hypothesis data come from a Multivariate distribution. The degree of deviations from bivariate normality may result in biased estimate of polychoric correlations. Babakus, Ferguson and Jöreskog (1987) found that Polychoric correlations performed worst on all goodness-of-fit criteria. However, distribution of underlying variables can be highly skewed and this may introduce bias in the result of χ^2 test to assess goodness of fit of structural equation models (Muthen, 1993). Moreover, the polychoric correlation matrix may be non-positive definite. For small samples, polychoric correlation offers a rather unstable estimate. Even for large samples, the estimates are noisy if there are few empty cells. In case of items with smaller number of response categories, polychoric correlation between latent continuous variables tends to be attenuated. However, reliability using polychoric correlation is not a non-parametric approach because of the assumption of bivariate normality of the underlying variables.

Lewis (2007) referred the ordinal reliability as nonparametric reliability coefficients in a nonlinear classical test theory sense even though such reliabilities assume that the underlying variable is continuous. Zumbo, Gadermann and Zeisser (2007) suggested a measure of reliability viz. Coefficient theta proposed by Armor (1974) that is based on principal components analysis. If the single factor solution is reasonable for the items, then $\theta = (\frac{p}{p-1})(1 - \frac{1}{\lambda_1})$ where λ_1 is the largest eigen value obtained from the principal component analysis (PCA) of the correlation matrix for the items. However, estimation of λ_1 based on the sample covariance matrix is extremely sensitive to outlying observations. PCA relies on linear assumptions. But the data may not always be linearly correlated.

This state of affairs motivates a need to find methods of obtaining reliability of Likert items and Likert scale from a single administration of the questionnaire using only the permissible operations for a Likert scale i.e. considering the cell frequencies or empirical probabilities of Item – Response categories without making any assumptions of continuous nature or linearity or normality for the observed variables or the underlying variable being measured.

2. Objectives

To find non-parametric methods of obtaining reliability of Likert items and Likert scale from a single administration of the questionnaire using only the permissible

operations for a Likert scale i.e. considering the cell frequencies or empirical probabilities of Item – Response categories without making any assumptions of continuous nature or linearity or normality for the observed variables or the underlying variable being measured.

3. Methodology

Suppose there are n respondents who answered each of the m items of a Likert questionnaire where each item had k numbers of response categories. Consider the basic data matrix $X = ((X_{ij}))$ where X_{ij} represents score of the i -th individual for the j -th item, $i = 1, 2, \dots, n$ and $j = 1, 2, \dots, m$. Value of X_{ij} ranges between 1 to k and $\sum_{i=1}^n X_{ij}$ = Sum of scores of all individuals for the j -th item (Item Score for the j -th item)

It is possible to have another frequency matrix $F = ((f_{ij}))$ of order $m \times k$ showing frequency of i -th item and j -th response category. A row total will indicate frequency of that item and will be equal to the sample size (n). Similarly, a column total will indicate total number of times that response category was chosen by all the respondents. Denote the column total of j -th response category by f_{0j} for $j = 1, 2, 3 \dots k$. Here, $\sum_{j=1}^m X_{ij}$ = Sum of scores of all the items for i -th individual i.e. total score of the i -th individual (Individual score) and $\sum_{j=1}^k f_{0j}$ = Grand total = (Sample size) (number of items) = mn . Clearly, $\sum \sum X_{ij}$ = Sum of scores of all the individuals on all the items i.e. total test score.

After administration of the questionnaire to a large number of respondents, one can calculate k -dimensional vector of empirical probabilities for the i -th item with k -response categories as $P_i = (p_{i1}, p_{i2}, \dots, p_{ik})^T$. Clearly $\sum_{j=1}^k p_{ij} = 1$. Similarly, for the entire questionnaire, vector showing empirical probabilities will be $T = (\frac{f_{01}}{mn}, \frac{f_{02}}{mn}, \frac{f_{03}}{mn}, \dots, \frac{f_{0k}}{mn})^T$ and $\sum_{j=1}^k \frac{f_{0j}}{mn} = 1$.

3.1 Proposed methods

Two methods based on angular associations i.e. cosines of angle between two vectors are proposed below:

3.1.1 Cosine similarity Method

Popular measure of similarity between two n - dimensional vectors X and Y are the Jaccard measure $J(X.Y)$, Dice measure $D(X.Y)$ and Cosine similarity measure $C(X.Y)$ defined as : $J(X.Y) = \frac{X.Y}{\|X\|^2 + \|Y\|^2 - X.Y}$; $D(X.Y) = \frac{2X.Y}{\|X\|^2 + \|Y\|^2}$ and $C(X.Y) =$

$\frac{X.Y}{\|X\|\|Y\|}$. All the three measures are similar in the sense they consider dot product of two vectors, take values in the interval [0,1] for acute angle between the two vectors and $J(X.Y) = D(X.Y) = C(X.Y) = 1$ if and only if $X = Y$

Thada and Jaglan (2013) found that for a general dataset, $C(X.Y) > D(X.Y) > J(X.Y)$ and best fit values were obtained using $C(X.Y)$. Use of Cosine similarity is common in areas like information retrieval and text mining, involving higher dimensional spaces (Singhal, 2001). Accordingly, association between i -th and j -th item can be taken as $Cos\theta_{ij}$ where θ_{ij} is the angle between the vectors P_i and P_j and to be computed as

$$Cos\theta_{ij} = \frac{P_i^T P_j}{\|P_i\| \|P_j\|} \quad \dots\dots\dots (1.1)$$

Similarly, Item-test correlation between the i -th item and total score can be obtained by $Cos\theta_{iT}$ where θ_{iT} is the angle between the vectors P_i and T

$$Cos\theta_{iT} = \frac{P_i^T T}{\|P_i\| \|T\|} \quad \dots\dots\dots (1.2)$$

Note that $Cos\theta_{ij}$ as defined in (1.1) satisfy the following:

- If $P_i = P_j$ where $i \neq j$ then $Cos\theta_{ij} = 1$ and vice versa.
- $Cos\theta_{ij} = 0$ if and only if the vectors P_i and P_j are orthogonal
- Symmetric i.e. $Cos\theta_{ij} = Cos\theta_{ji}$
- Satisfy non-negativity condition i.e. $Cos\theta_{ij} \geq 0$.
- Does not satisfy triangle inequality i.e. it does not satisfy $Cos\theta_{XY} + Cos\theta_{YZ} \geq Cos\theta_{XZ}$ where $X \neq Y \neq Z$. In other words, $Cos\theta_{ij}$ is not a metric.

Correlation or association between a pair of Item in terms of $Cos\theta_{ij}$ is always non-negative. Thus, the method helps to avoid negative correlations between a pair of items. Item reliability in terms of correlation between an item and the test in terms of $Cos\theta_{iT}$ will always be positive. Test reliability should not be computed as average of $Cos\theta_{ij}$'s or $Cos\theta_{it}$'s since $Cos\theta_{ij}$ does not obey triangle inequality. The symmetric matrix showing $Cos\theta_{ij}$'s may be used to find value of test reliability and also to undertake factor analysis. However, $Cos\theta_{iT}$ will indicate reliability of the i -th item.

Following Gaddernan, Guhn and Zumbo (2012), reliability of a test with m items can be found by replacing the polychoric correlation between items i and j by $Cos\theta_{ij}$ in the following equation

$$r_{tt} = \frac{m}{m-1} \left(1 - \frac{m}{m + \sum \sum Cos\theta_{ij}} \right) \quad \dots\dots\dots (1.3)$$

Clearly, equation (1.3) requires computation of inter-item correlation matrix in terms of $\text{Cos}\theta_{ij}$. It may be noted that test reliability as per equation (1.3) is not a function of item reliabilities.

3.1.2 Bhattacharyya's measure

To make \mathbf{P}_i and \mathbf{P}_j as unit vector, one may choose $\boldsymbol{\pi}_i$ and $\boldsymbol{\pi}_j$ where $\boldsymbol{\pi}_i = \frac{\sqrt{\mathbf{P}_i}}{\|\mathbf{P}_i\|}$ and $\boldsymbol{\pi}_j = \frac{\sqrt{\mathbf{P}_j}}{\|\mathbf{P}_j\|}$ so that $\|\boldsymbol{\pi}_i\|^2 = \|\boldsymbol{\pi}_j\|^2 = 1$. Association between the i -th item and j -th item i.e. association between vector $\mathbf{P}_i = (p_{i1}, p_{i2}, p_{i3}, p_{i4}, \dots, p_{ik})^T$ and vector $\mathbf{P}_j = (p_{j1}, p_{j2}, p_{j3}, p_{j4}, \dots, p_{jk})^T$ can be found by Bhattacharyya's measure (Bhattacharyya, 1943) as cosine of the angle ϕ_{ij} where ϕ_{ij} is the angle between the two vectors $\boldsymbol{\pi}_i$ and $\boldsymbol{\pi}_j$ since $\|\boldsymbol{\pi}_i\|^2 = \|\boldsymbol{\pi}_j\|^2 = 1$. The Bhattacharyya's measure is in fact a measure of similarity between \mathbf{P}_i and \mathbf{P}_j . Thus, $\rho(\boldsymbol{\pi}_i, \boldsymbol{\pi}_j) = \text{Cos } \phi_{ij} = \sum_{s=1}^k \sqrt{\pi_{is}\pi_{js}}$ (1.4)

$$\text{where } \pi_{is} = \frac{p_{is}}{\|\mathbf{P}_i\|} \quad \forall i = 1, 2, \dots, m \text{ and } s = 1, 2, \dots, k$$

Item reliability in terms of Item-test correlation using Bhattacharyya's measure can be defined as

$$\text{Cos}\phi_{iT} = \rho(\boldsymbol{\pi}_i, \sqrt{\mathbf{T}}) = \sum_{j=1}^k \sqrt{\frac{f_{ij}}{mn}} p_{ij} \quad \dots \dots (1.5)$$

It can be proved easily that

- i) The measure is defined even if a p_{ij} is equal to zero i.e. if all respondents do not choose a particular response category of an item.
- ii) $\rho(\boldsymbol{\pi}_i, \boldsymbol{\pi}_j) = 1$ if the vectors $\boldsymbol{\pi}_i$ and $\boldsymbol{\pi}_j$ are identical
 $= 0$ if $\boldsymbol{\pi}_i$ and $\boldsymbol{\pi}_j$ are orthogonal
- iii) $0 \leq \rho(\boldsymbol{\pi}_i, \boldsymbol{\pi}_j) \leq 1$ using Jensen's inequality
- iv) $\rho(\boldsymbol{\pi}_i, \boldsymbol{\pi}_j) > \text{Cos}\theta_{ij}$ i.e. inter-item correlations as per Bhattacharyya's measure are greater than the same obtained from Angular association method.
- v) Does not satisfy triangle inequality.

While dealing with vectors of unit length, Rao (1973) has shown that mean and dispersion of the angles $\phi_1, \phi_2, \phi_3, \dots, \phi_k$ can be found as follows:

Mean or most preferred direction is estimated by $\bar{\phi} = \cot^{-1} \frac{\sum \cos \phi_i}{\sum \sin \phi_i}$ and the dispersion by $\sqrt{1 - r^2}$ where $r^2 = (\frac{\sum \cos \phi_i}{k})^2 + (\frac{\sum \sin \phi_i}{k})^2$. Reliability of the Likert scale can be defined as $\text{Cos}(\bar{\phi}) = \text{Cos} (\cot^{-1} \frac{\sum \cos \phi_i}{\sum \sin \phi_i}) \dots \dots$ (1.6)

The above will help to find reliability of the Likert scale as a function of item reliabilities where range of reliability can be found from $(\text{Cos} \bar{\phi} \pm C \sqrt{1 - r^2})$ where C is a suitably chosen constant.

4. Empirical verification

A questionnaire consisting of five Likert items each with five response alternatives was administered to 100 respondents where “Strongly agree” was assigned 5 and “Strongly disagree” was assigned 1. Here, $m = 5$, $k = 5$ and $n = 100$

Table - 1
Item – Response Categories frequency matrix and Probabilities

Items	Frequency/ Probability	RC-1	RC- 2	RC- 3	RC- 4	RC- 5	Total
1	Frequency	19	32	35	11	3	100
	Probability(P_{1j})	0.19	0.32	0.35	0.11	0.03	1.00
2	Frequency	7	33	34	19	7	100
	Probability(P_{2j})	0.07	0.33	0.34	0.19	0.07	1.00
3	Frequency	34	11	5	14	36	100
	Probability(P_{3j})	0.34	0.11	0.05	0.14	0.36	1.00
4	Frequency	10	14	38	30	8	100
	Probability(P_{4j})	0.10	0.14	0.38	0.30	0.08	1.00
5	Frequency	4	31	37	20	8	100
	Probability(P_{5j})	0.04	0.31	0.37	0.20	0.08	1.00
Total	Frequency(f_{0i})	74	121	149	94	62	500
	Probability($\frac{f_{0i}}{mn}$) = (P_{iT})	0.148	0.242	0.298	0.188	0.124	1.00

Legend: RC- j denotes j -th Response Category $\forall j = 1, 2, \dots, 5$

4.1 Descriptive statistics for the usual summative method for the items and test obtained from the usual summative methods are as follows:

Table – 2
Mean, variance, Skewness and Kurtosis of items and test

	Mean	Variance	Skewness	Kurtosis
Item - 1	2.47	1.0395	0.2870	-0.3495
Item - 2	2.86	1.0711	0.2865	-0.4669
Item - 3	2.94	1.2489	-0.2343	-0.6592
Item - 4	3.12	1.1572	-0.3429	-0.3524
Item - 5	2.97	0.9991	0.3087	-0.4476
Test	14.36	6.1923	0.0436	0.2134

Observations:

- Item – 3 had maximum variance.
- Values of skewness and kurtosis were different from zero for each item which implies that item score are not normally distributed.

4.2 Item correlation matrix and item-test correlations as obtained from the three methods are given in Table – 3

Table – 3
Item correlation matrix

	Item-1	Item-2	Item-3	Item-4	Item-5	Test
A. Usual Summative Method						
Item-1	1.00	(-)0.0040	0.0782	0.1230	0.0834	0.5298
Item-2		1.00	0.1149	(-) 0.1662	0.0838	0.4277
Item-3			1.00	(-) 0.0528	0.1431	0.5636
Item-4				1.00	(-) 0.0906	0.3535
Item-5					1.00	0.4958
B. Cosine Similarity Method						

Item-1	1.00	0.9585	0.5186	0.8531	0.9395	0.9542
Item-2		1.00	0.4690	0.9061	0.9958	0.9674
Item-3			1.00	0.5064	0.4390	0.6567
Item-4				1.00	0.9229	0.9358
Item-5					1.00	0.9601
C. Bhattacharyya's measure						
Item-1	1.00	0.9754	0.8021	0.9448	0.9593	0.9737
Item-2		1.00	0.7970	0.9716	0.9972	0.9848
Item-3			1.00	0.8210	0.7748	0.8831
Item-4				1.00	0.9715	0.9793
Item-5					1.00	0.9764

The above table reveals:

For usual summative method, item correlations were low and few were found to be negative and item-test correlations ranged between 0.35 to 0.56. However, for Cosine Similarity method and Bhattacharyya's measure, all item correlations in terms of $Cos\theta_{ij}$ and $Cos\phi_{ij}$ respectively were positive and value of item-correlation between i -th and j -th item was more than the same for usual summative method $\forall i, j = 1, 2, \dots, 5$. Same was true for item-test correlations also.

4.3 Reliability of items and the test for each of the above method was computed and are shown below:

Table – 4
Item reliability and test reliability for different approaches

Item No.	Summative method	Cosine similarity method	Bhattacharyya's measure
	Item reliability (r_{iT}) and test reliability (Cronbach's alpha)	Item reliability ($Cos\theta_{iT}$) and test reliability as per (1.3)	Item reliability ($Cos\phi_{iT}$) and test reliability as per (1.6)
1	0.5298	0.9542	0.9737

2	0.4277	0.9674	0.9848
3	0.5636	0.6567	0.8831
4	0.3535	0.9358	0.9793
5	0.4958	0.9601	0.9764
Test	0.1366	0.9378	0.9899

Reliability of items and the test increased by each of the two proposed methods in comparison to the usual summative method.

Sum of inter-item correlations excluding the diagonal elements, $\sum \sum \cos \theta_{ij}$ for $i \neq j$ is $2(7.508924) = 15.017848$. Reliability of the test as per Cosine similarity method was $r_{tt} = \frac{m}{m-1} (1 - \frac{m}{m + \sum \sum \cos \theta_{ij}}) = 0.9378$ which is much greater than Cronbach's alpha for the test.

As per Bhattacharyya's measure, $\sum_{i=1}^5 \cos \phi_{iT} = 9.01455$. Corresponding value of $\sum_{i=1}^5 \sin \phi_{iT} = 1.28869$. Using (1.6), test reliability is $\cos(\bar{\phi}) = \cos \left(\cot^{-1} \frac{\sum \cos \phi_i}{\sum \sin \phi_i} \right)$
 $= \cos \left(\cot^{-1} 6.9951 \right) = \cos (8.135721 \text{ degrees}) = 0.9899$

Reliability of the test as per Bhattacharyya's measure was found to be highest among the three methods discussed here.

4.4 Effect of deletion of items on reliability for the three methods were computed and details are shown below.

Table – 5
Effect of deletion of Item on Test Reliability

Description	Cronbach's alpha	Cosine similarity method Test reliability as per (1.3)	Bhattacharyya's measure Test reliability as per (1.6)
Test with 5 items	0.1366	0.9378	0.9899
If Item – 1 is deleted	0.0197	0.9059	0.9702
If Item – 2 is deleted	0.1623	0.4876	0.9617
If Item – 3 is deleted	0.0123	0.7764	0.9897
If Item – 4 is deleted	0.2684	0.9114	0.9686
If Item – 5 is deleted	0.0588	0.4293	0.9645

It may be observed that Cronbach's alpha increased on deletion of Item – 2 and also Item – 4 and thus, test reliability in terms of α may not be robust.

Value of test reliability as per Cosine similarity method and Bhattacharyya's measure exceeded alpha significantly. Maximum value of test reliability was obtained while using Bhattacharyya's measure.

Deletion of an item resulted in decrease of test reliability as per Cosine similarity method and Bhattacharyya's measure also. However, fluctuations of reliabilities upon deletion of an item did not show any pattern for each of the two proposed method. Thus, the Bhattacharyya's measure showed more robustness of reliability.

4.4 Summary of comparison of the three methods is given below:

Table - 6
Summary of comparison of the three methods

Description	Summative method	Cosine similarity method	Bhattacharyya's measure
Assumptions	Data are continuous, uncorrelated errors and normally distributed	No assumption of continuous nature or linearity or normality for the observed variables or the underlying variable being measured	No assumption of continuous nature or linearity or normality for the observed variables or the underlying variable being measured
Avoids		Test of uni-dimensionality or bivariate normality associated with the polychoric correlations.	Test of uni-dimensionality or bivariate normality associated with the polychoric correlations
Item correlations	-Found to be positive and also negative	-Always positive. -More homogeneous	-Always positive. -Highest among three methods -More homogeneous
Item-test correlation	Maximum 0.5636 Minimum 0.3535	Maximum 0.9674 Minimum 0.6567	Maximum 0.9848. Minimum 0.8831
Test reliability considers	Item variances, test variance and number of items	Cell frequencies or empirical probabilities of Item – Response categories, number of items, Inter-item	Cell frequencies or empirical probabilities of Item – Response categories, number of items, Item reliabilities

		correlations	
Numerical value of reliability	Low $\alpha = 0.1366$	Higher $r_{tt} = 0.9378$	Highest $r_{tt} = 0.9899$
Reliability on deletion of an item	Increased on deletion of item 2 and also on deletion of item 4.	Did not increase on deletion of any one item	-Did not increase on deletion of any one item -Most robust
Test reliability as a function of item reliabilities	Not possible	Not possible	Possible

5. Findings and Conclusions

Reliability of a Likert scale and Likert item were found by Cosine similarity method and Bhattacharyya's measure, using only the frequencies of Item – Response categories without involving assumptions of continuous nature or linearity or normality for the observed variables or the underlying variable being measured. Thus, such reliabilities are in fact Non-parametric and suitable alternatives to coefficient alpha to compute reliability of Likert response data. The proposed methods also avoid test of unidimensionality or assumption of normality for Cronbach's alpha or bivariate normality associated with the polychoric correlations. The problem of outlying observations and reliance on linear assumptions associated with PCA for finding reliability theta are also avoided in each of the proposed method. Thus, the proposed methods are considered as improvement over the existing ones. The methods help the researchers to find better estimates of Likert reliabilities in non-parametric ways.

Reliability of the test for Cosine similarity method replaced polychoric correlation between items i and j by $Cos\theta_{ij}$ which can be computed irrespective of nature of distributions of the observed or underlying variables or factor structure. Value of test reliability by this Cosine similarity method and by Bhattacharyya's measure was found to be 0.94 and 0.99 respectively against Cronbach's α of 0.14 only. Range of Item reliability was found to be highly desirable both in Cosine similarity method and Bhattacharyya's measure. Significant values of the elements of the Inter-Item correlation matrix tend to indicate inter-item consistency leading to possible uni-dimensionality which may be confirmed through factor analysis.

Test reliability by Bhattacharyya's measure has a special property as it can be expressed as a function of Item reliabilities. The approach also helps to find range of reliability of the entire Likert scale.

Ranks of Items in terms of Item reliabilities were different for different methods. Test reliability did not increase on deletion of any item in the Cosine similarity method and for Bhattacharyya's measure. Empirically, the Bhattacharyya's measure showed maximum robustness of reliability. Thus, reliability as per Bhattacharyya's measure appears to be preferred among the three methods discussed. Use of Non-parametric reliability by Bhattacharyya's measure is recommended for Likert-type data for clear theoretical advantages.

Further studies may be undertaken to find item reliability and reliability of Likert scale and to facilitate comparison of the two proposed methods with other existing methods.

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THE EFFECT OF THE SHAPE OF EYEGLASSES ON JUDGEMENTS TOWARD WEARERS' OCCUPATIONS -REPLICATION AND EXTENSION OF GUÉGUEN (2015)-

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Abstract

Studies have found that eyeglasses could increase the perceived intelligence of wearers, and the shape of eyeglasses also has an influence on judgements of wearers' personalities. This study replicates Guéguen (2015), in which the influence of the presence or absence of eyeglasses on the estimation of the wearer's socio-professional group was investigated, and extends the previous research by taking eyeglass shapes into consideration. Participants looked at a photograph of the face of a man with round or square eyeglasses or no eyeglasses, and estimated his occupation. The results indicated that the face with eyeglasses is more likely to be judged as that of a high status person, especially when the eyeglasses are square rather than round. It could be explained that a metaphor-consistent link between shape and personality and perceived higher competence changes the estimation of the occupation of the target.

Keywords: eyeglasses, perceived competence, the shape of eyeglasses, replication and extension.

1. INTRODUCTION

Previous studies have shown that the wearing of eyeglasses has both positive and negative influences on wearers' impressions of their facial image. On the negative side, Leder, Forster, and Gerger (2011) found that eyeglasses made wearers appear less attractive. The same results have been reported in other research (Hasart & Hutchinson, 1993; Lundberg & Sheehan, 1994). On the positive side, Guéguen and Martin (2017) reported that passersby on the street agreed to be interviewed more often when the interviewers wore eyeglasses in actual field settings.

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This was because of the perceived higher conscientiousness of people wearing eyeglasses. Likewise, Thornton (1943, 1944) found that participants wearing eyeglasses were perceived as more intelligent and industrious than those without eyeglasses. Okamura and Ura (2017a, 2017b) focused on the effect of the shape of eyeglasses on the personality judgement of others. They proposed that judgements of many personality items are influenced by eyeglass shape, especially in respect of warmth and competence traits: a face wearing round eyeglasses is perceived as warmer, whereas a face wearing square eyeglasses is perceived as more competent. Moreover, Okamura and Ura (2017c) reported that the shape of eyeglasses affects our own personality judgements: imagining wearing round eyeglasses leads our self-evaluation to be warmer, whereas imagining square eyeglasses leads it to be more competent. The authors explained the mechanism in terms of metaphor. In fact, in Japanese, the words “*marui*” (round) and “*shikakui*” (square) are used to describe personality traits: “*marui*” means warm and mellow and “*shikakui*” means competent but stubborn. Since people think of abstract concepts in terms of more concrete concepts by using metaphor, the activation of round or square (concrete) concepts could influence personality (abstract) concepts in a metaphor-consistent manner (*metaphoric transfer strategy*: Landau, Meier, & Keefer, 2010).

Guéguen (2015) hypothesized that wearing eyeglasses is associated with perceived higher conscientiousness and intelligence and found that people who wear eyeglasses were more often judged as members of high-status socio-professional groups. This result is consistent with the findings of Okamura and Ura (2017a), in that a face with square eyeglasses was judged most competent, a face with round eyeglasses was judged next most competent, and a face with no eyeglasses was judged least competent. Based on the conclusion that intelligence and competence are positively correlated with socio-professional status (Firkowska-Mankiewicz, 2011; Furnham & Cheng, 2013), it is hypothesized that square eyeglasses are most frequently associated with intellectual occupation, round eyeglasses are next most frequently associated with it, and no eyeglasses are least frequently associated with it. The present study investigates the hypothesis using the same methodology as Guéguen (2015).

2. METHOD

2.1. PARTICIPANTS

Participants were 56 men and 52 women (aged between 22 and 58 years). Sample sizes were calculated using G*Power 3.1.9.2 (Faul, Erdfelder, Lang, & Buchner, 2007) and the parameters $\alpha = 0.05$ and power = 0.8. They received a questionnaire and responded to it. They were informed that they could drop out of the study at any time during the survey and their informed consent was obtained before taking part in the study.

2.2. STIMULI

Three black-and-white photographs of the face of a 36-year-old man were used. The male target was either wearing round or square eyeglasses, or not wearing eyeglasses. The eyeglasses had been added to the facial image using software for fitting simulation of eyeglasses in order to maintain exactly the same facial expressions. The photographs of the two kinds of eyeglasses that were used in the present study are shown in the appendix.

2.3. PROCEDURE

Participants were randomly divided into three conditions (no eyeglasses, round eyeglasses, square eyeglasses). Each group consisted of 36 participants. They were instructed to look carefully at the photograph and estimate the person's occupation from the seven categories that were used in Guéguen (2015): (a) farmer, (b) artisan or merchant, (c) executive or highly intellectual occupation, (d) middle executive, (e) office worker, (f) manual worker, and (g) unemployed.

3. RESULTS

The dependent variable was the number of participants who selected each category. The data are presented in Table 1.

Table 1. The number of participants who selected each category in each group

	no eyeglasses <i>N</i> = 36	round <i>N</i> = 36	square <i>N</i> = 36
Farmer	5	3	2
Artisan or merchant	4	3	1
Executive or highly intellectual occupation	5	14	22
Middle executive	8	7	5
Office worker	7	6	6
Manual worker	4	2	0
Unemployed	3	1	0

Since many of the expected frequencies were less than five (57.1%), the seven categories were classified into two categories to improve the strength of the chi-square test: executive or highly intellectual occupation (highly intellectual) and the other six categories (middle or low intellectual). An independent chi-square test was performed and revealed a significant interaction ($\chi^2(2, N = 108) = 17.06, p < .001, \phi = .40$). Further interaction revealed that significantly more participants in the square eyeglasses condition selected highly intellectual occupations (adjusted residual = 3.4, $p < .01$), and significantly fewer participants in the condition

selected middle or low intellectual occupations (adjusted residual = -2.6, $p < .01$), whereas significantly more participants in the no eyeglasses condition selected middle or low intellectual occupations (adjusted residual = 2.8, $p < .01$), and significantly fewer participants in the condition selected highly intellectual occupations (adjusted residual = -3.5, $p < .01$). No further significant interactions were found.

4. DISCUSSION

These findings are in line with Guéguen (2015) in that eyeglasses are likely to be associated with high status and intellectual occupation. Moreover, it was found that square eyeglasses are more frequently associated with executive or highly intellectual occupations, whereas no eyeglasses are less associated with occupations of this kind. These results confirmed that a face with eyeglasses is perceived as being of higher intelligence, especially in the case of square rather than round eyeglasses, and that a metaphor-consistent effect between square (shape) and competence (personality) affects the estimation of the wearer's occupation.

DECLARATION OF CONFLICTING INTERESTS

The author declared no potential conflicts of interest with respect to the research.

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APPENDIX



Figure 1. Round eyeglasses



Figure 2. Square eyeglasses



THE EFFICIENCY OF COGNITIVE-BEHAVIORAL THERAPY IN REHABILITATION PROCESS OF THE INJURED ATHLETES - A REVIEW

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Abstract

Sport injuries threaten athletes' career and success and determine rehabilitation costs. The purpose of this paper is to underline the psychological effects of sports injury and the efficiency of cognitive-behavioral therapy in rehabilitation process of the injured athletes. In a study concerning the psychological aspects of sport-injury rehabilitation, Brewer (2003) concluded that psychological factors play an integral role in the recovery and rehabilitation from sport injury.

Cognitive-behavioral therapy is aimed to educate people to change their philosophy of life, to think rationally in order to cope effectively with negative mental states.

Keywords: *Cognitive-behavioral therapy, athletes injury, sport psychology.*

1. INTRODUCTION

Participation in different types of athletics has increased over time, as has the incidence of athletic injury among such athletes. An injury affects physical capabilities, but also determines negative emotions and other mood disturbances, so during the rehabilitation process the intervention of a psychologist is recommended.

Becoming injured and fast recovering from injury are common outcomes of participation in all kind of performance sports. Taking in consideration the negative physiological effects of injury, psychological effects have also been found to negatively affect injured athletes. Factors such as stress, anxiety, and depression

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are among the most known outcomes associated with injury.

Researches made by sports medicine professionals found that approximately 5%-13% of injured athletes experience different levels of psychological distress (Cupal & Brewer, 2001; Wiese-Bjornstal, Shaffer, 1999).

Cognitive-behavioral therapy is one of the most used method for helping people suffering from stress, anxiety, depression to deal with emotional difficulties, to overcome their negative thinking patterns and replace them with healthier, more efficient thoughts (Rizeanu 2012, 2014).

This paper aims to discuss the psychological symptoms athletes players experience when injured during the games, as well as possible cognitive-behavioral therapy techniques the kynosio-therapist and sport psychologist can implement when working with injured athletes.

2. THE LITERATURE REVIEW

There is a lack in the literature about sport injuries and their consequences and few psychological studies on sport injury prevention.

Gustafsson, Lundqvist and Tod (2017) published a case study in which they presented the most efficient cognitive-behavioral procedures recommended to treat anxiety problems in sports: behavioral analysis, psycho-education and exposure.

The original stress-injury model developed by Andersen and Williams (1988) proposes that when sport participants experience a stressful situation their personality characteristics, history of stressors and coping resources contribute to the stress response.

In a study concerning the psychological aspects of sport-injury rehabilitation, Brewer (2003) concluded that psychological factors play an integral role in the recovery and rehabilitation from sport injury.

Research conducted by Asken (1999) has shown that the psychological responses to injury, such as stress, anxiety or depression are amplified in cases of severe injury and lead to the increasing of the rehabilitation process. Stress is a factor that negatively affects the individual, both on the psychological and physiological level (Rizeanu, Mihăilă, 2015).

A study conducted by Mittly, Németh, Berényi and Mintál (2006) showed that in order to an earlier return to their sport activity, injured athletes need psychological interventions as well as social support in their post-injury period.

Andersen (2009) found that cognitive-behavioral techniques are effective in helping athletes to control irrational cognitions or negative emotions and behaviours. The use of rational emotive behavior therapy in sport helps athletes eradicate dysfunctional thought processes and emotions, as it help people in any other domain (Rizeanu, 2012, 2014). The studies conducted by Bernard (1985),

Elko and Ostrow (1991), Yamauchi and Murakoshi (2001), Lerner and his collaborators (2007), Si and Lee (2008), Marlow (2009), Turner and Barker (2013), Nippert and Smith (2008) and Bratu (2014) showed the efficiency of applicability of REBT in sports.

Sordoni, Hall and Forwell (2000) conducted a study which concluded that cognitive-behavior therapy techniques, especially imagery can be helpful in the rehabilitation period of injured athletes.

Using CBT techniques such as relaxation and mindfulness-based practices when working with injured athletes can shorten the period of rehabilitation, considering that post injury depression rates are ranging from 5% to 21% and such strategies could lead to decreased depression (Manuel, Shilt, Curl et. al., 2002).

Increasing evidence supports the use of cognitive-behavioral therapy (CBT) for injured basketball players with chronic pain and researches concluded that physical therapists should incorporate CBT techniques when treating these patients (Thorn, Cross, Walker, 2007). The results of the study conducted by Naoi (2003) concerning the effectiveness of cognitive-behavioral interventions on negative emotions of injured athletes showed improvements in the mood of the participants of the study.

Brewer (2017) stated that “psychological readiness to return to sport after injury is an emerging concept that cuts across cognitive, emotional, and behavioral responses to sport injury.” In a study concerning the stressors and psychological responses to sport injury, Rees (2010) concluded that the performance standard of the athletes can influence the relationship between psychological responses and stressors to sport injury.

REBT is an effective intervention aimed to reduce irrational beliefs of injured athletes and their performance anxiety and to improve competitive performance in sport (Wood et al., 2016).

3. CONCLUSIONS

Sport psychology is a relatively new field of science and researches concluded that around 19% of athletes should experience a negative psychological impact of their suffered sport injury (Chan, Michelli, Smith et al, 2006; Clanton, Matheny, Jarvis & Jeronimus, 2012). The stress, frustration and anxiety are not generated by the seriousness of the injury, but the insecurity whether how long the recovery would take (Hamson-Utley, Martin, & Walters, 2008; Rizeanu, Bratu, Rizeanu, 2017).

An effective rehabilitation process should comprise the treatment of anxiety and depression of the athletes, which is also related to the possible recurrence of the injury (Baum, 2005; Bratu, 2012, 2013).

This paper is aimed to analyze the psychological symptoms of athletes experience as a result of becoming injured and the most effective psychological techniques which can be used during their rehabilitation process. Cognitive-behavioral therapy techniques such as relaxation, cognitive-restructuring and mindfulness are most recommended by the clinicians.

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THE EFFECTS OF SELF EFFICACY ON THE LEVEL OF PERCEIVED STRESS: A CORRELATIONAL STUDY

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Abstract

Stress is nowadays one of the most dangerous enemies, it changes our lives, affects its quality but most of all is the source of many psychosomatic disease.

The objective of this study is to reveal a correlation and a possible psychological link between the level of self-efficacy and the level of perceived stress on a sample of medicine students. The results shown a significant correlation between the two measured parameters ($r=0.8$).

Keywords: *perceived stress, self-efficacy, stress effects*

1. INTRODUCTION

The stress, which Hans Selye has defined since 1934, has become for each of us an increasingly discussed subject, due to his real and significant implications on physical and mental health, on the reverberations he produces in the social sphere, education and the economy. It is known the contribution of stress in the occurrence of cardiovascular diseases (hypertension, ischemic coronary artery disease, myocardial infarction), neurological diseases (stroke), digestive diseases (gastric or duodenal ulcers). In the psycho-emotional sphere, exposure to a intense and prolonged stress decreases attention and memory capacity, with already visible implications in the current educational process. The psychological effects of stress cause serious behavioral disorders (apathy, aggression) and mental disorders - depression, anxiety, suicide (Rizeanu, 2016).

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The stress analysis, not until recently, was aimed at the sample of the adult population, but today the concern of specialists turned to other age groups, extremely exposed to stress - children and adolescents (Bubulac, Ichim, Popescu et. al, 2017).

Stress is defined as the totality of reactions that an organism has to the action of physical (such as trauma and burns), chemical, biological (infections) and psychological causal agents, which lead to various morpho-functional changes in the body, especially in the endocrine system (affecting the hypophysis and the adrenal glands). This in turns creates the “general adaption syndrome”, which is made up of the totality of mechanisms that are capable of rallying the organism’s adaptive resources in the face of an aggression (Rizeanu, Mihăilă, 2015).

Iamandescu (1998, 2002) argues that psychological stress, caused by psychological stressors, can induce somatic changes such as: tachycardia, disturbances of muscle tone, vasomotor disturbances, secretory disturbances caused by the hyperactivity of the sympathetic-adrenergic system. These changes are tightly related to the development of mood and anxiety disorders, such as depression and social anxiety. Acute neuro-endocrine responses to a psychosocial stressor may be elevated in patients with mood and anxiety disorders (Takahashi, Ikeda, Ishikawa et al, 2005).

Elevated cortisol levels may increase resilience to environmental stressors. Some subjects may respond to cortisol “levels of stress” by becoming depressed; however, in this case, the hypersecretion of cortisol must interact with other predisposing factors (Cowen, 2005).

Identifying stress in medical school students is one way of preventing school dropout. Distress was found to be correlated with decreased empathy in medical school students, which further proves that reducing distress would contribute not only to the students’ overall well-being, but to increasing the quality of medical care they will provide. Preventing stress in medical school students and cultivating constructive, health-promoting problem-solving skills will have a direct impact on the students themselves and an indirect impact on medical training.

It is important that medical schools focus on the importance of preventing and combating stress even from freshman years, given the increased incidence of anxiety and depression with an onset before 30 years of age (Mihăilescu, Năstase, Matei, 2001).

Stress appears frequently in the general population, while its effects - depression and anxiety - appear later during one’s lifetime, in predisposed individuals. Young adults with subclinical depression symptoms have higher rates of depression, substance abuse, psychological dysfunction and functional deficiencies as adults (Aalto-Setälä, Marttunen, Tuulio-Henriksson, Poikolainen, Lönnqvist, 2002).

The Bucharest College of Physicians has put together a survey of the levels of professional stress among physicians in Bucharest. According to this study

conducted from April to August 2017 (Poiană, 2017), 55% of physicians suffer from personal stress, 52% from professional stress, 36% from stress caused by patient interaction, and 24% suffer from all three types of stress. The figures reported in this study are higher than those reported in other European countries. The burnout syndrome in France is 42.4%, in Germany - 48.7% and in the US - 45.8%. A study made in 12 European countries shows that 43% of doctors suffer from emotional exhaustion. In Great Britain, studies show that one in every three doctors reports burnout symptoms (Kumar, 2016).

2. OBJECTIVE AND HYPOTHESES

2.1. OBJECTIVE

The main objective of this study is to reveal a correlation between the level of self-efficacy and the level of perceived stress. This correlation will be the foundation of future studies that will try to find physiological effects and to propose intervention models for coping strategies.

2.2. HYPOTHESES

We presume that there is a significant correlation between the level of the perceived stress and efficacy.

3. METHOD

To investigate this correlation we have performed a series of psychological testing on a significant sample formed of 107 students.

3.1. Participants

The experimental sample was selected from the population of Carol Davila University of Medicine and Pharmacy, it was consisted of 107 students (80 males and 27 females) who accepted to be a part of this study motivated by the results of the study and being worried of the effects of stressing situations for their lives.

3.2. Questionnaire

We have conducted a pilot study before the current study. For the purposes of this study, the researchers interviewed 107 students and asked them to fill in two questionnaires: one to observe the level of the perceived stress - Perceived Stress Scale – PSS (Cohen, Kamarck and Mermelstein, 1983) and another one to measure self-efficacy: Self Efficacy Scale – SES (Schwarzer & Jerusalem, 1995).

3.3. Procedure

We assumed the study hypothesis in the context of the stressful stimuli of the social reality. The data were collected in personal interviews, conducted in groups of students participating at different types of academic activities. The interviewer remained with the participant the entire time they completed the questionnaires in order to answer and clarify any questions regarding the study. The participants were given general information about the purposes of this study. Participants rights were protected, they were assured of anonymity and confidentiality. The consent of completing the questionnaires was requested and given by all the participants mentioned in this study.

4. RESULTS

Details about the socio-demographic characteristics are shown below. We had a sample of 107 subjects, 80 men and 27 women, with the same level of educations. The average age was 21.5 years old (range between 18 and 25).

After the results were collected we performed a Pearson correlation procedure using SPSS software.

The descriptive statistics showing the results for Self-efficacy Scale for our sample are shown below:

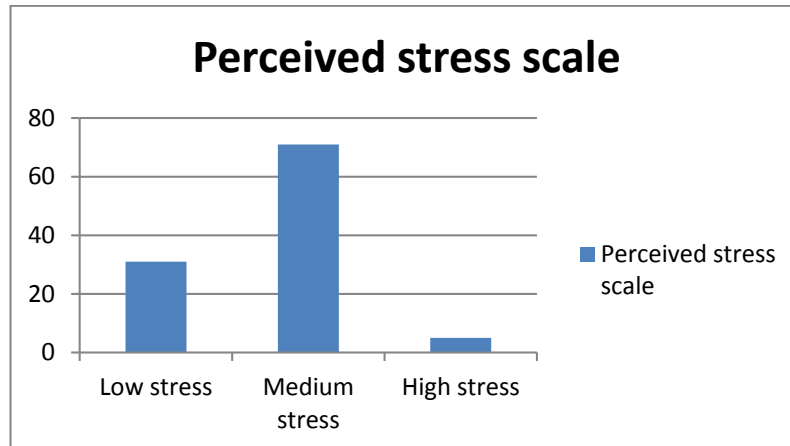
Figure 1. Self-efficacy level



The quotation for this instrument can be described on five levels: 10-26- Very low, 27-29- Low, 30-33 Medium self-efficacy, 34-37 High self-efficacy, 38-40 Very high self-efficacy

For the Perceived Stress Scale(PSS), descriptive results are shown as following (figure 2):

Figure 2. Perceived stress scale



As we can observe the medium stress level has the most important part in our sample, this type of stress could very easy turn into a dangerous way in a high level stress.

The next step in our experiment was to correlate the results using a Pearson correlation procedure which was performed using the SPSS software. The “r” coefficient has shown a correlation between the self-efficacy level and the perceived stress.

Table 1. Correlation between the two measured parameters

Correlations			
		SES	PSS
SES	Pearson Correlation	1	.816**
	Sig. (2-tailed)		.000
	N	107	107
PSS	Pearson Correlation	.816**	1
	Sig. (2-tailed)	.000	
	N	107	107

** . Correlation is significant at the 0.01 level (2-tailed).

Considering the table above we can assume the fact that the hypothesis of this research is confirmed. The “r” coefficient having a value of 0.8 is considered a strong correlation between the two measured parameters. The results shown a significant correlation between the two measured parameters, considering that highly stress determines a low level of self-efficacy ($r=0.8$).

5. CONCLUSIONS

Considering the results of this study and the work done by other researchers we can assume that a high level of stress could determine a low level of self-efficacy that has dangerous consequences on student life and individual functionality.

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A REVIEW REGARDING PERSONALITY TRAITS AND VOCATIONAL INTERESTS

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Abstract

Starting from the points that Hexagonal model of Holland (1973; 1985) highlights the six types of personality: realistic, investigative, artistic, social, entrepreneurial and conventional the scientific literature investigates how the individuals in the work environment might match as personality profiles with the characteristics of the jobs through the six types of work environment. In this way the employee may carry out their tasks and activities matching their personality type. Many studies were focused to investigate how the personality factors: openness to experience, conscientiousness, neuroticism, extraversion, and agreeability correlate with the vocation interests presented by Holland. Also, were analyzed the aspects of different work values in relation with the individuals' cultural characteristics. The conclusion of the scientific studies leads to the career counseling in the way of choosing the perfect workplace corresponding to the personality Hexagonal model as individuals' vocational interests.

Keywords: *personality traits, vocational interests, work environment, career choice theory, Hexagonal model.*

1. PERSONALITY-A FACTORIAL APPROACH

The concept of personality plays a primordial role in understanding human behaviors with applications in organizational, educational, clinical, and many other domains. The personality study captivated scientific literature from the early decades of the twentieth century (https://ro.wikipedia.org/wiki/Psihologia_personalității).

Zlate (2008) presents the concept of personality through the perspective of 6 facets (page 41):

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1. Real personality - as it is in reality;
2. Self-assessed personality - the image that the individual has about himself;
3. The ideal personality - the one imagined, the one desired, the one the individual aspires to form;
4. Perceived personality - the image of the individual about others;
5. Personality designed - believes the individual thinks others about it;
6. Personality manifested - the exteriorized, objectively behaved.

In the personality psychological assessment, the personality structures based on factors have been imposed since the second half of the 20th century. Thus Cattell (1946; 1973; 1978) advanced studies on factorial analysis and usability of questionnaires, but also the personality structure on 16 factors-16PF Personality Inventory (Cattell, 1989; Cattell & Krug, 1986; Cattell & Mead, 2007).

The most used factorial structure of the personality is that structured on five factors advanced by the Big Five model: Open to experience, Conscientiousness, Extraversion, Agreeability and Neuroticism (Goldberg, 1993; Costa & McCrae, 1992). Burtăverde (2015) conducted a study investigating the relationship between personality traits structured with the Big Five model and vocation interests on pharmacies. Using the entire structure of the five personality factors, Costa and McCrae (1985) have also advanced another personality inventory, NEO-PI R.

A new factorial model of the personality that follows the Big Five structure but contains an extra dimension is that advanced by the Hexaco model (Ashton & Lee, 2009; De Vries, Ashton, & Lee, 2009; De Vries, Lee & Ashton; Vries, Lee & Ashton, 2008; Lee & Ashton, 2006). The Hexaco model is structured on the following factors: Honesty-Humility, Emotionality, Extraversion, Agility, Conscientiousness and Openness to Experience. In Romania, the psychometric properties of the Hexaco Personality Inventory by Burtăverde (2015) were performed. Burtăverde (2015) translated and adapted the Romanian Hexaco-PI R inventory in both forms: 100 items and 60 items.

2. A CONCEPTUAL PERSPECTIVE ON VOCATIONAL INTERESTS

In view of the vocational interests, Holland (1959, 1973, 1985) argued that there are six broad categories of interests as follows:

1. Realistic interests that highlight the fact that people are concerned about money, status and power.
2. Investigation interests that are interested in science and scholarship.
3. The artistic interests through which people are interested in self-expression and aesthetic achievements.

4. Social interests through which people are interested in getting involved in teaching, help, training, and so one.

5. Entrepreneurs are people who aim at career, economic success, prestige.

6. Conventional interests through which people are interested in an orderly and systematic career.

Holland (1973; 1985) has created a hexagonal pattern with which the individual's individuality is represented by the environment. Thus, in figure 1 we can analyse the personality types after it.

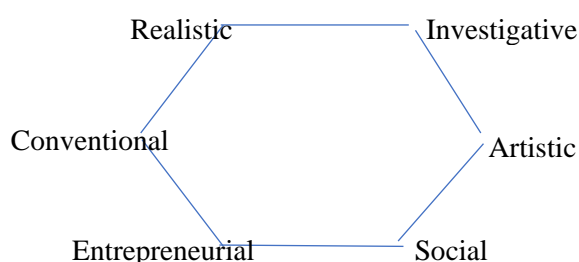


Figure 1. The Hexagonal model introduced by Holland (1973; 1985)

Holland's career choice theory is the most well-known and based exactly on the hexagonal pattern shown in Figure 1, thus developing a number of 6 types of personality: Realistic, Investigative, Artistic, Social, Entrepreneurial and Conventional. In this way, individuals in each personality group will create an environment at work that matches their personality type. An example would be that the artistic personality will create an artistic environment in the workplace, reinforcing creative thinking and associated behavior. Knowing that in the selection of staff, future candidates are chosen according to the position of the job holder, their values must coincide with the values of the working environment as much as possible in order to be able to express themselves and carry out the duties and work activities accordingly. Thus, an artistic type will look for an artistic environment, a conventional type will look for a conventional work environment, etc. In this respect, individuals who choose to work in an environment that suits their personality will be professionally successful, will work efficiently and will be satisfied. Holland (1973; 1985) emphasizes through his theory of career choice and the model in Figure 1 that the more employees fit as a personality profile with the type of work environment but also with the other colleagues, the more professional achievements will be safe, successful, but also a high level of satisfaction.

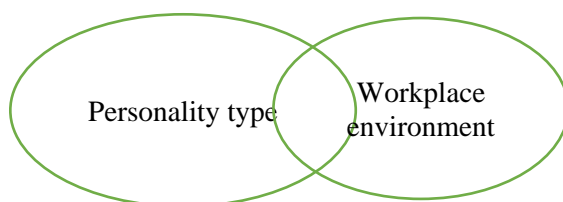


Figure 2 The match between personality traits and workplace environment through Holland personality theory (1973; 1985)

In Figure 2 we can see at the intersection between the personality type and the work environment the superposition of the two variables, which is in fact the matching of the individual with the working environment in the light of Holland's hexagonal theory and model.

3. STUDIES INVESTIGATING THE RELATIONSHIPS BETWEEN PERSONALITY TRAITS AND VOCATIONAL INTERESTS

In a study on the relationships between the vocational typology and the personality model presented in Figures 1 and 2, Costa, Holland and McCrae (1984) highlighted a number of 217 men and 144 women, strong associations between investigative and artistic interests and the opening to experience. Also, there was a statistically significant correlation between social and entrepreneurial interests with extraversion and the fact that occupations with conventional work environment are closed to experience. The findings of this study have brought the importance of vocational counseling implications in older adults as well.

Bullock-Yowell, Peterson, Wright and Mohn (2011) conducted a study aiming at the importance of self-efficacy in assessing self-esteem vocation interests. Hence, the authors use the self-efficacy, self-estimation and self-competence variables in a multiple hierarchical regression model and confirmatory factorial analysis based on Holland's hexagonal model (1973; 1985). In Figure 1, concluding that when self-estimation is used to measure career interests, it is not necessary to show a certain level of self-efficacy.

Bullock-Yowell, Reed, Mohn, Galles, Peterson & Reardon (2015) conducted a study in which they were interested in studying the relationship between neuroticism, coping strategies and negative career thinking in the context of positive status. The study was applied to 119 women and 113 males with a mean age of 20.3 years. They were following a career development program. The results highlighted that coping strategies did not make any significant contribution to the proposed model and that neuroticism had a significant indirect effect on career decision-making due to negative thoughts. An interesting conclusion of the study is that in the presence of negative thoughts about careers, neuroticism becomes associated with increasingly positive career development decisions. Thus, career

counseling can intervene on the extent of neuroticism so that the expression of this has productive implications in making career decisions.

Gundula & Ulrich (2017) highlighted the vocational interests in terms of personality traits having significance in educational and organizational environments. Thus, the authors emphasize that vocal interests are an important aspect of personality. By treating Holland's model and theory of vocational interests, the two authors present a dynamic perspective on interactions that influence stability and change throughout life. Moreover, the conclusion reached by the two authors is that the professional interest is a motivating aspect of the personality that has an effect on the individual development of the people.

Damian, Spengler, & Roberts (2017) conducted a study in which they wanted to highlight the implications of computerization of jobs on staff selection. The sample consisted of 346.660 participants, high school students in the US who were tested in two parts of the longitudinal study: 11 years and 50 years later. Initially the variables were measured: social background, intelligence, personality traits and professional interests. Thus, the participants' occupations and the likelihood of being computerized on the basis of the necessary skills and the technology were recorded during the study. The applied regression model highlighted the fact that regardless of the social context, smarter, mature people interested in art and science at the time of initial measurement had selected jobs that were less likely to be computerized. For these variables, an increase in the standard deviation predicted a decrease by 4 points of computerization probability.

Strong, Rieger, Ludtke, Nagengast, Trautwein, and Roberts (2017) conducted a more extensive research. They were interested if the professional interests that people have when finishing high school will predict work, relationships and health outcomes over a 10-year period. The authors used the taxonomy of Holland (1997), RIASEC and the Big Five Personality inventory. The sample consisted of 3.023 high school students in Germany who were monitored for 10 years after graduating from high school. Regression analysis was used to verify the prediction of vocation interests and personality traits. Thus, professional vocational interests were a significant predictor for a number of 7 variable variables: full-time employment, gross income, unemployment, marriage, children, non-involvement in any relationship, and perceived health. Personality traits significantly predicted better self-perceived health.

Given the person's fit with the work environment in terms of personality traits, Ehrhart and Makransky (2007) conducted a study investigating professional interests and personality. Thus, the authors wanted to test the hypothesis that occupational interests as a system of occupational preferences of vocational interests (person-vocation matching) predict the right perception of occupations and more than the personality assessed in terms of the five-factor model predicts the characteristics of the workplace (matching the person to the position he / she occupies). The results of the study of the two researchers, Ehrhart and Makransky

(2007) showed that professional interests were better predictors of the perceived person, but also of the person perceived as a personal vocation compared to the personality traits taken as predictors.

Fan, Cheung, Leong, and Cheung (2012) conducted a cross-cultural study between American students and students in Hong Kong on the features of their precociousness, career interests and career. This study compared patterns of relationship through personality traits, career interests, and career exploration. Two student samples were analyzed a sample of 369 American students and a sample of 392 Chinese students in Hong Kong. The tool used was Cross-cultural (Chinese) Personality Assessment Inventory-2 (CPAI-2). The first hypothesis tested prediction capacity for personality traits as career predictor variables taken as a variable criterion for American and Chinese students. The second hypothesis focuses on the role of the mediating variable of vocational interests between personality traits and career exploration. Cultural differences have been highlighted as significant in testing the first hypothesis. Personality traits measured with CPAI-2 predicted career exploration only for Chinese students in Hong Kong. The second hypothesis has been partially confirmed. The entrepreneurial character has mediated the association between the social potential variables and the career exploration for the Chinese student group. For the US student group, artistic interest has proven to be a mediator.

Zhu, Yang & Cai (2017) were interested in conducting a study of personality traits and vocal interests at students in the technological educational environment. They conducted a study on the relationship between personality types and choices made on the vocational orientation of Chinese students in China's educational and post-graduate technology. The sample consisted of 209 students and 194 postgraduate students. The applied tool was Personal Globe Inventory-Short, used to determine personality types. The results were in the form of three-letter personality profile codes for students in both groups, ESA (social, artistic and entrepreneurial). Also, there were significant differences between the students in the field of educational technology and the postgraduate students according to the realistic personality type that proved to be a significant predictor for most of the vocational options as well as the students' interests in the technology of education. Moreover, postgraduate students in education technology interested in specific realistic activity have selected little interest in educational technology, and the type of social personality as a profile has been associated with more interests.

Duffy, Borges & Hartung (2009) were interested in investigating relationships between personality traits, vocational interests, and work values at medical students. The sample consisted of 282 medical students (169 women and 113 men). The tools applied were: Strong Interest Inventory, NEO Personality Inventory-Revised, and Physician Values in Practical Scale. In this respect, the results have proved significant relationships between openness as a personality trait and artistic interests and between extraversion as a personality trait and entrepreneurial

character, social interests and managerial work values. Testing hypotheses on regression analysis has highlighted that personality and vocational professional interests predicted between 2% and 14% of the variation of each of the six measured workplace values as values of work.

De Bruin (2002) was interested in studying the relationship between personality traits and vocational interests. The author made a study in which he applied the Personality Factor Questionnaire and Instrumental 19-Field-Interest Inventory. The results of the study have shown that extrovert people are interested in areas related to social contact and the ability to influence others. Another highlight was that emotionally sensitive individuals as personality traits are statistically significant in arts and languages and independent people are interested in creative thinking.

Hansen & Wiernik (2018) were interested in making a theoretical synthesis of personality traits and performance in the workplace in terms of vocational interests. They highlighted the role of vocational interests in work values and work-person matching. The authors mention in the published theoretical chapter that interventions to make career decisions have been designed to optimize the person-working environment, interests and values, and skills to increase organizational variables such as well-being and work performance.

Wiernik & Wille (2018) conducted a theoretical analysis of career, career development and career management through vocational orientation. Thus, they have reviewed several studies from many traditions. Also, in their work, the authors analyze empirical results from career choices, career management factors, individual changes, persistence and career success.

Wiernik, Dilchert & Ones (2016) conducted a study of personality traits and creative-artistic interests. Thus, the authors used the individual criterion of the profile to investigate the relationship between aesthetic and investigative-creative interests with personality traits. The Big Five and the Holland-RIASEC inventory of interest were used. The results highlighted the fact that the aesthetic and investigative interests revealed distinct patterns that pertain to the individual intrapersonal profile of permissibility. Investigative interests have been significantly associated with increased openness to intellect, consciousness and emotional stability but also with low levels of low extraversion and acceptability to other features of individuals. In pursuit of the results, artistic interests were associated with the perceptual strengths of each participant in the study for opening up to experience and personal weaknesses for conscientiousness, assertiveness and emotional stability.

Salami (2008) investigated the roles of personality traits, vocational interests, academic achievements, and socio-cultural factors in aspirations on adolescent gymnasium education in southwestern Nigeria. The sample consisted of 430 students (220 men and 210 women). A regression model was applied to test the research hypothesis related to the variables mentioned. The results confirm that personality traits, vocational interests, academic performance, socio-economic

status and family requirements are statistically significant related to students' educational aspirations.

Krapić & Kuljanić (2017) were interested in testing whether the level of intelligence, personality traits and vocational interests are predictors of school achievements. Hence, the aim of the study was to highlight these aspects in the primary school, general school and to highlight a certain group of school disciplines such as verbal-communication, social-humanistic, technical and artistic. Moreover, the incremental validity of the personality traits and of the vocational interests against the effects of intelligence has been analyzed. The sample consisted of 263 children (128 boys and 135 girls) from an elementary school. The model of hierarchical regression was applied as a statistical method, in the first model were included the personality traits and the second the vocational interests. The results highlighted that verbal, numerical and abstract skills as well as investigative interests and conscientiousness are statistically significant predictors of school achievement. Finally, the features of the precociousness and the vocational interests explain a further proportion of variation of all the variable variables except for the technical group. Moreover, the role of intelligence, perceptual features and vocational interests is emphasized in the prediction of school achievements in elementary school.

Pozzebon, Visser, Ashton, Lee & Goldberg (2010) conducted a study on the psychometric characteristics of the Oregon Vocational Interest Scales inventory. This study highlights the professional identity of young people in Bulgaria through their professional interests, work-related strategies and personal characteristics. The sample consisted of 257 participants aged 18-29. The applied scales were: the Oregon professional scale - ORVIS (Pozzon, Visser, Ashton, Lee, & Goldberg, 2010), the questionnaire for the study of alternative work strategies (Bozhinova, 2003) and the Big Five inventory (Costa & McCrae, 1992). The results of the study showed that for the selected group aged between 18 and 29 years, professional interests, creativity, leadership and altruism are strongly correlated with the labor market orientation. Dominant personality factors are openness to experience, conscientiousness and agreeability. Moreover, the three types of work-related strategies interact poorly with moderate factors of the Big Five and 8 interests on the Oregon Vocational scale.

Harris, Vernon, Johnson and Jang (2006) conducted a study on the phenotypic and genetic relationship between vocational interests and personality traits. Thus, the relationships between the personality traits and the professional interest factors have been examined phenotypically and genetically. The sample consisted of 516 twins and brothers who completed personality scales and vocational interests. Factorial analysis was performed for each scale, and five personalities and six professional interest factors were extracted. Correlations ranged from 0 to .33 at the phenotypic level between personality traits and vocational interests. Genetic components accounted for between 0 and 56% of the variation in occupational

factors and between 44 and 65% for personality factors. Finally, it was highlighted that personality is related to certain dimensions of professional interest and that some observed relationships have a common genetic basis.

Holtrop, Born & de Vries (2015) were interested in conducting a study on relationships between vocational interests and personality traits by comparing recent models of vocational interests. The sample consisted of a total of 656 participants in the Netherlands, as a spherical sample (reproduction of spherical structure). The tools applied were: The Personal Globe Inventory, IGP, (Tracey, 2002) and the HEXACO-PI-R personality inventory (Ashton, Lee, & de Vries, 2014). The results confirmed the previous findings from the studies conducted and the interests such as prestige and the defining characteristic of the spherical representation correlated poorly with openness to experience and extraversion. The undergraduate honesty-humility and openness to experience correlated with certain scores of vocational interests.

4. CONCLUSIONS

Following the review of the presented studies it can be emphasized that the person's fit with the work environment remains the most important criterion in the selection of the personnel and not least in the vocational orientation. As Holland (1997) specifies, the six types of personality seen from the perspective of the Hexagonal model (Figure 1): realistic, investigative, artistic, social, entrepreneurial and conventional creates the possibility for individuals in the work environment to carry out their tasks and activities matching personality type. It is important to note that personality factors: openness to experience, conscientiousness, neuroticism, extraversion and agreeability correlate with the vocation interests and aspects of different work values in relation to the cultural characteristics of the respective population. Cross-cultural studies, as well as populations with certain endogenous characteristics based on the relationships between personality traits and vocational interests, represent a challenge to contemporary psychological research.

In this respect, vocational counselling since high school years plays a fundamental role in understanding future adaptation behaviors, relationships with colleagues, behaviors to carry out tasks and activities, and pursuing a certain career in choosing the most favourable the future job from the perspective of the environment and colleagues as well as the tasks to be executed (Bogluț, Rizeanu, Burtăverde, 2015; Rizeanu, 2016). Vocational counsellors should take into account variables such as personality traits, intelligence, skills, vocational interests, and so on.

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METHODS AND TECHNIQUES USED IN DIAGNOSTIC AND THERAPEUTIC APPROACH FOR PEOPLE WITH MILD MENTAL RETARDATION

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Abstract

The present case study is focused to reveal the efficiency of the therapeutic methods and techniques for people with mild mental retardation. State of the art was reviewed before presenting the case study. The participant to the case study is a person, Mr. M. diagnosed by the Commission for the Examination of Persons with Disabilities, with: Mild delay in mental development, I.Q.= 47 and severe aggressive behavior. He was institutionalized in 1985 and being abandoned soon after birth. Some of the therapeutic plan objectives are as follows: Developing communication skills; Development of creativity; Increase of self-esteem and self-knowledge; Communication, collaboration and group integration; Decrease of anxieties, frustrations, stress and tension release. Conclusions underline the establishment of causal relationships between manifested behavior and the latent one and propose was for reducing most of the behavioral manifestations.

Keywords: *art-therapy, sand-therapy, dance and movement therapy, poetry-writing therapy.*

1. INTRODUCTION

Carole Kunkle-Miller (1978) made a theoretical review highlighting the use of art therapy with retarded adults and she finds out that for the moment being there were not so many studies regarding the mentioned topics. Ludkins-Katz (1972) cited by Carole Kunkle-Miller (1978) underlined the following stereotypes regarding the population topics: they are not able to concentrate, they are constantly repetitive and incapable of growth, and so one. Furthermore, the author underlines that the art is involved in the development of the retarded individual

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(Bryant and Schwan, 1971; Crawford, 1962; Ludkins-Katz, 1972). Gussak & Rosal (2016) presented in their book the individuals' developmental disabilities. The authors underline that the individuals with developmental disabilities have overcoming as social stigmas, facing mental, physical and emotional stressors. Hence, they highlight the role of the art therapy in developing effective individualized treatment plans for people with developmental disabilities (Bololoi, Rizeanu, 2017).

Malchiodi (2014) underlines that the creative arts therapy begins from the arts and theories related to creativity and expressive arts therapy utilizes the creative arts in the way of patient's self-expression. The methods used in the creative and expressive art are: art, drama, dance, music, movement, poetry, play, and writing.

Hence Malchiodi (2014) defines the methods used in the creative and expressive arts as follows:

1. Art Therapy – focuses on the purposeful use of visual arts materials and media in intervention, counselling, psychotherapy, and rehabilitation;
2. Music Therapy – focuses on the prescribed use of music to effect positive changes in the psychological, physical, cognitive, or social functioning of individuals with disabilities;
3. Drama Therapy – focuses on the systematic use of drama/theatre processes, products, and associations to achieve therapeutic goals of symptom relief, emotional and physical integration, and personal growth;
4. Dance and Movement Therapy – focuses on the use of movement on the presumption that the body and mind are connected;
5. Poetry/Writing Therapy – focuses on the use of the written word and other forms of literature for healing and personal growth;
6. Play Therapy – focuses on the systematic use of play techniques by therapists to assist individuals in preventing or resolving psychological/social difficulties.

Baker, Berlowitz, Grocke and Tamplin (2014) conducted a study regarding the experience group music therapy at individuals with chronic quadriplegia. They found out that the music therapy had a positive effect on mental and physical state in the way of encouraged social engagement.

Heijenbrok-Kal, Ribbers, van de Sandt-Koenderman, van der Meulen and Visch-Brink (2014) were interested to examine the effects of melodic intonation therapy for subacute severe non fluent aphasia treatment. Using as samples a control and an experimental group, the authors found out significant improvement in verbal communication.

Inal (2014) underlines that dance may play a role in improving the physical, emotional, and cognitive functioning at individuals with disabilities. Also, the author underlines that dance improve the body image, spatial awareness and social skills.

Biddiss, Blain-Moraes, Chesser, Kingsnorth and McKeever (2013) investigated the effects of physiological signals music generated on people with profound multiple disabilities. The bio music combines the following signals: electrodermal activity, fingertip skin temperature, blood volume pulse and respiration.

Fenner, Schofield and Van Lith (2013) identified a number of 23 studies focused on art-based practices having as effects the social recovery, self-expression, relationships and social identity. The results underlined the role of the art therapy in mental healthy recovery.

Alon Uri & Moran (2011) highlighted that playback theatre promotes recovery in the field of mental health. The results of the study highlighted that significant improvement using the Playback Impact Scale. The playback theatre can be used as an effective practice for enhancing recovery processes at people with disabilities.

Using interview method Fenner, Schofield and Van Lith (2011) were interested to explore participants perception regarding the art-based programs in the mental health recovery. They underlined that the art-based programs support the recovery process by creating life control, feeling stronger and confident.

De Castro, Galati, Mercadal-Brotons and Solé (2014) find out that art-based programs made changings in mental health recovery and were making researches in order to identify/analyze changes in affect and participation during music therapy sessions.

Cesarz, Dobrzynska, Rymaszewska and their collaborators (2006) conducted a study focused on highlighting of how group therapy using music therapy and cognitive-behavioural therapy techniques can treat depression.

De Morais, Eler, Roecker and Salvagioni (2014) were involved in a qualitative, descriptive and exploratory research in the way of reviling the significance of clay art therapy. The clay therapeutic method improves creativity, self-consciousness and reduce anxiety.

2. THE OBJECTIVE AND HYPOTHESES

2.1. Objectives

The objectives pursued by the above-mentioned method are: 1) to manifest motor reactions with aggressive connotations; 2) to use aggressive language; 3) to exhibit a frustrating attitude; 4) to use either violence (aggressive and violent behaviour) or aggressive language to eliminate frustration.

2.2. Hypotheses

1. M. deficit concerning the comprehension and expression of his own feelings, needs and frustrations, amid mental retardation, leads to aggressive behaviors directed towards himself and the environment.

2. Through his participation in the activities of art therapy he enhances sensitivity, aesthetic sense and the ability to express himself more easily using the verbal language, attenuating aggressiveness.

3. Ludic therapy techniques stimulate and encourage direct relationship with persons in proximity, developing empathic capabilities.

3. METHOD

In order to achieve the objectives and based on the theoretical foundations which underline the specifics and psycho-behavioural characteristics of people with mild mental retardation, we consider that the main useful methods in our approach should be: guided observation, therapy through art / art therapy (graphic expression, drawing, painting, moving, metaphor), Ludo therapy, free conversation, analysis of personal documents.

Guided observation consists in careful and systematic tracking of the subjects' behaviour in order to determine their characteristic aspects concerning, on the one hand, physiognomy, hygiene, appearance, gaze, facial expressions, gesture, conformation, and on the other hand, the reaction of subjects at certain times or specific situations (during school and free activities).

The objectives for practical activities:

- Development of the sense of self-confidence and achievement;
- Development of the sense of artistic appreciation and expression;
- Adults' familiarization with different materials that they begin to analyse while using them - shape, size, texture, colour - through motor and sensory channels;
- Development of necessary practical manual skills and abilities used in transforming simple materials into toys or artistic creations using tools and accessories;
- Enrichment and development of thinking processes, the language and the vocabulary involved during the process of creation;
- Development of maintaining attention, independent activities, perseverance, courage, self-confidence, patience, discipline and cooperation with other adults in carrying out certain group activities, e.g. team work;
- Encouraging adults to use the results obtained by participating in other forms of therapy, as well as games and activities that they are best at;
- Development of the aesthetic sense and the ability to analyse critically their own work or others' in terms of shape, colour, originality;

- Development of respect for the results of their own work;
- Strengthening the technical skills of cutting, bonding, bending different materials and forming new skills such as weaving, combining;
- Strengthening the ability to end what he has started and discipline to keep materials in order.

4. RESULTS/THE CASE STUDY

M. aged 41, is the beneficiary of specialized social services, being institutionalized in a residential center. He has been a resident in the Centre for Integration by Occupational Therapy since 1985, being abandoned soon after birth. Within the center he receives care services, assistance, recovery, rehabilitation and socio-family integration and reintegration according to the Individualized Plan of Intervention.

According to the certificate of disability, M. is diagnosed by the Commission for the Examination for Persons with Disabilities, by mild delay in mental development, I.Q. = 47 and severe behavioral disorders.

Currently there are not known any data about his family of origins which has unknown address. He does not receive any visits from relatives or family and there are no contacts or information of this type in his personal history.

According to his personal documents, M. graduated from the 6th grade (Child's House in Botosani, Neuropsychiatric Hospital Siret). At present, M. carries out activities of art therapy in the workshop of creative therapy- ceramics and has a lot of works. He was part of the creative group together with other 4 beneficiaries. The creative group was led by a special education specialist and a psychologist, people who have skills in working with mentally disabled beneficiaries, counseling and empathizing with their needs and who are able to find a way to respond to these needs. The length of a session was 45 minutes and the selection criteria of the group were common:

- Close age;
- Approximately the same level of development;
- Same types of problems and concerns, as well.

At the time of taking over the case, M. had undergone a surgical operation on the right limb as a result of self-aggressiveness crisis, which had as effect a broken window; accidentally a little shard of glass penetrated the venous sinus of his hand.

We will present this case on the basis of certain observable data within the first contact with the beneficiary. M. has a robust physical constitution, his height and weight being above average in relation to the group age. His vertical body

posture manifests anxiety and psychomotor agitation with disorganized behavior, impulsivity, serious expressiveness of the face, with furrowed eyebrows. He presents scratches on the face and he is in a state of high emotional tension and speaks precipitately with a rapid verbal flow, in a high pitched voice, repeating obsessively "what do others want, if I don't want to speak with them I should be left alone... And then I'll mind my own business too the others don't let me".

M.'s problematic manifestations outlined by the special education worker but also by a psychologist, are the following:

- permanent restlessness during activities provided in the daily schedule (there are dozens of information reports about his maladaptive behavior, as well as psychological counseling sheets);
- relationships conflicting with colleagues, both during dining hours and at the residency;
- Self harming with self-mutilation tendencies (scratching deeply the facial skin) in a situation of refusal to fulfill his desire (e.g.: following their refusal to enable him to watch TV, at a late hour, he scratched violently his face, being necessary the intervention of a medical cabinet);
- verbally complaining attitude, demanding the discharge to the averagely protected houses outside the Centre;
- sometimes refusal to participate in the daily educational programs set in the daily schedule and Individualized Plan of Intervention (IPI);
- M. speaks aggressively about the occurred incident, although the problem has been solved recently, from the medical point of view.

He easily enters in spontaneous conflicts with beneficiaries, especially male and manifests an affective lability, ranging from anxious irascible feelings to excited manifestation of emotions.

Though in the beneficiary's personal history there is not information or facts regarding his biological family, he has built up a picture of his parents, mentioning them in various speeches, e.g. I'll go to "my parents", "my parents" will come.

Analyzing the psychological evaluation present in the personal file, we have picked relevant aspects of the beneficiary's psyche: average delay in mental development with behavioral disorders on a psychopathic background; psychomotor agitation with a disorganizing characteristic on adaptive behaviors (anxiety, tendency to action); incapacity to censor emotional states manifested by an accentuated excitement; low adaptability to social environment - stubbornness, negativism, rigidity, suspicion; semantic memory – existing capacity for the storage of work information, relatively faithful evocations; inactivity at the level of concrete intuitive operations of thinking; vocabulary limited to ordinary words - low-pitched tone in verbal expression; inter-relational aggressiveness (at the level of the group he belongs); autolytic tendencies in episodes of behavioral disorders

on the background of frustration intolerance; infantilism in emotional- affective relationships.

Tree test - overall impression- disharmonic, inaccurate, chaotic expressiveness, disorganized spirit, unstable, susceptible and agitated subject; he does not present rich psychic activity being nervous and sometimes even negativistic; he is precipitated in decision making process and most of the times he manifests contradictions in his way of thinking. He has an inferiority complex and other times he overestimates himself; he is lacking empathy in relationships having a limited capacity of relating to others; he has a developed critical sense, his reactions are violent; choleric temperament.

CONCLUSIONS:

- Manifestation of low sociability by isolating from collectivity;
- Lack of self-control on states of anger, fear in certain situations;
- Incapacity to solve various problems he is facing;
- Inability to express his wishes, needs, emotions, feelings;
- He is emotionally unstable;
- He manifests increased nervousness, aggressively, violence;
- Negativity (I do NOT want ... I do NOT do ...);
- Reduced self-esteem and self-respect (I am good for nothing, I know nothing);
- Hyperactivity;
- Language disorders (stuttering due to emotional background).

RECOMMENDATIONS:

Attending an art therapy program within the framework of the creative therapy Workshop – clay modeling in order to: support the development of capacities to express verbally or non-verbally the desires, feelings, emotions; re-establish self-respect and self-confidence and to provide personal strategies to solve the problems and intra- and interpersonal conflicts; to break emotional blockage, to relieve the tension, accumulated anxieties, stress, frustrations and negative feelings; and to contribute to the development of the capacity to integrate in groups; and last but not least to develop capacities of self-knowledge and self-acceptance.

SESSION ONE AND TWO

M. was invited to the Creative Therapy Workshop - pottery - together with 4 other of his colleagues to come into contact with work materials.

In the first meeting M. refused dialogue and eye contact with the therapist. He manifested anxiety, body agitation, changing his place from chair to chair, negativism (he does not wish to touch materials).

On the level of verbal language he expressed a complaining attitude, verbal stereotypes and behavioral aggressiveness.

Any aspect of the beneficiary's behavior from body movements, posture and walking, to verbal manifestations intentioned or less intentioned may set a scene of the mental condition or can communicate certain personality traits. These observations will retain their relative status, being included in the therapeutic approach as hypotheses.

Aggressiveness can be a form of adaptation and counter-reaction to institutionalized persons of adult age. This premise is based on the assertion that the aggressiveness, as well as aggressive behavior, is a form of adaptation, but also a counter-reaction to a frustrating situation.

M. has built a way of reaction to the institutional environment, the communication barrier imposed between himself and therapist representing an aggressive form of withdrawing when facing a request that implies a minimum involvement regarding "the other". The low level of understanding requires from the therapist to proceed with a ludic approach, easy, close to the level of infantile behavior.

In the first meeting, at the time of group formation we used an introduction technique called "THREAD BALL" which has the following objectives:

- Development of abilities to communicate and cooperate in group;
- Interpersonal knowledge;
- Group integration;
- Breaking emotional and intra-group connection blockages;
- Development of attention and memory;
- Complying with group rules;
- Collaboration and mutual support in work team.

Pursued purpose:

- Elimination of inhibitions and conflicts due to first inter-relational contact;
- Facilitating freedom of manifestation, encouraging expression;
- Diminution of anxieties, elimination of inhibitions, relieve of tensions;
- Carrying-out a verbal and nonverbal contact (through body touch) between the members of the group;
- Physical and emotional integration within the group;

DESCRIPTION OF THE EXERCISE

Before starting the game the beneficiaries are placed in a circle and are asked to be very attentive to the game. After that they have been seated in a circle, a pretty big ball is brought, each person after saying his name gives the ball to the colleague next to him, the end of the ball remaining at the therapist. Thus the ball reaches the next member, and the one who gives it forward remains with the thread in his hand in order to create a network, till the end. The ball is in the hand of the

last member of the group, then this one gives it to the person who has started the game. This will take the ball and will say the name of the person who handed it to him, then he will say: “My name is ...”, the ball will go to each member who says his name as well as the name of the previous member.

It is an exercise in which beneficiaries will learn how to integrate in the group.

The first two meetings were aimed at establishing a therapeutic alliance based on trust but also gathering information through participatory observation with regard to symptomatology and the establishment of causal relationships between manifested behavior and the latent one. Getting close in a space proximate to the beneficiary and the touches confirming the protective affection (caresses, verbal encouragements, touching arm) have created a positive therapeutic relationship.

THERAPEUTIC INTERVENTION

General purposes of therapeutic intervention:

- Decreasing behavioural aggressivity;
- Encouraging the development of alternative ways of expressing his own personality and stimulating positive relationship with those in the proximity.

SESSION THREE AND FOUR

In the context of educational-therapeutic valences, the projection has significant values on personal history leading to discovery, activation, outlining some personal difficulties.

In these two sessions we worked with the beneficiary an exercise “MY GIRLS” by which he was able to express his feelings freely.

PURSUED OBJECTIVES:

- Development of the capacity to express feelings, emotions;
- Decrease in stress and anxiety;
- Development of communication skills;
- Development of creativity;
- Increase in self-esteem, self-knowledge and self-control.

This fact allows the beneficiary:

- To express feelings, needs, emotions;
- To relieve accumulated stress and anxieties;
- To make a connection with himself;
- To train the group to work together.

The exercise implies the use of the game: „My girls”. The outline of four daughters is suggested: the cheerful one, the sad one, the scared one and the furious one. Each of the beneficiaries is asked to model in clay the four girls. In the end

they describe their works and can name each work with a name or a feeling. During these sessions the girls were made, coloring module being free choice.

Interpretation of models

M. started to use clay hitting it against a table, cutting it or stinging it with a tool. This is his mean of communicating his emotional state that he has, and, moreover, it unlocks his means of communication. Clay modeling helps him show his emotional state and to focus on himself forgetting about the problems he has. The beneficiary is charmed by the freedom of expression, his enthusiasm being revealed by the way that he handles the material, by his attitude, therapist encouraging his infantile manner of release. The spontaneous forms obtained by directing the movements are the ones that enable encouraging the act of creation.

During the two sessions, through this theme M. was initiated in the issues of the act of creation, thus developing his creativity and the aesthetic sense. Also, voluntary attention has been subject to a therapeutic educational process that is to be finalized by developing the spirit of order and discipline.

SESSION FIVE

The theme of this session was one focused on M.'s personal problems allowing him to express what happened to him some time ago.

"ME AND THE MONSTER" is an exercise of self-knowledge; it starts from the premise that each of us has got a beautiful part, but also an ugly part, that is a "monster" which sometimes appears and causes us a lot of problems.

PURSUED OBJECTIVES

- Developing communication skills;
- Development of creativity;
- Increase of self-esteem and self-knowledge;
- Communication, collaboration and group integration;
- Decrease in anxieties, frustrations, stress and tension release;
- Acceptance of group rules;
- Facilitation of spontaneity.

This fact allows the beneficiary:

- To develop strategies in order to resolve conflicts and issues within the framework of the group;
- To respect colleagues in the group;
- Facilitating freedom of manifestation, encouragement of expression;
- To reduce anxieties, to eliminate inhibitions and to release tensions;
- To integrate emotionally and physically in the group;
- To train his patience and to accept rules in the group.

Each member of the group will be asked to model in clay first a monster then a self-portrait. After they finish modeling, they are asked to find or to build a place for "monster" and one for the self-portrait. After modeling, M. is asked: "When does this monster appear?" A: "When I get angry...". "How does he look like?" A: "It is black, then it bursts into flame... it's bad". "What does it do?" A: "It hurts me". "Does it scare you?" A: "Yes, I'm hurt". "Is it friendly or not?" A: "No". "How is it?" A: "I wish it weren't on earth so that I could be quiet".

It is a role play, in which M. is asked to speak to "the monster". "The monster" can be modeled or an imaginary one. In this exercise the beneficiary is helped to change the monster and this only depends on his own wishes. Therefore he is invited to crinkle the monster's image and turn it into something he wishes.

Interpretation of the models

We proposed M. to render a "monster" by modeling technique and this way to project all his anxieties and frustrations out on that piece of clay. M. complied with the theme proposed by the psychotherapists and used appropriate techniques of work. He addressed himself appreciatively to the participants with regard to their models, establishing a balanced, harmonious relationship.

Through this topic, M. has been put into contact with his negative internal experiences, providing himself the possibility of change, with personal resources of expression and externalization of the aesthetic needs. He was encouraged in his therapeutic and ludic relationship by the psychologists and positive socialization with his colleagues.

SESSION SIX AND SEVEN

In this meeting we proposed the exercise "MODELS ROTATION" to encourage the compliance with some rules, development of self-control depending on the environmental conditions, i.e. the given theme.

PURSUED OBJECTIVES

- Increasing the capacity of cooperation within a group;
- Resistance to frustration and development of self-control;
- Respect for colleagues in the group;
- Formations of skills for intra-group connection;
- Develop skills for solving problems, conflicts;

This fact allows the beneficiary:

- To express his or her feelings, needs, emotions;
- To train frustration tolerance;
- To respect one another;
- To learn to work in a team;
- To develop management and solution strategies for conflicts and problems within the group;

- To develop the capacity to adapt to the needs and wishes of his group colleagues.

Members of the therapeutic group sit around a table. Each beneficiary may shape what he wants in front of him until group therapist says "STOP GAME!" Thereafter each member will give his model to his colleague on the right. For 5 minutes he will shape what he wants, then when therapist says "STOP! CHANGE!" and he will give the model he has to his colleague on his right.

Models go only in the same direction - right so that a model should get to all those present in the group.

Interpretation of the models

If at first M. was charmed by the opportunity to express his own feelings, this time, the idea of exchanging models put him in a difficult position because there were times when he tried to influence his colleagues not resuming what his colleagues started, but he expressed on those models his own feelings, ideas, emotions.

The exchange of work was perceived as being frustrating but on the way he learned that he had to deal with these changes in the situation, that they did not bring something bad or good, beautiful or ugly, but that it was just a joint work.

The acceptance of joint work for M. meant the acceptance of the group.

M. managed to observe the rules of the game activating his internal resources related to the ability to obey already established rules. Developing compositions stimulated personality traits associated with the ability of thought, thinking flexibility, fluency of ideas, sensitivity to problems, the spirit of observation, curiosity, self-confidence, the degree of independence in thought.

Meeting for the evaluation of therapeutic procedure

Taking into account the specific nature of the bio-psycho-behavioral profile of the present study case, we can say that the approach of art therapy (therapy of graphic expression) and ludo therapy represent some of the most appropriate therapeutic intervention strategies.

In the first meetings, we outlined a therapeutic framework based on openness, trust and empathy which make the introduction for the approach of personal difficulties and accessing appropriate resources to stimulate the latent abilities. Emotional investment had a securing protective role to meet the need for attachment obviously showed.

The dynamics of the following meetings can be regarded as being the therapeutic effect of previous meetings. The topics debated led to the discovery of new communication strategies and expression of personal needs, joys, rage, etc. In those meetings M. managed to concentrate and to maintain attention on a voluntary basis. He renounced oral aggressive manifestations marking as an alternative externalization to a different level of personal anger and discontent. He managed

successfully to comply with default rules in the external environment, receiving emotional gratification from the therapist. It represents a significant moment in the acquisition of self-control depending on the environmental conditions, to the detriment of impulsive manifestations.

The next sessions focused on activating positive inner emotions, encouraging development of aesthetic sensitivity and non-aggressive capacity to create interpersonal relationship with the ones in his proximity. The modeling language was explored by projecting a complex of emotions, affection, manifested acts, latent resources of the entire personality.

5. CONCLUSIONS

The Environment, as a factor of human development, is composed of the totality of elements with which the individual interacts, either directly or indirectly, in the course of his development. Although it appears as the main supplier of material that stimulates the hereditary potential, the environmental action, overall random, can be equally a chance to develop (an enabling environment), but also a brake or a blockage of the development (a hostile, unstimulated, insecure or alienating environment).

Such a situation, when the environment represents a brake or a blockage in the path of development, while the person remains far behind ordinary development parameters for a given age, is frequently met in the case of institutionalized adults.

In such situations, because of the limits imposed by a flawed institutionalized environment - generating stress and permanent affective frustrations – the personality is crippled, hard to be approached by psychotherapies.

In the previously exposed case, art therapy is the most accessible to the level of knowledge and development of the beneficiary.

We are making the mention that the therapeutic process is still ongoing, M. is participating in the art therapy sessions on a voluntary basis; currently he has many appreciated works. The results achieved in the sessions presented in this work were observed by the expert staff employed within the centre (psychologists, social workers, special education specialists, overseers), manifesting in his daily conduct: he has not presented any autolytic acts in the last two months, his presence in the dining room has not been a violent one and there have not been detected episodes of conflict in the relationship with his colleagues.

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PERCEIVED STRESS AND ANXIETY AMONG NURSES - AN ORGANIZATIONAL ANALYSIS

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Abstract

In the present paper we focused on highlighting the possible relations between the variables perceived stress and perceived anxiety level.

The hypotheses tested possible correlations between the perceived stress and age, perceived anxiety and self-perceived stress caused by the life events. Method: Participants were a number of 50 nurses with at least 3 years of specialty studies and a minimum of 3 months experience. The average age is 35 years (minimum 25, maximum 45 years). The instruments were: STAI Anxiety Inventory (State-Trait Anxiety Inventory) and The Social Readjustment Rating Scale. Applying the statistical tools in the way of testing the hypotheses, the hypotheses had been confirmed. Hence, nurses by their activities during the program face high level of perceived stress and anxiety.

Keywords: *perceived stress, perceived anxiety, life events.*

1. THEORETHICAL FRAMEWORK

The nature of work is changing with the speed of wind. Probably, now more than ever, the stress caused by the nature of the job poses a threat to the health of employees and the health of organizations. Fortunately, research into work-related stress has greatly expanded in recent years. But despite this attention, confusion remains in connection with the effects, causes and prevention of professional stress.

For the United Kingdom Health and Safety Commission (1999), work-related stress is the reaction of the person exposed to excessive pressure or requests of the environment in which he operates.

For the European Commission - the General Office for Employment and

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Social Affairs (Tihan, Ghiza, 2002), professional stress represents an emotional, cognitive, behavioral and physiological reaction to the aggressive and harmful aspects of labour specifics, the working environment and the organizational climate, a state characterized by high levels of distress and a feeling of helplessness in solving tasks. In an official document issued in 1999, the National Institute of Occupational Safety and Health of the U.S. defines professional stress as a set of physical and emotional responses that occur when demands do not match the capabilities, resources and needs, and that can lead to significant deterioration in health. Surveys from Organizational Environments in the U.S. and Western countries indicate an alarming increase in physical and mental health disorders due to work-related stress (Chruden and Sherman, 1984; Muchinsky, 2000; Rascle, 2001, apud Roth & Cohen, 2006).

In the US, mental disorders are identified among the top 10 professional diseases (National Institute of Occupational Safety and Health, 1988; apud Muchinsky, 2000, apud Vinay Joshi, 2005).

Gruy and Sackett (2003) have shown that there are professions that have an increased risk for a higher level of stress. In this regard, according to the authors, employees with high levels of stress are: teachers, nurses and social workers. Stora (1997) mentions several definitions of stress:

- stress as the force that produces a tension: it is an external stimulus, either physical (noise, heat, cold), or psychological (grief, sadness);
- stress is understood as the result of the action exercised by a stressor, physical, psychological or social agent on the health of a person;
- stress is at the same time the stress agent and the result of this action, in its various particular dimensions; this significance is retained in many works released after Selye's work (1979);
- stress is a defense of the psyche's functioning against sensory and motor stimuli.

Le Blanc, Jonge and Schaufeli (2000) propose the following typology of organizational stressors: content of work (toxic substances; precarious conditions: noise, vibrations, illumination, irradiation, temperature; work posture; dangerous situations; precarious hygiene, lack of means of protection); employment conditions; social relationships at work (poor, inefficient management; reduced social support, etc.).

Cooper, Dewe and O'Driscoll (2001) lists 6 types of stressors: the intrinsic characteristics of the work; organizational roles; labour relations; career development; organizational factors; human / work interface. Greenberg (1999) and Greenberg and Baron (1993) advance the idea of total distress of life.

2. OBJECTIVE AND HYPOTHESES

2.1. OBJECTIVE

In this research we wanted to analyze the influence of stress factors on the members of a medical department. That is why we considered it necessary to study a team of nurses from the County University Hospital "Sf. Spiridon" in Iasi. Taking into account the implications of nursing work, we considered that determining stress factors for most nurses and developing a strategy to reduce / eliminate them, we can optimize the work and mental well-being of employees.

2.2. HYPOTHESES

H1: We assume that younger nurses have a lower stress level than older nurses.

H2: We assume that there is a statistically significant correlation between nurses' age and perceived experience.

H3: We assume that there is a statistically significant correlation between perceived anxiety and self-perceived level of stress caused by life events.

3. METHOD

3.1. PARTICIPANTS

The research team consists of 50 nurses (study group) with at least 3 years of specialty studies and a minimum of 3 months experience. The average age is 35 years (minimum 25, maximum 45 years). With respect to the variable "sex", the structure of the study group is the following: 22 men and 28 women. As far as marital status is concerned, for women the proportion is 1/1, which means that for every unmarried woman there is one married. In men, the proportion of married persons is higher (a number of 14), the number of unmarried being 8. All employees are of the same nationality. Subjects are part of several sections. On the upper hierarchical line they are subordinated to the physicians and chief nurse, and the health care assistants are subordinated. Served sections are mixed (the patients being both women and men).

3.2. INSTRUMENTS

To achieve the objectives and demonstrate the research hypotheses, we have used the following methods: STAI Anxiety Inventory: State-Trait Anxiety Inventory (Spielberger, Gorsuch, Lushene et. all, 1983) and the Social Readjustment Rating Scale - SRRS (Holmes & Rahe, 1967).

We have applied this inventory to supplement stress tests that focus more on the external aspects of anxiety, while the STAI inventory only addresses psychological aspects. We have used this inventory in order to assess the state of

momentary anxiety that renders the intensity of the phenomenon (STAI Y-A) and the assessment of the anxious personality trait (STAI Y-B). The Inventory of State-Trait Anxiety (Spielberger, Gorsuch, Lushene et. All, 1983) is used to assess the anxiety state, built so that it can be completed by the subject himself. Even if the inventory was designed to measure anxiety, the evaluator must use this term in the discussion with the subject; he has to talk only about the self-evaluation questionnaire. The inventory consists of two separate parts that independently assess anxiety as personality traits (STAI Y-B) and anxiety as a state of moment (STAI Y-A). Applying the test correctly requires that the subject completes the first part of the inventory that has as aim the anxiety as a state of moment (STAI Y-A), so that the subject is not influenced by the responses he gives for the scale that aims the anxiety as personality traits (STAI Y-B). Each part of the inventory contains 20 questions, each question having four variants of response, depending on the intensity and frequency. For interpretation, a value of 1 to 4 is given to each item and items 1, 2, 5, 8, 10, 11, 15, 16, 19, 20 on the STAI Y-A scale and items 21, 23, 26, 27, 30, 33 on the STAI Y-B scale and the quote will be inversely from 4 to 1. The total score is made by summing up the scores of each item, the total value being between 20 and 80, the scores over 20 characterizing the clinical anxiety. Instructions for use are printed on the inventory, their understanding by the subject being essential. The questions only concern the psychological aspects of anxiety, and the somatic repercussions are not taken into account.

The Social Readjustment Rating Scale was built by psychologists Holmes and Rahe (1967); it consists of 41 items (life events) to which a certain score corresponds ranging from 0 to 100, 0 representing the non-existence of stressful events, and 100 representing a maximum bearable stress. The subject is asked to mark the events experienced in the last 12 months, and to sum up the values corresponding to them. The following results are obtained: easy life crisis: 150-199 points; moderate life crisis: 200-299 points; major life crisis: >300 points.

3.3. PROCEDURE

The instruments were applied after an informed agreement was previously completed. Application took place within the organization.

3.4. EXPERIMENTAL DESIGN

Independent variable: age of nurses;

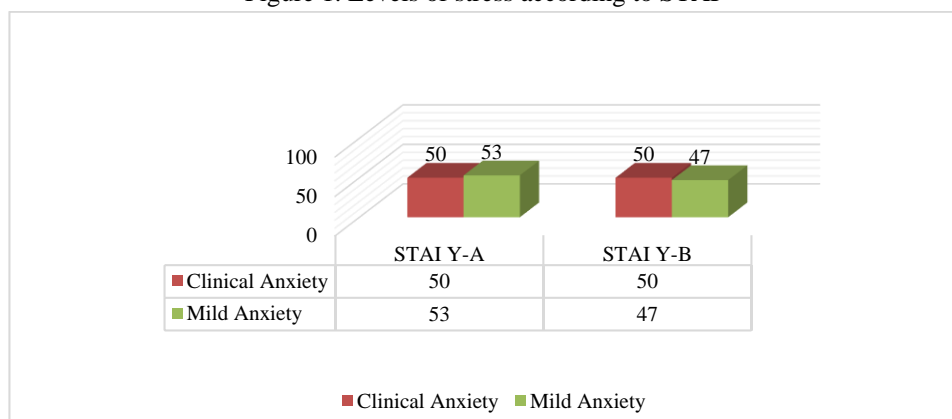
Dependent variables: perceived anxiety, perceived life events.

4. RESULTS

The first step in research was to measure the stress level in the group of selected nurses. This measurement was done using the STAI questionnaire of anxiety developed by Spielberger, Gorsuch, Lushene and collaborators (1983).

Analysing the individuals' collected data it can be seen that a large proportion of the subjects in the group of nurses show high levels of stress (psychological and somatic aspects). Once it has been established that there is a high level of stress, discussions with employees of the hospital followed. They were held in small groups (2-3 employees) and they had as purpose finding out discontent, problems and difficulties that nurses encounter in their work. As a result of these discussions an inventory of stress factors was made, which was afterwards subject to the attention of all employees and constituted support for differentiating the levels of stress present at employees (figure 1).

Figure 1. Levels of stress according to STAI



Along with preparing the inventory of stress factors, we also collected information on absenteeism, litigations, violent acts (verbal or physical), mistakes in professional activity, illnesses and work accidents occurred in 2013. The data are presented in table no. 1.

Table 1. Additional information about the nurses' activity-a synthetic presentation

Employee	Absent	Litigation	Violent Acts	Errors	Diseases	Accidents
Total	83	24	87	41	61	27

By correlating the data obtained from employees with the age variable, we found that younger nurses had lower stress levels than older nurses ($p < .05$) (H 3 confirmed), but on a deeper analysis, we realized that in fact the manifestation of

the stress is very well managed, the latent stress being very dangerous for their health.

The age variable is related to the professional experience (H2 is confirmed). As a result of this correlation, it has been noticed that a maximum level of stress is found in employees with a 3 year accumulated service. They have reached a level of saturation and are going through a phase of transition in which they have to learn to control their problems. This control is found in employees having 4-5 years tenure at work. Obviously, recently employed subjects have the highest level of anxiety and stress, probably due to social demands, the need for adaptation, external and internal criticism.

In order to track the intensity of the stress level, closely correlated with the probability of crises occurrence, we applied the Social Readjustment Rating Scale. The results show that, overall, there are no significant issues as far as it concerns the stress that has occurred due to the events of everyday life. Only 7.3% of employees face a major crisis, leading to an 80% probability of illness, according to the methodological guidelines mentioned by Holmes and Rahe (1967). Where there are moderate crises (21.6%), the chances of illness are 50%, and where mild crises occur, the chances of illness in the future are 35%.

5. CONCLUSIONS

All methods of assessment and measurement of stress can be used by managers in enterprises for the diagnosis and prevention of stress. Choosing the most effective and appropriate methods belongs to trained managers, knowing that decision-makers in enterprises have the "key" to the health of human resources in their organizations, although this has long been overlooked. Overworking the body due to excessive conscientiousness, care to others or pride, contributes to the premature and inefficient consumption of adaptation energy. This situation is damaging for that person but also for those around him, creating an unfavourable working climate. The solution can only be balanced use of all human potentialities so that the organization's performance to be maintained at a high level over the long term.

Persons found in a state of stress should be treated with patience, in order to have the chance to recover. Temporary relief from tasks, psychological counselling, for better time management, training in an exercise program, will help them recover better working capacity, with beneficial effects on them, but also on achieving the organizational objectives (Rizeanu, 2016). We do not deny that stress management programs are long-lasting. In time, however, the emphasis has to be shifted from the identification of tension and stress signals to prophylaxis, by preventing the employees' morale to be altered. We are convinced that in an economic climate vitiated by the problems of transition, managers in organizations

have a decisive role in creating a cooperative working climate where stress factors are reduced to the maximum.

Due to the fact that a large number of employees have expressed their dissatisfaction with the same issue, we can consider that the factors listed above represent active stress factors. Thus the stress reduction strategy will mainly focus on reducing them. The solution we have proposed is a combination of stress management with organizational change.

In the first phase, we recommend the development of specialization programs in which all employees participate one by one, with the purpose of broadening the perspective on the possibilities offered by work with patients.

Along with these courses, behavior can be changed within the institution by promoting friendly attitudes between doctors and nurses. They can start both from the head of the institution and from nurses. In this way, the image of doctors about nurses can be improved, and nurses can assess, diversify and develop their professional abilities.

Participating in the specialization courses offers the opportunity to interact with other professional backgrounds, leading to a re-assessment of the perception of their own professional activity. The assessment of this strategy can be done after at least 6 months, time required for the participation of at least a number of nurses in the specialization courses and the occurrence of the effects related to the less formal atmosphere due to behavioral changes. A form of assessment could be done through interviews.

To improve communication between nurses and physicians, besides the possibility of friendly relationships described above, meetings can also be held in which both nurses and physicians participate, where they can express their opinions.

An index of good communication is the extent to which the boss and subordinate agree on work issues and each is sensitive to each other's point of view. The parties may "agree to disagree" in some respects. These meetings aim to present more points of view and to highlight that they can lead to the expected results. The agreement between "parties" involves increasing confidence in the professionalism of others. Creating team spirit aims at increasing the efficiency of working teams by improving interpersonal relationships, clarifying objectives and roles (what does the team do and who is responsible for what?). It can thus facilitate communication and coordination.

The formation of team spirit usually starts with a diagnostic session, "often kept away from work, where the team examines its current level of functionality" (Sullivan & Bhagat 1992). Due to the fact that in our group the main factor of stress is the involvement in prolonged service activities, the need to hold these meetings away from the workplace is disadvantageous. Thus, the chosen solution was to conduct the diagnostic session within the institution during the weekly

meetings. The goal of this phase is to make the map of strengths and weaknesses of the team in its current condition. The result of these meetings was a list of changes needed to improve its functioning as such.

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