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Major affective distress in testing forensic paternity

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Abstract: *Background.* Starting from the most recent validated trans-theoretical approaches regarding dysfunctional negative emotions (depression, anxiety and affective-anxious lability), mediated by cognitive scheme and maladaptive cognitions, we aimed to investigate their part in the assessment and testing of forensic paternity, as well as the participative behavior of the tested individual.

Aim. Individual differences regarding adaptive or maladaptive participation in the assessment and testing of paternity in subjects with a profile of major affective distress.

Methods. The total sample of participants was 142N, of which 71N clinical (C) and 71N nonclinical (NC). The groups were divided into 50% male and 50% female subjects for both the clinical and non clinical groups. For the clinical group (C) we selected patients who were tested in order to assess paternity. The average age for both groups (C/NC) was 31, and the average educational level was 12.50 school grades. Subjects came from several locations in the country and had various ethnicities. The expert team consisted of scientific specialists and consultants in the field of forensic medicine, molecular and cellular biology, as well as psychology.

Outcomes. The test meets all statistic conditions regarding discriminant significance, result sphericity, homogeneity using the ANCOVA method for age and sex, as well as clinical-non clinical group discrimination.

Results. A number of N143 respondents took part in the research; of them, 50% were male and 50% female, with a mean of m=1.51 and a standard deviation of SD=0.51, as well as an average age of m=31.06 with a standard deviation of DS=8.33. The groups were divided into an experimental group (E) consisting of N71 subjects and a control group (C) of N71. Significant results were obtained in the t test for independent samples in the control group *vs*. the experimental group, with a mean of m=17.5528 and SD 2.34417, t-4.417, df 241.157, p 0.000.

Clinical implications. Developing relational and communication abilities in communicating with anxious and depressive patients who undergo paternity tests, in order to ensure better collaboration and to foster an adaptive behavior regarding the participation of individuals to forensic tests.

Strengths & limitations. This research did not include equal subgroups of gender and age for the clinical/non clinical samples, thus influencing the research variables.

Conclusion. Research results suggest that major affective distress in assessing and testing paternity leads to maladaptive behavior in the doctor-patient relationship, but also to non-compliant participation and other associated behaviors.

Key Words: forensic medicine, paternity test, emotional distress.

INTRODUCTION

Albert Ellis formulated the dual model of emotional states, dividing negative emotions into two large chapters – adaptive and dysfunctional negative emotions [1]. The functionality or dysfunctionality of a negative emotion is given by the subjective experience associated to that emotion, by associated cognitions and the behavioral consequences of said emotion. This cognitive pattern is based on qualitative differences which exist between emotions of the same value – difference given mainly by underlying thought processes – and not on intensity variations [2]. In other words, intense "sadness" cannot be called "depression", as the

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difference between the two feelings is given by specific beliefs determining them (e.g. rational beliefs for functional negative emotions and irrational beliefs for dysfunctional negative emotions). Subjective differences between functional and dysfunctional negative emotions were investigated in several studies; results indicate the existence of quantitative and qualitative differences between the two types of emotions [3].

The paternity test is a genetic test which establishes whether a man is the biological father of a specific child of foetus (when the mother is pregnant). The DNA test is the only certain method for determining degree of kinship. In order to perform the test, biological samples of the presumed father and of the child are required. Analyzing a sample taken from the mother increases the confidence level of the test, but is not compulsory.

In the laboratory, the work procedure is standardised and based on using last generation devices and commercial kits recognized in the scientific community [5]. In order to test paternity, by molecular methods, one of the techniques used is the DNA analysis which determines the HLA genotype (Human Leukocyte Antigen) used for the analysis of HLA class I and class II genes, based on the Polymerase Chain Reaction (PCR) method. The HLA system is a complex of genes encoding the proteins of the major histocompatibility complex (MHC), which is a polymorphic, multigenic and multi allelic complex. It is located on the short arm of chromosome 6 and represents the largest and most polymorphic region of the human genome.

Characterized by a high polymorphism, each gene in the HLA system has multiple alleles in population. The alleles represent alternative forms that a gene may have in the population, which differs in the nucleotide sequence (from the initial gene) and occupies the same locus on the chromosome. By determining HLA alleles, a genetic profile is generated for each person (presumed father, child). The profiles are compared, and correspondence is established for each marker (allele) [4].

MATERIAL AND METHODS

Participants

Participants, numbering N142, of which N71 were in the clinical group, from the Forensic Medicine Institute of Cluj-Napoca, Romania, undergoing forensic expertise for paternity testing, 50% female and 50% male with an average age of m=30.99 and SD=8.356. The non clinical group consisted of N71 participants selected based on the criteria of this research. Mosthad completed high school, 50% were female and 50% male, with an average age of m=30,33 and SD=8,425 (Table 1).

Procedure

Participant selection took place in the Forensic Medicine Institute of Cluj-Napoca. The participants were undergoing forensic testing either on request or upon the decision of a judicial authority. Other volunteer respondents were also selected to take part in the research. All those selected, in both groups (clinical, N71/non clinical, N71), were informed regarding the research, agreed to participate and signed an informed consent form. All had blood samples collected in order to establish paternity, and also completed the Affective Distress Profile test battery. After the two tests (biological and psychological) were completed, both paternity and psychological profiles were established in order to determine affective distress regarding the subjects' participation in the research. All data were processed and introduced into an SPSS database.

Work materials and instruments

The laboratory tests used in the Forensic Medicine Institute of Cluj-Napoca, as well as the Affective Distress Profile questionnaire, adapted and standardised for the Romanian population, were used as work materials. Statistical data analysis was performed using the online platform of IBM SPSS Statistics Subscription, Forecasting & Decision Trees, Authorized User Per Month, license, D1QWYLL and the SPSS software (Statistical Package for the Social Sciences) version 25.0 [6].

Hypothesis testing

A statistical hypothesis, sometimes named confirmative data analysis, is a hypothesis which can be tested based on observing a process which is modelled by a set of random variables [7]. Therefore, we assume that individuals undergoing paternity testing obtain significant scores in the affective distress test compared to individuals who have no paternity establishing issues.

RESULTS

The results below indicate a male and female intergroup/group/clinical/non-clinical mean of m=1.51 and a standard deviation of SD=0.502, meaning that result homogeneity was obtained without influencing the variables involved in the research (Fig. 1).

Table 1. Difference between the clinical and non-clinical groups

Group		Education		Age		Sex	
	N	M	SD	M	SD	M	SD
Clinical	71	12.50	2.361	30.99	8.356	1.50	0.500
Nonclinical	71	11.89	2.210	30.33	8.425	1.51	0.502
Total	142	12.195	2.285	30.66	8.390	1.505	0.501

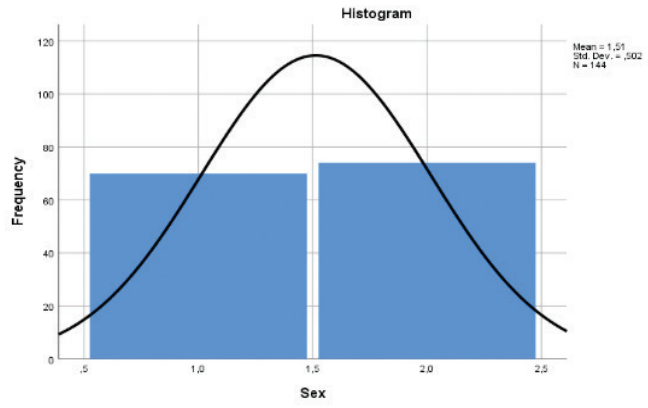

Figure 1. Mean and standard deviation of male and female sex groups.

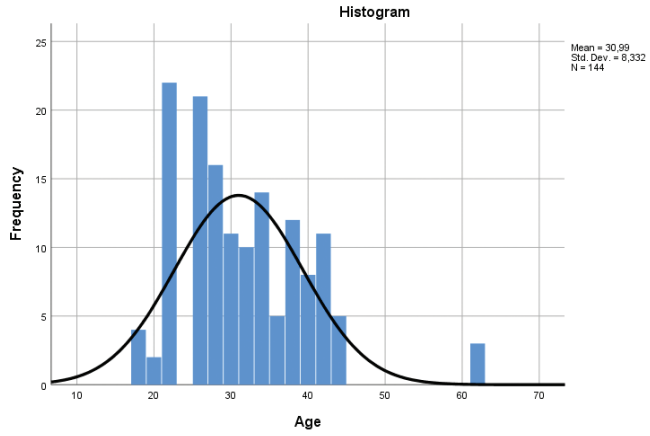

Figure 2. The mean and standard deviation of age in the two groups.

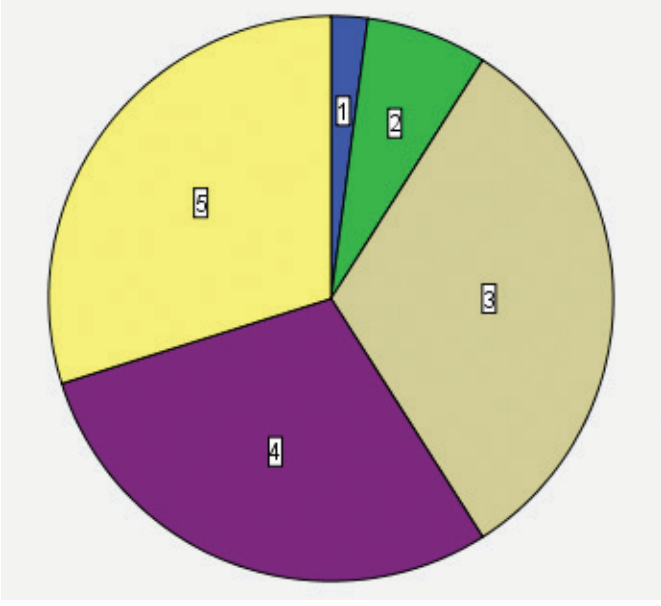

Figure 3. Experimental group.

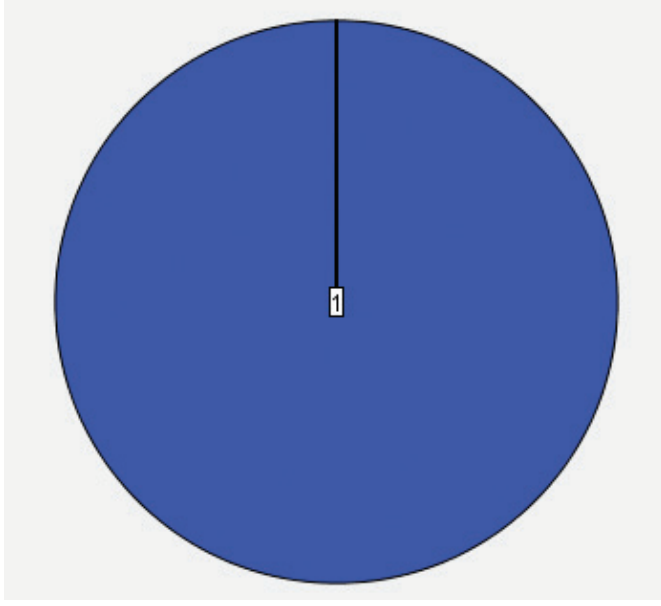

Figure 4. Control group.

Table 2. The two-way ANOVA method for the two groups

One-Sample Test

	Test Value = 0					
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference Lower	Upper
Exp	44.428	143	0.000	3.778	3.61	3.95

The results below indicate an intergroup/group/clinical/non-clinical age mean of m=30.99 and a standard deviation of SD=8.332 were obtained, this meaning that result homogeneity was obtained without influencing the variables involved in the research (Fig. 2).

The two graphs below show an intensity frequency (quotients) for the emotional distress profile in the clinical (experimental) group of 5, 4, 3 and 2 compared to the non-clinical 9 control) group, where scores are below 1. The compared scores can be seen in Figures 3 and 4.

Table 2 illustrates the results obtained when comparing the two independent score groups using the t test for the two groups (clinical – non-clinical), results which differ significantly. Statistic significance indicates the fact that the two groups differ to a sufficiently large extent so that the difference cannot be attributed to random factors which occurred during sampling [8]. For instance, t=44.428, m=3.778, with df=143 and a significant result of Sig. 0.000 were obtained.

Significant scores were also obtained in the two-way ANOVA method, indicating significance levels for the two variables (clinical-non clinical), the interaction between them, but also partial eta squared. Therefore, a ratio of F=309.906 with df=4 and Sig.=0.000 were obtained. The method used and the results obtained indicate a good randomized, discriminative and predictable study. The scores obtained for the two groups are listed in Table 3.

Table 3. Tests of between-subjects effects

Tests of Between-Subjects Effects						
Dependent Variable: Group						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	139.372[a]	4	34.843	309.906	0.000	0.899
Intercept	442.544	1	442.544	3936.137	0.000	0.966
Exp	139.372	4	34.843	309.906	0.000	0.899
Con	.000	0				0.000
Exp * Con	.000	0				0.000
Error	15.628	139	0.112			
Total	2180.000	144				
Corrected Total	155.000	143				

a. R Squared = 0.899 (Adjusted R Squared = 0.896).

DISCUSSION

From the total number of participants to this research, result homogeneity could be obtained in age and sex, which meant that these variables were not influenced or biased during data processing and statistic calculations. The male and female sex groups had a rather close score, even if the female score was one percent higher. Education level also did not distort research variables, meaning that studies are not a predictor of mental health.

Rather high scores were identified in the experimental (clinical) group regarding affective distress associated with paternity testing, both in males and in females. Compared to individuals who assumed their paternity of a child, those in the clinical group obtained significantly higher scores. Participants in the control group obtained very low scores in affective distress, this meaning that they had adopted an adaptive behavior, unlike the subjects in the clinical group.

For data accuracy, we used the t test as well as ANOVA for independent paired samples, in order to discriminate between participants in the experimental and control groups in paternity testing. Both methods indicated significant scores in clinical – non-clinical discrimination, good predictability regarding the emotional state of individuals undergoing paternity testing compared to individuals who assumed paternity, as well as between- group data correlation for sex and age [9].

We are reserved in implying that individuals undergoing paternity testing present major affective distress, due to certain pre-test limitations related to the use of other psychological tests for vulnerability and mental state. There are multiple studies which took into account the sensitive way of discriminating psychological vulnerability or mental state during assessment or testing, as well as the perception of paternity testing and cultural factors [10]. Mental multi factorialism plays a major part in this respect, and our approach may be limited given the psychological complexity involved.

Future studies can shed light on the adaptive or maladaptive behavior of individuals undergoing forensic paternity testing. We are interested mainly in the etiopathogenetic mechanisms underlying such maladaptive behaviors, as well as in the medical approaches which should be supported in the future in the case of patients with a profile of affective distress.

In conclusion, our research emphasized major affective distress in the case of patients undergoing paternity testing. The significant scores obtained by subjects in the Forensic Medicine Institute of Cluj-Napoca suggest a participant who adopts a maladaptive and opposing behavior, who is emotionally vulnerable because of irrational cognitions associated with a paternity test. We have also emphasized that rational cognitive processes can mediate an adaptive behavior accompanied by minimal affective distress (in the case of the control group) compared to those in the experimental group, where deviant cognitive processes were identified, dysfunctional negative emotions such as depression and the chronic fear that they may be unwilling parents.

The study also revealed the fact that an individual with a psychological vulnerability can outline a severe affective profile, with significant cognitive-behavioral consequences related to the outcome of the paternity test. The profile of chronic affective distress can deepen psychological or organic co-morbidity, which forces us to take into account the dangers these subjects face.

We believe that an educational/ psycho-educational intervention related to paternity testing and given during the pre-test stage is a priority, and the specialist must be trained in medical communication, as well as adopt a good doctor-patient relationship in order to stop and improve such emotional and affective conditions.

Conflict of interest. The authors declare that there is no conflict of interest.

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