Metacognition by gender: A pilot Study based on canonical correlation analysis

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Abstract

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Past studies have explored the relationship between metacognitions and psychopathology. Few studies has investigated the role of socio-demographic aspects in dysfunctional metacognitive beliefs. Moreover, there is a lack of studies that have examined these variables simultaneously. In this perspective, canonical correlation analysis (CCA) is theoretically coherent with the complexity of this field of research and with the aims of this study. Two group of 169 women and 137 men took part in this study and took a protocol including a measure of metacognition (MCQ-30), and various psychopathological measures to evaluate the following constructs: state anxiety (STAI X1), state trait (STAI X2), pathological worry (PSWQ) and obsessive-compulsive symptoms (PADUA). Two CCA was run on the basis of the gender differences. For each CCA, MCQ-30 subscales and socio-demographic variables were considered as predictor variables of the canonical function. The other instruments were considered as criterion variables of the canonical function. Results for group of men indicated that the most relevant criterion variable was the insufficient control of mental activities. The negative beliefs about uncontrollability and danger and the positive beliefs about worry were the strongest contributors to the predictor synthetic variable. Regarding the group of female, the most important criterion variable were the pathological worry and state anxiety. The negative beliefs about uncontrollability and danger was the most contributor to the predictor synthetic variable. Only for men, work had a role in the predictor synthetic variable. Educational and age did not show a role.

Keywords: Metacognition, canonical correlation analysis, anxiety, depression, gender.

1. Introduction

In the last years many studies have shown that there is a strong relationship between emotional processes, cognitions, metacognitive beliefs and behaviors (Brune, 2006). In this light, studies

underline the role of metacognition as "the aspect of information processing that monitors, interprets, evaluates and regulates the contents and processes of its organization (Wells & Purdon 1999)". The reason is that, as Wells and Matthews state (1994; 1996), dysfunctional metacognitive beliefs are the basis for the development and maintenance of psychological disorders. Evidence from several studies in both clinical and non-clinical samples highlighted the role of dimensions of metacognition as vulnerability factors in predicting development of psychological symptoms.

Regarding clinical group, empirical research in this area shows relationships between dysfunctional metacognitive beliefs and the following: generalized anxiety disorder (Wells & Carter 2001; Wells 2007), social phobia (Wells & Carter 2001; Wells 2007), panic disorder (Wells and Carter 2001; Wells 2007), obsessive-compulsive symptoms (Wells and Papageorgiou 1998), hallucination-prone subjects (Larøi, Van der Linden, & Marczewski, 2004), predisposition to hallucinations (García-Montes, Cangas, Pérez-Álvarez, Fidalgo, & Gutiérrez, 2006), anorexia nervosa (Cooper, Grocutt, Deepak, & Bailey, 2007), schizophrenic subjects with hallucinations (Perona-Garcelàn et al. 2011), patients with severe auditory verbal hallucinations (van Oosterhout, Krabbendam, Smeets, & van der Gaag, 2012), distress associated with auditory verbal hallucinations (Hill, Varese, Jackons, & Linden, 2012), stress sensitization in individuals at ultra-high risk of developing psychosis (Palmier-Claus, Dunn, Taylor, Morrison, & Lewis, 2013), and outpatients with gastrointestinal disorders (Aszalos 2008; Lenzo, Buccheri, Sindorio, Belvedere, Fries, & Quattropani, 2013), and symptom severity in chronic fatigue syndrome (Maher-Edwards, Fernie, Murphy, Wells, & Spada, 2011).

Moreover, other studies have explored the role of metacognitions in non-clinical samples. In this perspective, metacognition was found to be positively and significantly correlated with both perceived stress and negative emotion, such as anxiety and depression (Spada, Nikčević, Moneta, & Wells, 2008). Metacognition also predicted the development of anxiety and depression symptoms in the context of life-stress (Yilmaz, Gençöz, & Wells, 2011).

In addition, Spada et al. (2008) found that negative beliefs about worry concerning uncontrollability and danger was the strongest predictor for both anxiety and depression. The results of this study also revealed that cognitive confidence, beliefs about the need to control thoughts, and cognitive self-consciousness predicted (although weakly) depression but not anxiety. It is important to underline that all these empirical study are based on a psychological theory regarding metacognition. According to Wells (2000, 2007 and 2009), vulnerability and psychological maintenance are associated with a non-specific style of thinking that is the cognitive-attentional syndrome (CAS). In fact, CAS consists of positive beliefs about worry, negative beliefs about worry concerning uncontrollability and danger, and cognitive resource limitations and beliefs about the need to control thoughts. Wells constructed a metacognitive theory for emotional disorders, and also developed self-reporting instruments for assessing dysfunctional beliefs. For example, the metacognitions questionnaire (MCQ; Cartwright-Hatton & Wells 1997) and its short version (MCQ-30; Wells and Cartwright-Hatton 2004) both are measures for a range of metacognitive beliefs and processes relevant to vulnerability and maintenance of emotional disorders. In particular, MCQ-30 was translated into Turkish (Tosun & Irak 2008), Greek (Typaldou, Nidos, Roxanis, Dokianaki, Vaidakis, & Papadimitriou, 2010), Korean (Cho, Jahng, &

Chai, 2012), Spanish (Ramos-Cejudo, Salguero, & Cano-Vindel, 2013) and Italian (Quattropani, Lenzo, Mucciardi, & Toffle, 2014).

Regarding the impact of anxiety and depression, studies based on metacognition theory did not take account the role of gender. Substantial evidence indicates that women report greater fear and are more likely to develop anxiety disorders than men (McLean & Anderson 2009). In this perspective, a recent study has examined whether the relation between emotion dysregulation and anxiety is the same for male and female in the age of 9-16 years (Bender, Reinholdt-Dunne, Esbjørn, & Pons, 2012). The results indicated that participant's age did not have an impact on anxiety scores.

On the other hand, fewer men than women are diagnosed with depression. The lower reported rates may be due to the widespread use of generic diagnostic criteria that are not sensitive to depression in men (Oliffe & Phillips 2008). Moreover, past studies had tested the hypothesis that gender differences in depression rates are a function of gender differences in comorbid anxiety disorders (Simonds & Whiffen 2003).

The biopsychosocial model is the best approach to understanding this complex disorders in all its many facets (Robbins, 2006). At this regard, a recent study explore the relation between socioeconomic characteristics and mental health (Albor, Uphoff, Stafford, Ballas, Wilkinson, & Pickett, 2014). Statistical analyses that do not take account the interactions between psychosocial variables is a common limit of these studies.

In this perspective, the focus of this area of research concerned the link between psychological theory and statistical methods. On one hand, many studies have explored the role of metacognitions in the emotional disorders and with different groups. On the other hand, standard statistical methods employed often fail to take account the complexity of metacognition and his relate aspects. Indeed, standard statistics tells us how to analyze data on single variables, much of the interest in the field of psychological research lies in the interrelationships between many variables. So, it is very important to choose a statistical technique that is theoretically coherent with the purpose of the research. In this light, we use the technique of the canonical correlation analysis (CCA) to explore relationship between metacognitions and other aspects of psychological functioning simultaneously (Sherry & Henson, 2005) considering, in addition, the role of gender and some socio-demographic variables. In order to do this, in the next section we will give a brief outline of the methodology of the analysis of canonical correlation, in Section 6 we explain the methods and tools used with particular reference to the questionnaire, while in section 7 we present the main results obtained in this research by applying the CCA separately for both genders of the interviewees.

2. Canonical Correlation Analysis

As we know, CCA is a popular multivariate statistical method which allows the analysis of the relationships that exist between two sets of variables (Hotelling, 1936). CCA determines a set of canonical variates, orthogonal linear combinations of the variables within each set that best explain the variability both within and between sets. This method has been applied to diverse fields that range from ecological studies (Gittins, 1985) to human geography (Clark, 1975). In the last few years the capability of CCA has been challenged by new datasets that have appeared in fields such a

bioinformatics and biostatistics. In the CCA analysis, for convenience, the variables in the first set are called "criterion" or "dependent" variables and the variables in the second set are called "predictor" or "independent" variables. To evaluate the simultaneous relationship between several predictor and several criterion variables, the observed variables in each set must somehow be combined together into one synthetic (also called unobserved or latent) variable. These synthetic variables are created in CCA by applying a linear equation to the observed predictor variables to create a single synthetic predictor variable and another linear equation to the observed dependent variables to create a single synthetic criterion variable. The bivariate correlation between the two canonical variates is the "canonical correlation". The number of possible canonical variates, also known as canonical dimensions, is equal to the number of variables in the smaller set. In addition Wilks's lambda is commonly used to test the significance of CC. Generally, with regard to the interpretation of the analyzes are used two instruments: the standardized canonical coefficients (SCC) and the canonical loadings (CL). When the variates have been standardized, the standardized canonical coefficients are comparable with beta-weights from a multiple regression analysis. They serve to transform the original variables in such a way as to obtain a maximum correlation between predictor and criterion sets of variates. Instead, the canonical loadings are the correlations of a canonical variable with an original variable in its set. That is, it is the correlation of canonical variable scores for a given canonical variable with the standardized scores of an original input variable. The table of structure correlations is sometimes called the factor structure. The Canonical structure coefficients also form the basis for two other canonical coefficients (Thomson, 1984). The sum of all of a variable's squared structure coefficients (SCL) equals a canonical communality coefficient (h^2). These values indicate what proportion of each variable's variance is reproducible from the canonical results. Instead, the mean of all the squared structure coefficients for the variables in one set with respect to one function represents the adequacy coefficient (AC). Finally, multiplying the adequacy coefficient by the square of the canonical coefficient we obtain the canonical redundancy (Red) in each set. Regarding these coefficients for more details see Gregory et al. (2010), Thomson (1984) and Afifi et al. (1997).

3. Problem statement

Many studies has examined the link between metacognitions and other psychosocial variables. However, a common limit of these studies is that do not take account the interactions between variables. In fact, standard statistical analysis methods employed often fail to take account the complexity of metacognition and his relate aspects.

4. Purpose of the study

This study had two primary goals. The first was to explore relationship between metacognitions and other aspects of psychological functioning simultaneously.
The second goal of this study was to explore the role of gender and some socio-demographic variables.

5. Research questions

The following research questions were formed based on the need to better understand the role of metacognition and other variables simultaneously.

- What are the specific and simultaneous associations between metacognitive beliefs, anxiety, pathological worry, and obsessive-compulsive symptoms?

- What is the evidence for the role of metacognitions and other aspects of psychological functioning on the basis of gender?

- What is the role of some socio-demographic variables in the psychological functioning on the basis of gender?

6. Research Methods

6.1 Participants

A convenience sample took part in this study on a voluntary basis, without any form of compensation, either financial or other. Three hundred and six participants completed the MCQ-30 Italian version as a part of a battery of measures described below, to evaluate the concurrent validity of MCQ-30 factors. All participants were living in Southern Italy and the mean age was 32.5 years (s.d. = 15.84; range = 18-85), and the level of education in years was 14.22 (s.d. = 2.71; range = 5-18). The sample consisted of 169 women and 137 men. More than half of the sample were students (56%) and the remaining part were employees.

6.2 Measures

The *Metacognitions Questionnaire 30* (MCQ-30; Wells & Cartwright-Hatton 2004; Quattropani et al. 2014) is a 30 item self-report questionnaire, which measures a range of metacognitive beliefs and processes relevant to vulnerability and maintenance of emotional disorders. The items are rated on a 4-point scale from 1 *('do not agree')* to 4 *('completely agree')*. The items are grouped into five subscales, as in the original version (Cartwright-Hatton & Wells 1997). Factorial analysis has shown the presence of five factor (Wells & Cartwright-Hatton 2004): cognitive confidence, which measures confidence in attention and memory *(Cognitive confidence*, CC); cognitive self-consciouness, which measures the tendency to monitor one's own thoughts and focus attention inward (*Cognitive self-consciouness*, CS); positive beliefs about worry, which measures the extent to which a person thinks that perseverative thinking is useful *(Positive beliefs*, PB); negative beliefs about worry concerning uncontrollability and danger, which assess the extent to which a person thinks that perseverative thinking is uncontrollable and dangerous (*Uncontrollability and danger*, UD); beliefs about the need to control thoughts, which assesses the extent to which a person believes that certain types of thoughts need to be suppressed (*Need to control thoughts*, NCT).

The *State-Trait Anxiety Inventory* (*STAI;* Spielberger, Gorsuch, & Lushene, 1970; Spielberger et al. 1983) is a measure of general trait and state anxiety. Each subscale is composed of a 20-item measure scored on a 1-4 response scale.

The *Penn State-worry questionnaire* (*PSWQ*; Meyer, Miller, Metzger, & Borkovec, 1990; Morani, Pricci, & Sanavio, 1999) is a 16-item measure of trait pathological worry.

The *Padua Inventory Washington State University Revision* (Sanavio 1988; Burns, Keortge, Formea, & Sternberger, 1996) is a measure of five categories of obsessive-compulsive symptoms. Subscales include: obsessional thoughts about harm to oneself or others; obsessional impulses to harm oneself or others; contamination obsessions and washing compulsions; checking compulsions; and dressing/grooming compulsions. All the measure had good psychometric properties.

6.3 Procedure

The study was based on a protocol including the Italian version of MCQ-30, the measures of convergent validity and a questionnaire with socio-demographic data. Participants were told by the researchers that all data would be treated confidentially and only for research purposes. Before the beginning of the study, all participants gave written consent.

7. Findings

7.1 Summary of canonical solutions

CCA was used to analyze the data by using dysfunctional metacognitive beliefs and socio-demographic aspects as independent variables and some psychopathological symptoms as dependent variables. As mentioned above, sample was dividend for gender and two pairs of significant canonical variates were generated in the CCA (see table 1 and 2). The first pair of canonical correlation coefficient was found to be 0.75 (F = 3.14; p<0.001). The second pair of canonical correlation coefficient was found to be 0.49 (F = 1.52; p=0.005) (table 1). Regarding the group of women, the first pair of canonical correlation coefficient was found to be 0.81 (F = 4.26; p<0.001). The second pair of canonical correlation coefficient was found to be 0.47 (F = 1.52; p=0.013) (table 2). Therefore, these two pairs of canonical variates for each gender were reserved for further inspection. All the estimates are performed using the command syntax "Manova" in SPSS ver. 19.

7.1.1 Group of men

Table 1 shows canonical solution for functions 1 and 2 for men (n = 137). In the first pair of canonical variates (CVs), predictors set extracted 27.27 per cent from its variables and criterion set extracted 46.37 per cent from its variables. In the second pair of CVs, predictor set extracted 9.86 per cent from its variables and criterion set extracted 8.15 per cent from its variables.

Regarding the Function 1 coefficients, the most relevant criterion variable was the PADUA I (CL = 0.91), that is the Insufficient control of mental activities. In fact, the squared structure coefficient of PADUA I was 82.64 percent. However, other criterion variables had an important role to the synthetic criterion variable, as the PADUA V, PSWQ, and STAI X2 Form variables with canonical loadings (CL) values, respectively, of 0.74, 0.73, and 0.71. In Table 1 it can be noticed that these results were supported also by the standardized canonical coefficients (SCC) and square of canonical loadings (SCC). Nevertheless, a slight exception involves the PSWQ, which had small SCC but large CL.

Correlation analysis between criterion variables showed high coefficients between PADUA I and PSWQ. Moreover, PADUA I showed high correlation coefficients with other criterion variables. It is possible to hypothesized that these results are due to multicollinearity between PADUA I and these criterion variables. On the other hand, PADUA IV variable had a secondary contribution to the synthetic criterion variable with a CL of 0.49 and SCC of 0.36. The other side of the equation on Function 1 involves the predictor set. Table 1 shows that the Negative beliefs about uncontrollability and danger (CL = 0.75) and the Positive beliefs about worry (CL = 0.73) were the primary contributors to the predictor synthetic variable. Both predictor variables had a SCL more of 50 percent and a SCC, respectively, of 0.34 and 0.42. Instead, the Cognitive self-consciousness showed a secondary contribution to the predictor synthetic variable with a SCC value of -0.08 and a CL value of 0.28.

Regarding socio-demographic variables, all of these variables' structure coefficients had the same sign, indicating that they were all negatively related. However, only work showed a role in the predictor synthetic variable with a SCC value of -0.30 and CL value of -0.47.

Table 1 shows also the Function 2 coefficients for the criterion set and predictor set.

Table 1. Canonical solution for Functions 1 and 2 (Men)

	Function 1 (Wilks L = 0.23008 p<0.001) F=3.14			Function 2 (Wilks L = 0.53432 p=0.005) F=1.66			
CC	0.75			0.49			
Criterion set	SCC	CL	SCL	SCC	CL	SCL	h^2(%)
STAI X1 FORM	0.06	0.49	23.87%	-0.52	-0.48	23.02%	46.89%
STAI X2 FORM	0.21	0.71	51.10%	-0.37	-0.34	11.89%	62.99%
PSWQ	0.04	0.73	53.09%	-0.52	-0.30	8.91%	62.00%
PADUA I	0.59	0.91	82.64%	1.12	0.16	2.69%	85.33%
PADUA II	0.38	0.67	45.29%	-0.28	0.04	0.15%	45.44%
PADUA III	-0.09	0.65	42.83%	-0.59	-0.20	3.84%	46.67%
PADUA IV	-0.49	0.42	17.81%	-0.13	0.24	5.95%	23.75%
PADUA V	0.36	0.74	54.30%	0.70	0.30	8.79%	63.10%
AC		46.37%			8.15%		
Red		26.37%			1.98%		
Predictor set	SCC	CL	SCL	SCC	CL	SCL	h^2(%)
CCO	0.25	0.51	26.10%	0.66	0.48	23.52%	49.62%
POS	0.42	0.73	53.61%	-0.37	-0.12	1.33%	54.94%
CSC	-0.08	0.28	7.75%	0.72	0.52	27.15%	34.90%
NEG	0.34	0.75	56.34%	-0.25	-0.24	5.74%	62.08%
NC	0.27	0.64	40.57%	-0.23	0.01	0.00%	40.58%

Age	0.01	-0.17	2.79%	-0.50	-0.43	18.07%	20.87%
Education	-0.09	-0.29	8.54%	-0.04	-0.03	0.06%	8.60%
Work	-0.30	-0.47	22.45%	0.05	-0.17	3.03%	25.48%
AC		27.27%			9.86%		
Red		15.51%			2.40%		

Legend: CC = Canonical Correlation; SCC = Standardized Canonical Coefficients; CL = Canonical Loadings; SCL = Square of Canonical Loadings; AC = Adequacy Coefficient; Red = Redundancy ; h^2 = Communality Coefficient; CCO = Cognitive confidence; POS = Positive beliefs about worry; CSC = Cognitive self-consciousness; NEG = Negative beliefs about uncontrollability and danger; NC = Need to control thoughts; STAI-X1 = State-Trait Anxiety Inventory – X1 Form; STAI-X2 = State-Trait Anxiety Inventory – X2 Form; PSWQ = Penn State Worry Questionnaire; PADUA I = Insufficient control of mental activities; PADUA II = Come contaminated; PADUA III = Control behaviors; PADUA IV = Impulses and worries about losing control of one's own motor behaviors; PADUA V = Compulsions in dressing and washing oneself.

7.1.2 Group of women

Table 2 shows canonical solution for functions 1 and 2 for women (n = 169). In the first pair of CVs, predictors set extracted 23.32 percent from its variables and criterion set extracted 46.89 per cent from its variables. In the second pair of CVs, predictor set extracted 8.03 per cent from its variables and criterion set extracted 9.34 per cent from its variables.

Regarding the Function 1 coefficients, the most relevant criterion variable were the pathological worry (CL = 0.86) and the state anxiety (CL = 0.84). This conclusion was supported mainly by the SCL, which indicated more of 70 percent of variance that contribute to the synthetic criterion variable. Moreover, also the PADUA I variable, that is the insufficient control of mental activities, had an important role with a CL value of 0.79 and a SCL of 62.74 percent. On the other hand, PADUA I in the group of women had large CL but irrelevant SCC.

The PADUA IV variable, that regards the impulses and worries about losing control of one's own motor behaviors, had a secondary role in the group of women with a SCC value of 0.10 and a CL value of 0.28. Regarding the predictor set, it can be noticed that the negative beliefs about uncontrollability and danger was the most contributor to the predictor synthetic variable (CL = 0.96). This predictor variable had also a SCC value of 0.85 and it contributed with a SCL value of 91.46 per cent.

Differently from the group of men, socio-demographic variables did not contribute to the predictor synthetic variable.

Table 2. Canonical solution for functions 1 and 2 (Woman)

	Function 1			Function 2			
	(Wilks L = 0.21194 p<0.001)			(Wilks L = 0.62906 p=0.013)			
	F=4.26			F=1.52			
CC	0.81			0.47			
Criterion set	SCC	CL	SCL	SCC	CL	SCL	h^2(%)
STAI X1 FORM	0.04	0.59	34.33%	-0.52	-0.45	20.23%	54.57%
STAI X2 FORM	0.44	0.84	71.27%	-0.50	-0.39	15.35%	86.62%
PSWQ	0.35	0.86	73.19%	0.65	0.18	3.32%	76.50%
PADUA I	0.04	0.79	62.74%	-0.75	-0.07	0.49%	63.24%
PADUA II	0.31	0.65	42.74%	0.16	0.32	9.94%	52.67%
PADUA III	0.13	0.66	43.60%	0.68	0.45	20.11%	63.71%
PADUA IV	0.10	0.28	7.86%	-0.11	-0.19	3.67%	11.53%
PADUA V	-0.08	0.62	38.36%	0.39	0.07	0.47%	38.83%
AC		46.89%			9.34%		
Red		31.01%			2.09%		
Predictor set	SCC	CL	SCL	SCC	CL	SCL	h^2(%)
CCO	0.04	0.35	12.24%	-0.23	-0.10	1.03%	13.26%
POS	0.23	0.53	27.62%	0.73	0.44	18.94%	46.56%
CSC	-0.02	0.37	13.70%	0.53	0.33	10.90%	24.61%
NEG	0.85	0.96	91.46%	-0.24	-0.11	1.30%	92.76%
NC	0.03	0.57	32.43%	-0.64	-0.18	3.15%	35.58%
Age	-0.02	0.07	0.52%	0.74	0.43	18.77%	19.29%
Education	-0.14	-0.28	7.85%	-0.14	-0.17	2.92%	10.76%
Work	-0.06	-0.08	0.66%	-0.06	-0.01	0.01%	0.67%
AC		23.32%			8.03%		
Red		15.42%			1.80%		

Legend: CC = Canonical Correlation; SCC = Standardized Canonical Coefficients; CL = Canonical Loadings; SCL = Square of Canonical Loadings; AC = Adequacy Coefficient; Red = Redundancy ; h^2 = Communality Coefficient; CCO = Cognitive confidence; POS = Positive beliefs about worry; CSC = Cognitive self-consciousness; NEG = Negative beliefs about uncontrollability and danger; NC = Need to control thoughts; STAI-X1 = State-Trait Anxiety Inventory – X1 Form; STAI-X2 = State-Trait Anxiety Inventory – X2 Form; PSWQ = Penn State Worry Questionnaire; PADUA I = Insufficient control of mental activities; PADUA II = Come contaminated; PADUA III = Control behaviors; PADUA IV = Impulses and worries about losing control of one's own motor behaviors; PADUA V = Compulsions in dressing and washing oneself.

8. Conclusion

Many studies have shown the role of dimensions of metacognition as vulnerability factors in predicting development of psychological symptoms. Hoverer, there is a lack of study that explore relationship between metacognitions and other psychological aspects simultaneously. At this regard, CCA is a multivariate technique theoretically coherent with this purpose. Moreover, no studies has explored the role of socio-demographic aspects and gender differences. Regarding the gender differences, results of CCA showed two different canonical functions. For the group of male, the most relevant criterion variable was the insufficient control of mental activities. On the other hand, the impulses and worries about losing control of one's own motor behaviors had a secondary contribution to the synthetic criterion variable. Instead, the negative beliefs about uncontrollability and danger and the positive beliefs about worry were the strongest contributors to the predictor synthetic variable. Finally, work as social aspect, had a role in the predictor synthetic variable when taken simultaneously with dysfunctional metacognitive beliefs. Education and age did not show a role in the predictor variables. Regarding the group of female, results of CCA were different. The most important criterion variable were the pathological worry and the state anxiety. The impulses and worries about losing control of one's own motor behaviors had not a role in the criterion variable. The negative beliefs about uncontrollability and danger was the most contributor to the predictor synthetic variable. Differently from the group of male, socio-demographic variables had not a role in the predictor synthetic variable. However, we believe that the results obtained should also be carefully evaluated in relation to the empirical nature of the study and the territorial context. From a statistical point of view, it is necessary to improve sample recruitment and composition. In particular, it is important to extend the research to different age classes and countries. Findings of these research can improve the clinical efficacy of psychotherapy. The preliminary results of this research point out that specific variables taken simultaneously can influence symptomatology aspects of subjects.

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