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COGNITIVE BEHAVIORAL STRATEGIES AND INTERVENTIONS FOR STRESS MANAGEMENT IN PARENTS OF CHILDREN WITH INTELLECTUAL AND MULTIPLE DISABILITIES

DOCTORAL THESIS

RESUME

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Chapter 1

The first chapter of this paper presents a synthesis of the theories of the mechanisms of distress, of parental distress and of the distress of parents with children who have intellectual and multiple disabilities. This part is essential for selecting the mechanisms and the factors which can be synthesized in a model of parental distress that can guide the development of new interventions for stress reduction. Due to the complexity of the area of distress the foundation of the mechanisms involved in triggering and maintaining distress are based on multiple sources. Thereby, the general models of distress proposed for explaining parental distress reactions are reviewed, such as the general adaptation syndrome, the life events paradigm, the daily hassles model, the cognitive models and the integrative models of distress. From the cognitive models of distress the following are presented: the Rational-Emotive Behavioral Therapy Model, Beck's Cognitive Model, the Levels of Cognition Model and Lazarus's Appraisal Theory. From the integrative models applied to parents of children with special needs, the Double ABCX Model and the Formal and Informal Support Model were analyzed.

These models present the main factors considered as mechanisms that trigger and maintain parental distress. The underlined models are reinforced by the cognitive mechanisms demonstrated by studies which investigated the distress of parents of intellectual and multiple disabilities.

Next, the studies investigating cognitive factors involved in the vulnerability to distress of parents who have children with intellectual and multiple disabilities are reviewed. Studies show that self esteem and parenting self-efficacy, parental attributions, beliefs related to control on the children's behavior, evaluative beliefs, metacognitions and positive beliefs are the central cognitive factors for the vulnerability to distress of parents of children with intellectual and multiple disabilities.

The models that cognitive-behavioral interventions are based on represent an important source for the clarification of the mechanisms of parental distress, but also for the development of interventions aimed at reducing it. Studies that tested cognitive-behavioral interventions on their efficacy in reducing the distress of parents of children with intellectual and multiple disabilities are presented. Next, the paper describes studies and interventions applied in the reduction of the distress of parents of children with intellectual and multiple disabilities and their conclusions.

Several conclusions regarding the implementations of cognitive-behavioral interventions aimed at reducing the distress parents of children with intellectual and multiple disabilities are drawn. These conclusions emphasize that cognitive-behavioral intervention is efficient, but further clarifications regarding the long term maintaining of the effects, the assessment of the clinical significance and maintaining the effects when using a control group for controlling the non-specific mechanisms of the interventions are needed. Moreover, there are no studies that indicate which are the mechanisms involved in reducing distress, which are the factors that influence the effect of the interventions and what is the effect of enhancing protective factors within interventions (Hastings and Beck, 2004).

In the following section of the first chapter two important sources related to the basis of the mechanisms involved in reducing distress and evidence based interventions are presented: cognitive-behavioral interventions in General Anxiety Disorder and Depressive Disorder and the advanced theoretical and practical developments with implications on the cognitive model of distress.

Cognitive-behavioral interventions applied in reducing General Anxiety Disorder and worry, a common feature of distress symptoms in parents of children with special needs are presented on two levels: a) cognitive-behavioral models of the anxiety symptoms which emphasize the mechanisms that generate and maintain anxiety, and b) intervention strategies and techniques for reducing anxiety that suggest solid methods of distress reduction. It is concluded that the central feature of anxiety is uncontrollable worry about several aspects of the personal, social and professional life. Cognitive-behavioral intervention has received substantial empirical

support in treating generalized anxiety. The cognitive-behavioral interventions consists of relaxation techniques, the modification of positive and negative metacognitions, the modification of automatic negative beliefs of overestimation of the likelihood that threatening events will occur, the modification of catastrophic beliefs and the appraisal of the emotion-focused and problem-focused coping potential, the practice of cognitive modifications in vitro or exposure to worries, the control of avoidance and reassuring behaviors, time management and assertive training. For parents it is important that cognitive-behavioral intervention packages include these components that aim at reducing anxiety.

Depressive features have been constantly identified as emotional manifestations of distress in parents of children with intellectual and multiple disabilities (Singer, 2006). Moreover, depressive symptoms have been considered in several studies as markers of distress which was often conceptualized as depressive manifestations assessed by common instruments such as Beck Depression Inventory (Singer et al., 2007). Meta-analyses on emotional features have found depressive features as one of the major problems of parents of children with intellectual and multiple disabilities, especially of mothers (Singer et al., 2007). Changing depressive features is more important, as their occurrence has been associated with the use of explosive and aggressive discipline methods, as well as with serious health problems for mothers of children with intellectual and multiple disabilities (Singer, 2006).

Furthermore, models of cognitive-behavioral interventions and strategies used to reduce depression are presented. Thus, the main cognitive-behavioral models of depression are described, as well as intervention strategies and techniques for reducing depression that suggest solid methods of reducing the distress of parents with children with intellectual and multiple disabilities.

An emphasis is put on cognitive vulnerabilities that maintain depression and that can occur in parents of children with intellectual and multiple disabilities and in intervention techniques for reducing distress. Although the modification of depression in parents of children with intellectual and multiple disabilities appears to be the aim of cognitive-behavioral interventions (Beck and Hastings, 2004; Singer et al., 2007), they do not include techniques for

changing important factors such as metacognitions or the acceptance of emotional manifestations, factors that are specified in recent models that explain depression.

In most of the psychological intervention protocols demonstrated to reduce depressive manifestations, the intervention includes a combination of several of the following components: behavioral activation, changing metacognitions about rumination, modification of automatic negative thoughts and subsequently of assumptions and negative schemata. Behavioral activation plays two roles: increasing the reward rate and modifying negative automatic thoughts. This is done according to the specific problems of the parent. Cognitive modifications are made through two types of strategies: verbal and behavioral through behavioral experiments. Thus, it is important that the modification of depressive symptoms in parents of children with intellectual and multiple disabilities also includes interventions that are part of intervention packages validated in reducing depression: behavioral activation, changing metacognitions about rumination, modification of automatic negative thoughts and subsequently of assumptions and negative schemata.

The last part of Chapter 1 consists of a review of the implications of the applied behavioral developments on the mechanisms of parental distress. Namely, the implications of contextual functionalism, research on metacognitive factors, perceptual theories on cognitions and of positive factors involved in resilience.

The major implications of contextual functionalism and the derived application Acceptance and Commitment Therapy for the cognitive model of distress are:

a) the identification of three types of metacognitions involved in emotional problems as response expectancies and stimulus: a*) thought-action fusion, b) thought-emotion fusion - justification metacognitions and c) the importance of emotional regulation (or the context of avoidance).*

b) finding the dysfunctions in these types of metacognitions;

c) refining the learning sources in these types of metacognitions;

d)providing evidence-based interventions for changing the dysfunctional metacognitions.

Practically, these developments fill in the metacognitive model described by Wells (2000), emphasize the importance of perceptual sets and expectancies and of response expectancies (Kirsch, 1999) in moderating the relationship between cognition and emotion and provides a new direction for interventions aiming at reducing the impact of dysfunctional beliefs on distress. Regarding the distress of parents of children with intellectual and multiple disabilities these implications suggest that modifying the above mentioned metacognition in the form of stimulus and response expectancies leads to changes in distress.

The major implications of researching the effects of metacognitive factors on parental distress consist of identifying the following components involved not only in distress, but in emotional problems in general (Wells and Mathews, 1994):

- **metacognitive beliefs:** knowledge, plans, strategies that monitor, assess and control cognitive and emotional processes.

- **dysfunctional thinking patterns:** a thinking pattern featured by evaluations and negative interpretations, attentional focusing on threats and dysfunctional cognitive coping strategies. It often appears as ruminations and worries.

- **processing mode:** it is distinguished between the *metacognitive mode* of processing and the *direct processing mode*.

The main implication of perceptual theories of cognition on the mechanisms of parental distress is that, from this perspective, dysfunctional cognitive processes that generate distress can be described at three levels with cognitive restructuring targeting different factors at each level (Tiba, 2010):

a) at the linguistic symbol level one can identify four types of dysfunctional processes: excessive use of negative verbal beliefs, insufficient use of functional symbols and learning processes that maintain the use of these symbols or interfere with the use of adaptive symbols.

b) at the modal symbol level, dysfunctional beliefs consist of modal symbols that guide the activity in the emotional processing brain circuits in an altered way that leads to intense emotional reactions.

c) at the interactional level between external and internal symbols, dysfunctional beliefs consist of a rigid link between verbal and modal dysfunctional symbols and of a weak link between adaptive verbal symbols and modal symbols.

These developments have the following implications for the cognitive model of parental distress:

- parental distress or dysfunctional emotions are the result of the activation of *dysfunctional emotional simulations* as a response to external events (difficulties related to child rearing). The dysfunctional feature is maintained by processes at the linguistic symbols level, at the modal level or at the interactional level.

- dysfunctional emotional simulations are simulations (partial activations) of powerful uninhibited and prolonged emotional experiences;

- the dysfunctional features of emotional experiences are verbally expressed as irrational beliefs;

- the verbal forms of irrational beliefs generate distress only when they lead to dysfunctional simulations of emotional experiences that partially activate affective processing circuits in the brain area involved in those emotional experiences;

- the activation of these simulations depends on the factors that guide the interaction between representations such as metacognitive factors in the form of stimulus and response expectancies;

- the change in distress is the result of the modification of dysfunctional emotional simulations as a response to external events (in the case of parental distress, behavior or health problems of the children);

- dysfunctional emotional simulations are featured by several processes that generate and maintain distress, processes that can be described at three levels: a) the verbal level, b) the internal simulations or symbols and c) the interactional between verbal and internal symbols level;

- the effect of dysfunctional simulations on distress is reduced through interventions mainly directed at the level that shows most dysfunctions;

- the interventions used in ACT for reducing distress can be integrated at the interactional level between linguistic and modal symbols.

The major implications of the studies in positive factors on the cognitive model of distress in parents of children with intellectual and multiple disabilities are:

- positive factors such as positive emotions or positive reframing are essential for the adaptation to chronic distress;

- positive interventions aim at changing the cognitions that block positive emotions, positive focusing, infusing significance in daily situations and emphasizing positive experiences.

The applied part of this paper is made of two chapters: Chapter 2 which focuses on developing and illustrating a cognitive model of parental distress that integrated the theoretical background of the paper and Chapter 3, where the efficacy of an intervention developed according to this model is tested in reducing distress.

Chapter 2

Chapter two presents an extended cognitive model of distress in parents of children with intellectual and multiple disabilities. The model of distress is based on mechanisms analyzed in the theoretical part.

After the cognitive model of parent distress is described, two case studies are presented. The first case study illustrates the role of new cognitive factors in parental distress such as positive metacognitive beliefs. The second case study illustrates the application of the cognitive program intervention protocol. The program is build to change reviewed mechanisms of stress. In the same time, it comprises corresponding interventions delineated in the extended cognitive model of distress in parents of children with intellectual and multiple disabilities.

An important step in the clinical application of a theory is model construction (David, 2006). The model is the architecture of the main factors and mechanisms comprising the generation and maintaining of distress that direct the interventions that are amenable to change the hypothesized mechanisms.

There are multiple sources for the distress model presented here:

a) research of the cognitive mechanisms and factors involved in stress of parents of children with intellectual and multiple disabilities (Hastings and Beck, 2004),

b) current cognitive models of distress (Beck and Pretzer, 2002; Abrams and Ellis, 1994),

c) the theory and models of cognitive behavioral intervention protocols for stress reduction in parents of children with intellectual and multiple disabilities (Singer, 2003; Greaves, 1997), anxiety (Wells, 2000; Dugas et al., 1998) and depression (Papageorgiu and Wells, 2004),

d) theoretical and intervention constraints coming from positive psychology and therapy (Seligman et al., 2002), grounded cognition theory (Barsalou, 1999), metacognitive therapy (Wells and Mathews, 1994) and from acceptance and commitment therapy (Hayes et al., 1999).

According to the extended model of distress presented here, there are several principal mechanisms by which stress becomes a problem:

1. The situational demands overcome the resources and the coping mechanism of the parent;

2. Using dysfunctional or inefficient coping mechanisms;

3. Using a dysfunctional or inefficient formal or informal support system;

4. Beliefs, expectations or emotions that block the parent and represent an obstacle to the use of social support system needed to overcome the difficulties;

5. Beliefs, expectations or emotions that block the parent and represent an obstacle to the use of coping mechanisms needed to overcome the difficulty;

6. The parent overestimates the demands of the situation and/or underestimates the ability to cope;

7. The parent amplifies the negative consequences of the coping failure with the difficulties;

8. Using dysfunctional emotional coping mechanisms that amplify or maintain the stress reaction;

9. Deterioration of positive coping and positive emotions when confronted with difficulties;

For an ecological presentation for parents these mechanisms where grouped in five paths by which stress and difficulties become a problem. Distress or a problematic level of stress is presented to the parents as intense emotional reactions, with long duration, amplified and with high frequency. This unhealthy distress is considered to be maintained by the following paths:

1. Secondary distress (mechanism 8)

2. Chronic maintenance and exposure to practical difficulties (mechanism 1-5)

3. Perceiving too many difficulties or weaknesses (mechanism 6)

4. Amplifying the difficulties by dysfunctional evaluations (mechanism 7)

5. Losing the positive (mechanism 9)

The first case study tries to illustrate and to describe the changes in positive and negative metabeliefs and the applications of positive interventions in a cognitive behavior intervention for reduction of distress in a mother of a child with intellectual disabilities.

The conclusions underline several main points:

Metacognitive beliefs about stress and depression may maintain stress reactions and also block positive experiences. The results of this case study showed that changing positive metabeliefs was associated with an increase in positive emotions experienced by the parent. It is suggested that metacognitive beliefs may represent an obstacle for using positive coping by the parent in coping with stress but also an obstacle in using positive interventions that can help

parent to overcome the stress.

Also it shows that positive interventions may, together with traditional cognitive behavior interventions, increase positive emotion and reduce stress and negative emotions.

This case study shows several directions for investigation in single subject experiment, multiple subjects experiments and even in clinical trials to reveal the relation between different type of cognitions in generation and maintenance of parental distress.

It is suggested that is important to investigate the relation between positive and negative metacognitive beliefs and positive and negative emotions in relation with difficulties of raising a child with disabilities. It is possible that these metacognitive beliefs moderate the relation between positive and negative emotions in coping of parents of children with intellectual and multiple disabilities.

In the second case study, the multicomponent cognitive behavior intervention for reducing stress in parents of children with intellectual and multiple disabilities built on the extended cognitive model is presented. The intervention program includes multiple components for changing mechanisms related to maintenance of negative emotions but also mechanisms that deteriorate positive emotions and coping. Moreover, the case study aims to illustrate the flexible application of the program for the problems of parents in dealing with a high stress level related to taking care of a child with intellectual disabilities.

The intervention resulted in reduced stress level of the mother. The interventions were adapted to parent needs and to her specific stress profile. Also the interventions for changing metacognitive beliefs together with interventions for promoting positive coping in facing difficulties associated with raising children with disabilities are illustrated.

There are several implications for the mechanisms of stress from this case study. Changing metacognitive factors and promoting positive coping in parents of children with intellectual and multiple disabilities are interventions that may be advantageous if included in stress reduction programs.

Also the case study strengthens the view of multiple mechanisms involved in determination of parent stress reactions and the need of differential change depending of their specific pattern and manifestation in a given parent.

Chapter 3

In Chapter three, a study for testing the efficacy of the program for stress management presented in Chapter 2 is described. Chapter 3 comprises of five components: motivation of the study with the main theoretical points, the objectives and hypotheses, method, results, and the conclusions and study implications.

Mainly, this study aims to test the efficacy of a cognitive behavioral intervention program for reducing distress in parents of children with intellectual and multiple disabilities compared to a control condition in which parents receive care only for their children.

Secondary, this study aims to investigate the mechanisms that mediate the results of the intervention program by analyzing the changes in irrational beliefs, locus of control, positive coping abilities, social support and how they relate with changes in stress.

Hypotheses:

The cognitive behavioral intervention program will reduce stress reported by parents in the intervention group compared with the stress reported by parents in the control group.

The cognitive behavioral intervention program will reduce the level of irrational beliefs, social unfavourable comparisons, and positive metacognitive beliefs and will increase the level of positive beliefs, perceived control and social support reported by parents in the intervention group compared to levels reported by parents in the control group.

The cognitive behavioral intervention program will reduce stress because of the changes in irrational beliefs, positive beliefs, social support, unfavourable comparisons and locus of control.

Initially, the participants were represented by 63 parents of children with intellectual and multiple disabilities. Forty six parents with a cutoff of 52 on PAD (Profile of Affective Distress) stress scale were selected after initial interviewing. The participants were randomly distributed in interventions and waiting list control. The design is a 2X2 repeated measures design. The between variable is intervention with two modalities: intervention and control. The within variable is timeline with two modalities: a) before intervention and 2) after the intervention. The principal dependent variable is parent stress reactions measured by Profile of Affective Distress Scale (PAD).

The exclusion criteria were: bipolar disorder, major depression, panic disorder, substance abuse, schizophrenia, brain damage and mental retardation of the parents. Also, a criterion was receiving medication or psychotherapy treatment or that were hospitalized for suicide attempts. The expected rate of abandonment was 20% according to Hastings et al., (2004), Singer et al.,

(2007).

The measures used in the study were: Profile of Affective Distress Scale, General Beliefs and Attitude scale, Kansas Inventory of Positive Perceptions, Problem Behaviour Inventory, Positive Metacognitions Scale, Family support Scale, Parent Locus of Control Scale

Procedure

Announcements at a Rehabilitation Centre for Children with Disabilities, The Counseling Centre for parents and Children and Special Schools were made to contact parents. The note informed about the nature and content of the study and of the program. Consequently, appointments were established. The first evaluation comprised of interview and questionnaire completion. Parents received the main measures to be completed at home and they had to bring them back after one week. Selected parents were allocated to one of the two groups: intervention or waiting list.

Parents in the intervention group followed the introductory seminar about stress model and intervention methods and were planned for individual sessions. In total, there were three two-hours rationale seminaries in two years. After each seminary parents were programmed for individual sessions, one session weekly. At the last session parents received the testing brochure and completed in one week after the last session.

Description of the intervention program

The intervention program was built and developed according to the restraints of this population such as: lack of time, lack of involvement of the father, low financial resources. The program was organized in a group session with duration of two hours and six individual sessions lasting for 30 minutes. A follow up session was programmed for checking the evolution and returning the questionnaires.

Each session had a specific theme:

Session one: secondary distress; Session two: practical problems and parent resources; Session three: cognitive distortions; Session four: Unhealthy evaluations; Session five: Positive coping; and Session six: Responding and preventing behavior problems of the children.

Depending if the main source of parent distress came from secondary emotional problems, a high level of practical problems and low resources and support or children's behavior problems, the first session was comprised either by secondary distress, practical problems or children's behavior problems session. This flexible approach permitted the program to respond adequately to the current concern of the parent such as emotional difficulties, practical difficulties or difficulties to manage child behavior.

There were three types of statistical analyses used in this study:

a) Preliminary analyses: descriptive data, normality of distribution, data differences before intervention, exploratory comparisons of demographic data and missing data and adherence analyses;

b) Primary analyses: the effect of the intervention both on stress reduction and on changes in the hypothesized mediating variables;

c) Secondary analyses: the relation between changes in the mediating variables and changes in distress, mediation analyses and size effect.

By the analysis of the effect of intervention in reducing stress, the first hypothesis is tested. The hypothesis predicts that the cognitive behavior program will reduce stress of parents in the intervention condition compared to stress in parents in the control condition.

The effect of the intervention appears from the existence of a difference between the intervention and the control group after intervention and between, before and after measurements in the intervention condition.

Table 3. Means and standard deviations of the main dependent variables

Variable	*Intervention*	*Control*
Distress-PAD		
Before intervention N= 27	68.14 (17.28)	67.36 (17.55)
After intervention N=23	46.30 (15.06)	69.15 (18.85)
Dysfunctional negative emotions		
Before intervention	13.59 (6.92)	11.47 (5.02)
After intervention	5.69 (3.53)	12.52 (6.69)

PDA - Profile of Affective Distress;

Table 5 presents the effects of the intervention on stress reduction.

Tabel 5. F coefficients for outcome measures

Variable	*Group main effect*	*Timeline effect*	*Group *Timeline*
PAD	F (1,40)= 6.10 p< .01	F (1,40)= 21.90 p< .01	F (1,40)= 31.69 p< .01
DNE	F (1,40)= 3.89 p < .05	F (1,40)= 17.83 p< .01	F (1,40)= 34.71 p< .01

PDA - Profile of Affective Distress-score of negative emotions items;

DNE - dysfunctional negative emotions calculated on the PDA scale

Descriptive data from the hypothesized mediating variables reveal an intervention effect as shown by Table 7.

Table 7. Descriptive data, means and standard deviations for the hypothesized mediating variables

Variable	*Intervention*	*Control*
Irrational beliefs		
Before intervention	75.74 (12.58)	77.94 (6.31)
After intervention	54.21 (14.56)	79.42 (7.29)
Locus of control		
Before intervention	69.51 (5.92)	70.63 (5.92)
After intervention	61.60 (8.31)	70.26 (5.49)
Positive metacognitions		
Before intervention	36.51 (5.28)	36.63 (6.01)
After intervention	28.13(4.14)	35.84 (4.53)
Positive beliefs		
Before intervention	135.18 (9.80)	134.52 (11.11)
After intervention	140.69(6.19)	135.52 (9.80)
Unfavourable comparisons		
Before intervention	36.77 (4.66)	38.63 (5.01)
After intervention	47.00 (5.02)	38.47 (4.28)
Social support		
Before intervention	29.92 (3.25)	28.00 (3.48)
After intervention	34.47 (5.41)	27.89(3.49)

Table 6. F Coefficients for hypothesized mediating variables

Variable	*Group Main effect*	*Time effect*	*Group * Time*
Irrational beliefs	F (1,40)= 21.46 p< .01	F (1,40)= 27.65 p< .01	F (1,40)= 36.49 p< .01
Locus of control	F (1,40)= 8.71 p < .01	F (1,40)= 14.95 p< .01	F (1,40)= 12.35 p< .01
Social support	F (1,40)= 13.73 p < .01	F (1,40)= 16.51 p< .01	F (1,40)= 18.12 p< .01
Positive beliefs	F (1,40)= 1.45 p > .01	F (1,40)= 18.05 p< .01	F (1,40)= 7.07 p< .01
Positive metacognitions	F (1,40)= 8.90 p < .01	F (1,40)= 47.77 p< .01	F (1,40)= 32.55 p< .01

According to Weersing and Weisz (2002, *apud*. Szentagotai at al., 2008) there are several steps when establishing the change mechanisms by which intervention take effect.

First, it is necessary to determine whether the intervention or treatment is efficacious. Second, the influence of the intervention on the hypothesized mechanisms of change needs to be analyzed. Third, it is necessary to look at how the hypothesized mechanisms of change influence the outcomes. Finally, the question must be answered of whether the intervention effects can be accounted for by the hypothesized mechanisms of change (Szentagotai at al., 2008).

The primary analyses focused on the first two tests, of efficacy and specificity, and the secondary analyses focused on psychopathology test and mediation.

Changes in scores were calculated between pre and post-intervention for outcome measures as

stress and hypothesized mediating variables.

Table 8 presents the correlations coefficients between intervention change in the hypothesized mediating variables and intervention change in stress.

Table 8 suggests specific relationships between hypothesized mechanisms of change and outcome stress. Moreover, a significant correlation appears between changes in irrational beliefs, unfavourable comparisons and positive metacognitions and changes in stress.

Tabel 8. Correlation coefficients between changes in hypothesized mediating variables and changes in outcome measures

Variabile *N=23*	*Irrational beliefs*	*Locus of control*	*Social Support*	*Unfavourable social comparisons*	*Positive metacognitions*
Distress PAD	r=.73**	r= -.17	r=.01	r=-.44*	r=.59**
	p= .00	p= .41	p= .95	p= .03	p=.01
Dysfunctional negative emotions	r=.73**	r= -.09	r=.08	r=-.35	r=.49**
	p= .00	p= .66	p= .69	p= .09	p=.00

** Significance level 0.01

* Significance level 0.05

Mediation analysis was carried out using Baron and Kenny (1986) model which considers that a mediation effect is present when:

a) the predictor correlates with the outcome measure (path c)

b) the predictor correlates with the hypothesized mediating variable (path a)

c) the hypothesized mediating variable correlates with the outcome measure, if controlling for the predictor effect (path b)

d) after controlling the effect of the hypothesized mediating variable, the relation of the predictor with the outcome measure is reduced (partial mediation) or eliminated (complete mediation) (path c)

The first mediation analysis aimed at testing irrational beliefs as a mediating variable. Table 9 shows the regression equations according to Baron and Kenny (1986) model for the change in irrational beliefs. Regression analysis showed that, when controlling for irrational beliefs, the relationship between the independent variable and the outcome variable was no longer significant ($p < .05$).

Table 9. Regression equations for change in irrational beliefs as hypothesized mediating variable of the intervention effect on distress

Model	*B*	*SE β*	*β Stand*	*R 2*	*R change*	*p*
Intervention-distress	21	3,7	0,66	.44	.44	p < .01
Intervention-irrational beliefs	22.98	3.78	.69	.48	.48	p < .01
Irrational beliefs-distress (Controlling for intervention)	.63	.12	.66	.67	.22	p < .01
Intervention-distress (controlling for irrational beliefs)	6.5	4.06	.20	.67	.20	p > .01

The second mediation analysis aimed to test the change in positive metabeliefs as a mediating

variable. Table 10 shows the regression equations according to Baron and Kenny (1986) model for the change in positive metabeliefs as mediating variable. Regression analysis showed that, when controlling for the positive metabeliefs, the relationship between the independent variable and the outcome variable was no longer significant ($p > .05$).

Tabel 10. Regression equations for change in positive metabeliefs as hypothesized mediating variable of the intervention effect on distress

Model	*β*	*SE β*	*β Stand*	*R 2*	*R change*	*p*
Intervention-distress	21	3,7	0,66	.44	.44	p < .01
Intervention-positive metabeliefs	8.15	1.20	.73	.53	.53	p < .01
Positive metabeliefs-distress(Controlling for intervention)	1.52	.43	.53	.57	.13	p < .01
Intervention-distress (Controlling for metabeliefs)	8.77	4.8	.27	.57	.03	p > .01

The third mediation analysis aimed to test the change in unfavourable social comparisons as a mediating variable. Table 11 shows the regression equations according to Baron and Kenny (1986) model for the change in unfavourable social comparisons as mediating variable. Regression analysis showed that, when controlling for the unfavourable social comparisons, the relationship between the independent variable and the outcome variable was lower, but still significant ($p <.05$). The results suggests that changing unfavourable social comparisons partially mediates the change in distress.

Tabel 11. Regression equations for change in unfavourable social comparisons as hypothesized mediating variable of the intervention effect on distress

Model	*β*	*SE β*	*β Stand*	*R 2*	*R schimbare*	*p*
Intervention-distress	21	3.7	0.66	.44	.44	p < .01
Intervention-social comparisons	-.04	.008	.-71	.51	.51	p < .01
Comparisons-distress (controlling for intervention)	.64	.35	.29	.48	.04	p < .01
Intervention-distress (controlling for comparisons)	14.44	5.25	.45	.48	.10	p < .01

The effect size was calculated by using Cohen coefficient ($d = M_1 - M_2 / s$) and correlation coefficient *r*. The effect size was calculated for outcome measures-parent distress, measured by PAD negative emotions and dysfunctional negative emotions subscale (DNE). Scores used for calculation of the coefficient were post-intervention scores for parents in control and intervention conditions. For PAD distress *d* was 1.33 (r = .55) which is a big effect size of an intervention in stress reduction. For dysfunctional negative emotions, the distress subscale as a measure of distress, *d* was 1.27 (r = .53) which is also a big effect size of an intervention in stress reduction.

In the following section, the summary of results, interpretation of hypotheses, conclusions and implications for the distress of parents of children with intellectual and multiple disabilities are presented.

The conclusions show that the current study was an effort in developing and investigating the efficacy of a multi-component cognitive behavioral program for reducing distress in parents of children with intellectual and multiple disabilities. The results show significant changes in

stress and dysfunctional negative emotions of parents, as well as in the hypothesized mediating variables such as change in irrational beliefs, social support, unfavourable negative comparisons, and positive metacognitions in parents that were subject of participation in the cognitive behavioral program.

Furthermore, secondary analyses of the relation between change in hypothesized mechanisms of change and parental distress reductions showed that distress reduction after cognitive behavioural intervention is related with changes in irrational beliefs, positive metacognitive beliefs and unfavourable social comparisons. Although parents in the intervention condition showed significant changes in perception of control over problem behavior and social support; these changes were not related to changes in distress.

Mediation analyses investigating the mechanisms through which interventions probably led to changes in distress showed that changes in irrational beliefs and positive metabeliefs account for a full mediation of the effect of the intervention on distress. Unfavourable social comparisons mediated partially the effect of the intervention on stress reduction in parents of children with intellectual and multiple disabilities.

The results reported in this study support the efficacy of the cognitive behavior intervention program in reducing distress in parents of children with intellectual and multiple disabilities. Furthermore, the results suggests that adding a cognitive behavioral program to the usual services provided for child rehabilitation in such a rehabilitation centre will benefit the parent.

There are several limitations to the present study. First, the low number of participants limits the generalizability of the results. Second, the absence of a follow up due to naturalistic limitations does not offer perspectives of how robust are the results and if they are maintained in time. Third, the absence of an active control such as a support group does not allow for control of nonspecific factors that may influence stress reductions.

Chapter 4

In Chapter 4, the conclusions of this paper, its implications and the new directions of research are presented.

On a theoretical level, the implications on the following issues have been described:

a) clarifying the effects of multi-componential cognitive interventions on reducing the distress of parents of children with special needs

b) clarifying the mechanisms that mediate the effect of cognitive interventions on reducing parental distress by

c) reinterpretation of the concepts promoted by Acceptance and Commitment Therapy and introducing them as *implicit metacognitions* in the literature of cognitive vulnerability factors;

d) introducing the perspective of the perceptual cognition theory in the domain of cognitive vulnerability factors, cognitive therapy and the parental distress;

e) introducing the concept of positive metacognitions about distress and positive emotions as cognitive vulnerability factors of parents' adjustment to the special needs of their children and as a mechanism of resistance to cognitive change interventions;

f) developing an extended model of distress which integrates a complex analysis of cognitive vulnerability.

On the practical level, the following implications are described

a) the adaptation of a psychological intervention on romanian population

b) the existence of a manual that can be implemented in the services offered to parents of children with disabilities and high stress levels

c) the existence of a service which provides these services to parents with special needs children;

d) delineating delivery conditions of parental programs to parents of children with intellectual and multiple disabilities

The thesis contributes to the literature that investigates the effects of cognitive behavioral interventions on reducing the distress of parents of children with intellectual and multiple

disabilities. This study brings up data which indicate that adding a cognitive intervention for parents to the recovery services for children with special needs, contributes to reducing the distress of parents.

In this way, data on the efficacy of the cognitive behavioral intervention in reducing parental distress in Romanian population are reported. This study supports the idea that the interventions tested on North American and West European population have similar effects on the Romanian population. The major implication confirms that cognitive behavioral interventions modify the distress of parents of children with intellectual and multiple disabilities. In conclusion, investing in interventions which can be added to the basic package for the recovery of children with special needs in order to modify the distress is justified.

The thesis has also a theoretical contribution regarding the clarification of the mechanisms involved in the mediation of the cognitive behavioral interventions effect on reducing the parental distress.

To date, there are no studies to investigate the mechanisms by which the cognitive behavioral interventions have some effects on reducing the parental distress. This thesis suggests that the reduced distress of parents that followed this cognitive intervention is due to modifications of the irrational beliefs of parents, modifications of positive metacognitions and partially to modifications of unfavourable social comparisons that they make regarding the situations of other families or children.

Even if only these mechanisms are sustained by the results of the present study, this does not eliminate the implications of other mechanisms, but it establishes new directions of research for investigating the relationship between diverse factors, such as beliefs regarding the control, positive beliefs, social support in determining the distress and mediating the interventions for reducing it.

The thesis contributes to the literature of cognitive vulnerability factors and cognitive models of distress by *introducing and reinterpreting the concepts promoted by Acceptance and Commitment Therapy as implicit metacognitions.* In such, we can distinguish three types of implicit metacognitions as cognitive vulnerability factors: *thought-event fusion*, *thought-emotion fusion* and *emotional avoidance metacognitions*. The introduction of these concepts allows the integration of some interventions validated within Acceptance and Commitment Therapy in packages of cognitive intervention guided by a coherent cognitive theory and model. By this view, interventions used by Acceptance and Commitment Therapy pursuit the modification of some implicit metacognitive factors which maintain distress and the associated behaviors.

The thesis *has a theoretical contribution to the literature of cognitive vulnerability on*

psycho-emotional problems by interpreting the cognitive vulnerability factors within the perspective of perceptual theory on cognition. The implications of this contribution are major on the way in which the impact of cognitive vulnerability on emotions and behaviors is considered. I propose *a triadic pattern of cognitive vulnerability* which explains the impact of interpretative and evaluative beliefs on emotions.

In this way, cognitive vulnerability factors include three components: a) the verbal symbolic component; b) the modal symbolic component, and c) the component of interaction.

Emotional problems and distress are considered the result of using distorted simulations of the experience. Modifying the emotional problems is considered the result of interventions by which the person stops using distorted simulations and uses adaptive simulations as a response to external events. The distorsions and the interventions to eliminate them can be described at several levels: a) the level of mechanisms of simulation (interaction); b) the level of simulated experience and/or c) the level of verbal symbols which direct the simulation

The cognitive model presented here permits the integration of interventions which pursuit modification of implicit metacognitive factors revealed by Acceptance and Commitment Therapy, of classic interventions for changing the content of cognitions and interventions which pursuit modifications of neurobiological functioning into *a coherent model of modification of one specific cognition*.

Also, implicit metacogntions are assimilated as forms of response expectancy, this allows the integration of the literature concerning the response expectancy as applications in modifying the metacognitive factors.

The thesis has a theoretical contribution by introducing positive declarative metacognitions as factors of cognitive vulnerability in the cognitive model of parental distress. It is the first time when they are mentioned in models of parental distress and when it is showed that their modification is related to the effect of cognitive intervention in reducing distress. Another contribution is clarifying the role of declarative metacognitions in parent coping with the difficulties of raising a child with special needs. In this way, a distinction is made between a) metacognitions regarding the negative emotions and b) metacognitions regarding positive emotions. Each of them can be positive or negative. The effect of negative metacognitions consists in decreasing and interrupting positive emotions and generating secondary negative emotions. The intervention includes also the modification of metacognitions regarding the positive emotions, modification which precedes the intervention that modifies positive beliefs.

This thesis has implications for the literature of parental distress by offering an extended cognitive model which allows a theoretical integration of different lines of research in the field

of cognitive vulnerability to distress and in parent adaptation to the difficulties of raising the child. This way, the conceptualization of parental distress and of the parent adaptation is refined by specifying the cognitive factors that influence the adaptation of parents to the difficulties regarding the special needs of children. The intervention used in this study is based on a cognitive model which included specific factors involved in the parental distress. This model includes factors that result from the convergence of several lines of research, offering a high level of complexity.

The intervention included not only components that aimed at modifying practical problems and at increasing social support, but also interventions that aimed at modifying negative interpretations, irrational beliefs, metacognitions regarding the effects of distress and positive beliefs. The study reveals that reducing parental distress can be made by several complementary mechanisms. A future step will be to investigate if these mechanisms are interdependent. Future studies will establish in what way some changes can be considered principal and others could be secondary (for instance, changing the irrational beliefs results in changing the unfavourable social comparisons) or following changes in positive metacognitions („*I love him, so I am devastated when I see him suffering so much*"), parents begin to control their emotions and they do not respond anymore with irrational beliefs or with negative interpretations. Of course, the investigation of these factors must be adapted to clinical reality. A major implication regarding the mechanisms of change is the fact that it has been shown that parents' metacognitions impact on the level of distress and their modification could reduce the level of distress following the interventions that aimed to change these metacognitions. This result suggests that the investigation of metacognitive mechanisms regarding parental distress and the effects of their modification should be continued.

The first practical implication of this thesis is that, for the first time in Romania, an empirical validated psychological treatment has been adapted to reduce parental distress in parents of children with intellectual and multiple disabilities. In this way, it contributes to the development of empirical validated psychotherapy, as being the first treatment that aimed this segment of population in our country. These interventions have been formalized, this way it permits the applications of these interventions in other centers which provide psychological services for parents of children with intellectual and multiple disabilities.

The second practical implication is that „the parental program presented in this thesis has been included in a service which has been adopted by a rehabilitation center for children with disabilities. The service is provided by two professionals. In fact, all parents who access the services of that center are evaluated, and following this evaluation, a decision is made: a) there

are no emotional problems and they receive only the basic recovery package, b) there are subclinical emotional problems and adjustment disorders and they are included into the program „Parental Stress"or c) if some affective disorders or anxiety are discovered, they will follow cognitive behavioral programs specific to the identified disorders.

The third practical implication is revealing specific conditions of applying those programs within rehabilitation centers for children with special needs. The format of delivery of this program was a mixed one. This was the result of applying and respecting some specific conditions of applying those programs within the rehabilitation centers, conditions without which this program could not have been applied:

1. *flexibility*

The way of applying the program has to be adapted to parents' needs.

2. *minimal effort*

The interventions must imply a minimal effort from the parent. In many cases the parents are loaded with problems regarding raising their children. Sometimes this fact is a mechanism of distress and often the reality is that the tasks of parents involved are so many and they do not have anybody to work them out with. For this reason, the intervention for decreasing distress does not have to become stressful in itself. This way, the risk of dropping out is very high. Very often parents say this and they do it explicitly.

3. *support type „crèche"*

Parents need support with the child during the program. For instance, organizing some group meetings with parents without organizing a crèche for children has been impossible. Frequently, the parents have separated the tasks to insure the revenues and the tasks for raising the child. This implies few possibilities of involvement for the other parent in raising the child while other one participates to the group meetings. Even if this was possible with some parents, the difficulties increased for five or more parents, so the efforts of involving the other parent were dropped. The need of a crèche suggests that Rehabilitation Centers are optimal for the implementation of parental programs, because such crèches can be easily created.

4. adaptability

The mixed format of the program has allowed offering practical abilities to parents in a short amount of time, such as during the period of waiting for the children to come out from the therapy room. The short period of the meetings allowed that they take place efficiently, without a „stressed" parent wondering what was his child is doing during child recovery therapies.

These conditions suggest that the particularities of this population make applying intensive interventions difficult. The effect of these factors should be analyzed by studies which investigate the methods and conditions that mediate the effect of cognitive behavioral interventions in parents of children with intellectual and multiple disabilities.

This thesis and the study reveal several directions of research. Among the major directions of research we can distinguish:

1 the study of metacognitions about positive emotions and the impact of changing them on parent adaptation and stress reduction; the study of cognitive factors which reflect resistance to cognitive modifications;

2 the investigation of the relationship between reducing parent distress and modification on the level of behavioral problems;

3 the implementation of an intervention program to parents having children with intellectual and multiple disabilities at a medium level of disabilities and with an increase in interventions for modifying the „problem behaviors“;

4 the comparison of the cognitive intervention program with a support group and monitoring the results of the intervention on a longer period of time in order to observe how these modifications last in time;

5 further analysis of the other mechanisms which could mediate the effect of the intervention, such as social support and the beliefs regarding the control of behavioral problems.

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