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SUMMARY OF DOCTORAL THESIS

**ATTACHMENT PATTERNS AND EMOTION
REGULATION STRATEGIES AMONG PEOPLE
WITH PSYCHOSOMATIC DISORDERS**

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INTRODUCTION

Psychosomatic disorders represent a field of major interest for research, for several reasons: a) high prevalence: 30-75% of the somatic symptoms encountered in primary care medical offices are somatoform, not having a medical explanation (Kroenke *et al.*, 1989, Kroenke *et al.*, 1990, *apud* Kroenke *et al.*, 1994; Steinbrecher *et al.*, 2011); b) strong impact on the individual (physiological and psychological), social and economic level (Alexander, 2008; Dijkstra-Kersten *et al.*, 2015; Jankowiak *et al.*, 2020; Terre *et al.*, 2003; Van der Feltz-Cornelis *et al.*, 2018; Van Geelen *et al.*; Yew *et al.*, 2020); c) the permanent evolution of the terminology and conceptualizations of psychosomatic disorders; d) complex etiology, not completely known.

Until now, most research in the field has used the terminology and previous conceptualizations of psychosomatic disorders, with a small number of studies using the most recent approach in DSM-5 – *Diagnostic and Statistical Manual of Mental*, fifth edition (APA, 2013), in which the category of psychosomatic disorders is named “Somatic Symptom and Related Disorders” with the main diagnosis “Somatic Symptom Disorder”. Also, most studies use either attachment theory or emotion regulation theory for understanding the etiology of these disorders. At the same time, there are limitations in the approach of attachment and emotion regulation, most studies using only the global perspective on attachment (which does not take into account the variability of the attachment style depending on the relationship), respectively only two strategies of emotion regulation (suppression and reappraisal). In addition, most studies are correlational, with a small number of practical validation studies of research results. In Romania, research in the field of psychosomatic is little developed, there is a small number of tools adapted to the Romanian population for the evaluation of psychosomatic disorders or the main factors involved in their etiology: attachment and emotion regulation strategies.

The PhD thesis aimed to overcome these limits, by using the latest approaches of attachment, emotion regulation strategies and psychosomatic disorders, both conceptually and in terms of assessment tools for these three concepts.

The thesis was structured in two parts. The first part, consisting of four chapters, included a synthesis of theoretical notions and studies related to attachment, emotion regulation and psychosomatic disorders. The second part, consisting of three chapters, was the actual research and included three studies conducted on independent samples of adults from the general population of Romania. For these studies, the conceptualization of psychosomatic disorders was used according to the most recent approach, found in DSM-5 under the name “Somatic Symptoms Disorder”.

The first chapter – **Attachment**, includes notions related to attachment theory, the characteristics of adult attachment, adult attachment patterns, as well as notions regarding stability versus instability of attachment.

The second chapter – **Emotion regulation**, presents the characteristics of emotion regulation, the models of emotion regulation, the types of emotion regulation strategies, as well as the dynamics of emotion regulation strategies.

Chapter Three – **Psychosomatic disorders**, includes a brief history of psychosomatic, relevant for understanding the mind-body connection and research in the field, a presentation of the evolution of terminology and conceptualizations used to define psychosomatic disorders, as well as a detailed description of biological, psychological and social factors which are relevant to the etiology of psychosomatic disorders.

In Chapter Four – **Attachment, emotion regulation and psychosomatic disorders**, the relationships between the three concepts are presented. Regarding *the relationship between attachment and emotion regulation*, there are described both the way in which attachment relationships contribute to the development of emotion regulation strategies and the way in which the use of emotion regulation strategies varies according to the attachment pattern. Regarding *the relationship between attachment and psychosomatic disorders*, the role of attachment in the development of psychosomatic disorders is highlighted, and the explanatory models of the mechanism by which attachment insecurity determines the development of these conditions are also described. Also, the differences in attachment between people with psychosomatic disorders and healthy ones are presented. Regarding *the relationship between emotional regulation and psychosomatic disorders*, there are described explanatory models of the mechanism by which disturbances in emotion regulation contribute to the development of these conditions. The existing differences in the use of emotion regulation strategies among people with psychosomatic disorders versus healthy people are also presented. The chapter ends with an integration of attachment theory and emotion regulation theory to explain the development of psychosomatic disorders, presenting *the mediation role of emotion regulation in the relationship between attachment and psychosomatic disorders*.

Chapter Five – **Study 1: The mediation effect of emotion regulation strategies in the relationship between attachment and somatic symptom disorder**, includes the results of a correlational study that approaches attachment from a global perspective, according to which the attachment pattern represents a characteristic of the individual, that manifests identically in all his significant relations. This study tests six hypotheses regarding: the correlations between attachment, emotion regulation strategies and somatic symptom disorder, the mediation relationship between these three variables, and the differences between people with and without the somatic symptom disorder in terms of attachment and emotion regulation strategies.

The chapter includes the adaptation on the general population in Romania of four questionnaires needed to assess attachment, emotion regulation strategies and somatic symptom disorder: *Experiences in Close Relationships – Short form (ECR-S)*, *Regulation of Emotion Systems Survey (RESS)*, *Patient Health Questionnaire-15 (PHQ-15)* and *Somatic Symptom Disorder – B Criteria Scale (SSD-12)*.

Chapter Six – **Study 2: The incremental effect of emotion regulation strategies, relative to attachment, in estimating somatic symptom disorder**, includes the results of a correlational study that approaches attachment from the perspective of specificity, according to which the attachment pattern varies according to the relationships that are meaningful to the individual. This study tests six hypotheses regarding: the correlations between attachment, emotion regulation strategies and somatic symptom disorder, the incremental effect of emotion regulation strategies, over attachment, in estimating somatic symptom disorder. We also analyzed differences in attachment and emotion regulation strategies between people with somatic symptom disorder and those without this disorder.

The chapter includes the adaptation in Romania of the *Attachment Multiple Model Interview* (AMMI), a tool that allows the assessment of attachment within significant relationships in adulthood: with the mother, with the father, with the romantic partner.

Chapter Seven – **Study 3: A training and intervention program for improving emotion regulation strategies**, includes a practical validation study of the research results, through which the hypothesis was tested that training and intervention programs focused on improving emotion regulation strategies lead to reducing the specific symptomatology of the somatic symptom disorder.

The final part of the thesis – **Conclusions and general discussions**, includes a presentation of the results obtained in the three studies, also specifying the contributions of the present research.

The main original contributions of the PhD thesis research are:

(1) *theoretical*, by integrating the attachment theory and the emotion regulation theory for investigating the psychosomatic disorders, using, at the same time, their current conceptualizations;

(2) *clinical*, by operationalizing the diagnostic criteria of the somatic symptom disorder, as well as by adapting in Romania five instruments that evaluate attachment in adulthood, emotion regulation strategies and somatic symptom disorder;

(3) *practical*, by implementing a training and intervention program to improve emotion regulation, which could be included in the treatment of people with somatic symptom disorder. The practical contributions brought by the present thesis also consist in the adaptation of the five instruments in Romania, which will be useful for psychologists and psychotherapists, who can obtain, through these instruments, information on the basis of which they can build their therapeutic intervention.

Keywords: attachment, emotion regulation, psychosomatic disorders, somatic symptom disorder

PART I

CURRENT STATE OF KNOWLEDGE

1. Attachment

Attachment theory, developed by John Bowlby, is a developmental theory that illustrates the importance of the early mother¹-child bond in the development of an individual's emotional bonds, as well as in his physical and mental health throughout life (Fraley, 2019; Gillath *et al.*, 2016). Bowlby (1982) defines attachment as a biological tendency of the child to seek the proximity of a specific figure (the person who cares for him), in certain situations, this tendency having the main function of protection. He also mentions that an attachment relationship has four characteristics: 1) maintaining proximity to the attachment figure; 2) separation distress (when the attachment figure leaves); 3) safe heaven (returning to the attachment figure, for comfort and safety, in case of confronting a threatening stimulus); 4) secure base (using the attachment figure as a base from which the child feels confident to explore unfamiliar places or interact with new people) (Bowlby, 1982; Hazan & Zeifman, 1999).

Regarding the organization of the attachment system, Bowlby (1982) proposes the concept of "internal working models", which designates the mental representations that the child constructs regarding himself and others, having as a reference the repeated interactions with his mother, especially her response to his needs. Through these mental representations, built towards the end of the first year of life and during the second and third years respectively, the child perceives events, evaluates his own situation and makes certain plans. The internal working model of the self encompasses the individual's notions of his own adequacy and the love he deserves to receive. The internal working model of the world includes the individual's representations of where attachment figures can be found and the responses expected from them (Bowlby, 1982). Bowlby (1973) presents the multiple working models hypothesis, suggesting that the individual can operate with several working models of the world and self, differentiated according to their origin, degree of dominance and the person's level of awareness.

The hypotheses formulated by John Bowlby were later tested by Mary Ainsworth, who developed a specific methodology ("Strange Situation" procedure), through which the child's behavior could be observed in an unknown situation, at first in the presence of the mother, and later in her absence (Bowlby, 1973). Based on the exploratory behavior shown by the child in the playroom, during the experiment, as well as the behaviors shown in the departure and return of the attachment figure (Adler-Tapia, 2012), Mary Ainsworth proposed the classification of attachment in childhood, according to three patterns: secure, insecure-ambivalent and insecure-avoidant (Van Rosmalen, 2015). Mary Main and Judith Solomon later added a fourth attachment style: insecure-disorganized (Main & Solomon, 1986).

¹ The word "mother" is used for the person who fulfills the role of mother in raising the child. Usually, this is the child's biological mother herself (Bowlby, 1980).

Although attachment theory initially focused on childhood relationships, John Bowlby (1982) also made contributions regarding attachment in adulthood, considering attachment behavior in adulthood as a continuation of childhood attachment, the individual tending to seek closeness to a trusted person, especially in situations he perceives as threatening (such as illness, catastrophe or danger). Later, attachment theory was used to explore the dynamics of romantic relationships in adulthood. Studies (Hazan & Shaver, 1987; Hazan & Zeifman, 1999) indicated that the emotional bonds formed between romantic partners are similar to the early emotional bonds formed between children and parents, and the attachment development process into adulthood is similar to the attachment formed in childhood.

Regarding the classification of attachment patterns in adulthood, two approaches are mentioned in the literature: categorical, respectively dimensional. Hazan and Shaver (1987) used a typology similar to that described by Mary Ainsworth for attachment in childhood: secure, ambivalent, avoidant. Later, Bartholomew (1990) challenged the suitability of the “avoidant” category, proposing a differentiation according to the motivation related to avoidance, respectively the level of awareness of attachment needs, thus resulting in four attachment patterns: secure, preoccupied, detached and fearful .

Later, attachment researchers abandoned the categorical approach to attachment in favor of the dimensional one, considering that attachment in adulthood can be conceptualized according to two fundamental dimensions: *Anxiety* (fear of separation and abandonment) and *Avoidance* (discomfort caused by intimacy and addiction) (Brennan *et al.*, 1998). Following comparative analyzes between the categorical and the dimensional approach, it was found that the dimensional model is most appropriate for describing attachment styles in adulthood (Fraley *et al.*, 2015).

In addition to the dimensional approach to attachment in adulthood, based on the *Anxiety* and *Avoidance* dimensions, the specialized literature (Miljkovitch *et al.*, 2015) also mentions another dimensional approach, based on four dimensions, found in each significant relationship for the individual (with mother, with father, with each romantic partner): *Security*, *Inhibition/Deactivation*, *Hyperactivation* and *Disorganization*. Security in the relationship is high if most of the responses received by the individual are appropriate to his needs. In situations where the attachment figure is not available or does not provide the appropriate response, the individual turns to secondary attachment strategies to satisfy his needs, either by not expressing, minimizing or even being unaware of attachment needs (inhibition strategy), or by focusing excessively on the attachment figure and attempts to attract her attention or to approach her (hyperactivation strategy), or to the simultaneous use of the opposite strategies of inhibition and hyperactivation (disorganization strategy), within the same relationship (Miljkovitch *et al.*, 2015).

Regarding the stability of the attachment, the results of the studies are contradictory, indicating either a maintenance of the attachment pattern throughout life (Chopik *et al.*, 2019; Fraley, 2002), or, on the contrary, a change in it, both over time (Pinquart *et al.*, 2013), as well as at the same time, depending on the attachment relationship – with the mother, with the father, with the romantic partner (Fraley *et al.*, 2011; Miljkovitch *et al.*, 2015).

2. Emotion regulation

Research in the field of emotion regulation began in the '90s (Gross, 2015), and the complexity of the concept determined the impossibility of unanimous agreement on an appropriate definition. Comparing the definitions proposed by reference authors in the field of emotion regulation (Berking, 2010, *apud* Berking *et al.*, 2012; Eisenberg & Spinrad 2004; Gratz & Roemer, 2004; Gross, 1998; Gross & Thompson, 2007; Thompson, 1994), it is found that some authors only focus on the conscious mechanisms involved, without taking into account the unconscious mechanisms, other authors consider only the processes by which the individual regulates his own emotions, without including the processes by which other people contribute to his emotion regulation, etc. Although these definitions present discrepancies from the perspective of conceptualization, there are, however, common elements, relevant to the complexity of emotion regulation, namely the inclusion, in addition to the actual emotional experience, of other components such as cognitive, behavioral and physiological ones. Also, given that emotion is a subdomain of the affect domain (along with stress, mood, and impulse), emotion regulation can be considered a subdomain of affect regulation, along with coping, mood regulation, and defense mechanisms (Gross & Thompson, 2007).

Regarding the conceptualization of emotion regulation, the most used model is the process model of emotion regulation, developed by Gross in 1998 (Verzeletti *et al.*, 2016). This model considers five emotion regulation processes: situation selection, situation modification, attentional deployment, cognitive change and response modulation, of which the first four processes are antecedent-centered, occurring before the generation of the emotion-specific response (physiological, experiential and behavioral), while the latter process is response-centered, occurring after the generation of that response (Gross, 1998).

Although it is useful for understanding the concept, the process model of emotion regulation has been shown to be incomplete, as it emphasizes only one stage of emotion regulation, namely the implementation of a certain emotion regulation strategy (Sheppes *et al.*, 2015), without providing a theoretical basis for understanding other aspects of this concept, such as: how emotion regulation strategies are initiated or stopped, how successful emotion regulation is achieved and what are the causes of failure (Gross, 2015). To overcome these limitations, Gross (2015) extended the process model of emotion regulation. This model starts from the premise that emotions involve evaluation, that is, the differentiation between what is beneficial for the individual and what is not beneficial, between the current state and the desired state. Also, the model assumes that at the level of the individual there are several evaluation systems, which are in interaction, acting either in the same direction or in opposite directions (Gross, 2015).

Regarding the concrete ways in which the individual regulates his emotions (Koole, 2009), the specialized literature indicates multiple classifications of emotion regulation strategies: antecedent-centered versus response-centered, explicit (with conscious effort) versus implicit (automatic), intrapersonal (self-regulation) versus interpersonal (social), adaptive versus maladaptive (Aldao *et al.*, 2010; Eldesouky & English, 2018; Gross, 2001; Gyurak *et al.*, 2011; Reeck *et al.*, 2016; Zaki & Williams, 2013).

Regarding the dynamics of emotion regulation strategies, studies have indicated that this manifests both throughout the individual's life and during a day or even within a specific emotional episode. Childhood is the basis for emotion regulation in adulthood, the ability of parents to regulate children's emotions contributing to the development of the individual's emotional (self)regulation skills (Gross & Thompson, 2007). The social aspect is extremely important for the development of emotion regulation strategies, the individual being influenced, at first, by the relationship with his parents, then by the interactions with his group of friends, by the relationship with his teachers and, later, by the relationships at the workplace (Thompson, 1994). Studies have indicated that emotion regulation strategies also vary over the course of a day (Eldesouky & English, 2018; English *et al.*, 2017) as well as within a specific emotional episode (Ford *et al.*, 2019; Heiy & Cheavens, 2014).

3. Psychosomatic disorders

Psychosomatic disorders have been defined as diseases caused or favored by psychological factors (Bransfield & Friedman, 2019). The link between the psyche and the body was brought to the attention of Western medical literature by the German doctor Johann Christian August Heinroth, who first used the term "psychosomatic" in 1818 (Muskin, 2008). Later, various psychoanalysts, such as Sigmund Freud (2005), Felix Deutsch (Luban-Plozza *et al.*, 1992) and Franz Alexander (2008), mentioned the role of the unconscious in the development of somatic symptoms.

The terminology used to describe psychosomatic disorders has evolved, in the literature being found terms such as: "somatization", "medically unexplained symptoms", "somatization disorder", "somatoform disorder", "somatic symptom disorder", "bodily distress disorder". The vast terminology used in the field of psychosomatic is closely related to the evolution of the conceptual approach of psychosomatic disorders, these changes being also found in the two international classification systems of mental disorders: DSM (*Diagnostic and Statistical Manual of Mental Disorders*), respectively ICD (*International Classification of Diseases*).

Thus, the category "Somatoform Disorders" with the main diagnosis "Somatization Disorder" from the fourth edition (text revision) of the DSM, DSM-IV-TR (APA, 2000), was replaced in the fifth edition of the manual, DSM-5 (APA, 2013), with the category "Somatic Symptom and Related Disorders", with the main diagnosis "Somatic Symptom Disorder". If in the previous version of the DSM there was a large number of diagnostic criteria for somatization disorder, and the central element was the lack of medical explanations for the somatic symptoms, in the most recent version of the DSM, this condition is removed, and the diagnostic criteria focus on positive symptomatology, highlighting more clearly the mind-body interaction and being much easier to use in medical practice. The diagnostic criteria for the somatic symptom disorder, according to DSM-5 (APA, 2013), are: the presence of disturbing somatic symptoms (criterion A), the presence of excessive psychological symptoms (thoughts, feelings and behaviors), associated with somatic symptoms (criterion B), respectively the duration of somatic symptoms longer than 6 months (criterion C). Similar changes regarding the terminology and conceptualization of

psychosomatic disorders were also found in ICD-11 (WHO, 2022), compared to the previous version, ICD-10 (WHO, 1994).

The complexity of the field of psychosomatic is not reflected only in the terminology and various conceptualizations of psychosomatic disorders, but also in the factors involved in the evolution of these disorders, the bio-psycho-social model being the basis for understanding these disorders (Okur Güney *et al.*, 2019). The relevant biological factors for psychosomatic disorders are: genetic factors, disturbed functioning of the central nervous system, the autonomic nervous system, the endocrine system, the immune system and the neurotransmitters (Chang, 2005; Holliday *et al.*, 2010; Rief & Barsky, 2005). The relevant psychological factors for causing or aggravating psychosomatic disorders are: emotion dysregulation, disturbances in perception and cognition, insecure attachment and personality disorders (Ciechanowski *et al.*, 2002; Elsaied *et al.*, 2017; Garcia-Campayo *et al.*, 2007; Knoop *et al.*, 2010; Lilly & Valdez, 2012; Liu *et al.*, 2011; Luyten *et al.*, 2013; Okur Güney *et al.*, 2019; Van Ravenzwaaij *et al.*, 2010; Waller & Scheidt, 2006; Woud *et al.*, 2016). The social factors involved in the development of psychosomatic disorders are: childhood abuse and neglect, major life events or daily stressful situations, social support, the social learning process, the context socio-cultural and stigma (Bagayogo *et al.*, 2013; Brown *et al.*, 2003; Dodaj & Šimić, 2012; Eisenberger, 2013; Heim *et al.*, 2009; Kilpeläinen *et al.*, 2002; Levy *et al.*, 2007; Ma-Kellams, 2014).

4. Attachment, emotion regulation and psychosomatic disorders

The link between attachment and emotion regulation has been supported by numerous studies. Within the relationship with the parent, the child develops his emotion regulation skills, by internalizing the emotion regulation patterns specific to this relationship (Cassidy, 1994, Sroufe & Fleeson, 1986, *apud* Contreras & Kerns, 2000). After experiencing various emotion regulation strategies in the relationship with parents, the individual continues to develop and refine his emotion regulation skills in other meaningful relationships for him, such as those with friends of the same age or with his romantic partner (Farrell *et al.*, 2016; King *et al.*, 2018; Lemay & Dudley, 2011; Thompson, 1994).

According to research, adults use various emotion regulation strategies depending on the type of attachment. Thus, when faced with a situation that may trigger unpleasant emotions, adults with secure attachment use appropriate strategies to reduce the unpleasant emotion, such as problem solving, planning, reevaluation, seeking social support, expressing and accepting emotions (Mikulincer & Shaver, 2007). Adults high in *Anxiety* react to unpleasant emotions by intensifying them in order to obtain attention, affection and protection from the attachment figure (Mikulincer & Shaver, 2007). Studies have indicated that the *Anxiety* dimension is a positive predictor for rumination and suppression, respectively a negative predictor for reappraisal (Caldwell & Shaver, 2013; Clear & Zimmer-Gembeck, 2017; Low *et al.*, 2019; Quickert & MacDonald, 2020; Read *et al.*, 2018; Reynolds *et al.*, 2014). On the other hand, adults high in *Avoidance* react to unpleasant emotions by diminishing the emotions felt, denying the dangers, suppressing the expression of emotions, diverting attention from the emotional stimulus, behavioral avoidance,

emotional distancing from other people, reduced search for social support and low use of reappraisal (Clear & Zimmer-Gembeck, 2017; Low *et al.*, 2019; Mikulincer & Shaver, 2007; Pascuzzo *et al.*, 2013; Read *et al.*, 2018).

The literature also mentions the link between attachment and psychosomatic disorders. It was found that people with psychosomatic disorders show a higher level of insecure attachment and a lower level of secure attachment, compared to healthy people (Agostini *et al.*, 2016; Dieris-Hirche *et al.*, 2012; Oladi & Dargahi, 2018). Studies have also indicated that adult attachment dimensions, *Anxiety* and *Avoidance*, are predictors of psychosomatic disorders and psychological symptoms associated with somatic symptoms (Fasakhoudi *et al.*, 2022; Heenan *et al.*, 2020; Lewczuk *et al.*, 2021; McWilliams & Bailey, 2010). The specialized literature provides three explanatory models of the mechanism by which attachment insecurity influences the emergence and maintenance of psychosomatic disorders: increased vulnerability to stress, high use of external elements for affect regulation, respectively deficient use of protective factors (Maunder & Hunter, 2001).

Regarding the link between emotion regulation and psychosomatic disorders, studies have indicated that people with psychosomatic disorders experience emotion dysregulation, presenting difficulties in awareness, identification, description and expression of their own emotions (Beck *et al.*, 2013; Bruehl *et al.*, 2012; De Gucht & Heiser, 2003; Erkcic *et al.*, 2018; Smith *et al.*, 2020; Subic-Wrana *et al.*, 2010; Van Middendorp *et al.*, 2005; Waller & Scheidt, 2006). Compared to healthy people, those with psychosomatic disorders use rumination and suppression more often and reappraisal less often (Bahremand *et al.*, 2016; Erkcic *et al.*, 2018; Sheybani Noghabi *et al.*, 2015). Studies have indicated that psychosomatic disorders correlate positively with rumination and suppression and negatively with reappraisal (Appleton *et al.*, 2013; Denovan *et al.*, 2019; Erkcic *et al.*, 2018; Koh *et al.*, 2005; Marcus *et al.*, 2008), these emotion regulation strategies representing, at the same time, predictive factors for psychosomatic disorders (Appleton *et al.*, 2013; Bahremand *et al.*, 2016; Ghasempour & Tavakoli, 2015).

Regarding the relationship between attachment and health, the mediation model was used, the link being explained through emotion regulation. Thus, it was considered that the attachment style leads to the use of certain emotion regulation strategies and the development of relational patterns, which, in turn, will influence the physiological response to stress, affect and health behavior, these having a determining role in the state of health of the individual (Pietromonaco & Beck, 2019). Currently, the field of psychosomatic comprises a small body of research investigating the relationships between attachment, emotion regulation, and psychosomatic disorders. This research indicates the predictive role of adult attachment in the development of psychosomatic disorders, this relationship being mediated totally or partially by emotion regulation (Falihatdoost *et al.*, 2020; Lewczuk *et al.*, 2021; Pascuzzo *et al.*, 2015).

PART II

STUDIES INVESTIGATING THE RELATIONSHIP BETWEEN ATTACHMENT, EMOTION REGULATION STRATEGIES AND SOMATIC SYMPTOM DISORDER

Preamble

The second part of the thesis includes two correlational studies and a practical validation study of the research results, carried out on three independent samples of adults from the general population of Romania. The objectives and hypotheses of the three studies were formulated based on the results and limitations of previous research in the field.

The model designed for the research, found in *Figure 1*, assumed that attachment is a predictor of somatic symptom disorder, and this relationship is partially mediated by emotion regulation strategies. At the same time, the research aimed to investigate comparisons between people with somatic symptom disorder and those without this disorder, in terms of attachment and emotion regulation strategies.



Figure 1. Representation of the model designed for research

The objectives and hypotheses of the three studies will be presented for each study individually in the following chapters.

These studies are useful to researchers in gaining a higher level of knowledge of the interactions between adult attachment, emotion regulation strategies and somatic symptom disorder. Also, the studies are useful to practitioners, who will have at their disposal appropriate tools for the evaluation of the three concepts, according to the latest approaches in the field, as well as indicators for the therapeutic intervention of patients with somatic symptom disorder.

5. Study 1: The mediation effect of emotion regulation strategies in the relationship between attachment and somatic symptom disorder

The first study was correlational and took into consideration the global perspective on attachment, which states that attachment is a characteristic of the individual that manifests identically in all of his significant relationships.

5.1. Objectives and hypotheses

The objectives of the study were the following:

- 1) Investigating the interactions between adult attachment, emotion regulation strategies and somatic symptom disorder (specifically, the mediation relationship), as well as comparisons between people with somatic symptom disorder and people without somatic symptom disorder, in terms of attachment and emotion regulation strategies.
- 2) The adaptation, in Romania, of four questionnaires that evaluate adult attachment, emotion regulation strategies and somatic symptom disorder: a) *Experiences in Close Relationships – Short form* (ECR-S); b) *Regulation of Emotion Systems Survey* (RESS); c) *Patient Health Questionnaire-15* (PHQ-15); d) *Somatic Symptom Disorder – B Criteria Scale* (SSD-12).

The hypotheses of the study were the following:

Hypothesis 1: *Anxiety* and *Avoidance* correlate positively with somatic symptom disorder.

Hypothesis 2: *Anxiety* and *Avoidance* correlate with emotion regulation strategies.

Hypothesis 3: Emotion regulation strategies correlate with somatic symptom disorder.

Hypothesis 4: Emotion regulation strategies mediate the relationship between attachment and somatic symptom disorder.

Hypothesis 5: *Anxiety* and *Avoidance* are significantly higher in people with somatic symptom disorder compared to people without somatic symptom disorder.

Hypothesis 6: Emotion regulation strategies differ significantly in people with somatic symptom disorder compared to people without somatic symptom disorder.

5.2. Participants and procedure

The sample consisted of 170 people (19 men, 151 women) with somatic symptom disorder, aged between 18 and 62 years ($M=34.31$, $SD=11.92$) and 170 people (28 men, 142 women) without somatic symptom disorder, aged between 18 and 62 years ($M=33.49$; $SD=11.98$). After consenting to participate in the study, participants completed a socio-demographic data sheet and four questionnaires assessing adult attachment, emotion regulation strategies and somatic symptom disorder. Participation was voluntary, without financial benefits. The participants, however, had the opportunity to receive a personalized report, which included both the interpretation of the personal results obtained from the completed questionnaires and a brief theoretical presentation of the evaluated concepts.

5.3. Instruments

Experiences in Close Relationships – Short form (ECR-S), developed by Wei *et al.* (2007), contains 12 items and allows the assessment of adult attachment, based on two dimensions: *Anxiety* and *Avoidance*. The *Anxiety* dimension is characterized by preoccupation, jealousy, fear of abandonment and fear of rejection, and the *Avoidance* dimension is characterized by the discomfort felt when approaching other people, the avoidance of intimacy and the tendency of self-reliance (Brennan *et al.*, 1998).

Regulation of Emotion Systems Survey (RESS), developed by De France & Hollenstein (2017), contains 38 items and allows the assessment of six emotion regulation strategies: distraction, rumination, reappraisal, suppression, engagement and relaxation.

Patient Health Questionnaire-15 (PHQ-15), developed by Kroenke *et al.* (2002), contains 15 items and allows the assessment of the severity of somatic symptoms (criterion A of somatic symptom disorder).

Somatic Symptom Disorder – B Criteria Scale (SSD-12), developed by Toussaint *et al.* (2016), contains 12 items and allows the assessment of psychological aspects (cognitive, affective and behavioral) of somatic symptom disorder (criterion B of somatic symptom disorder).

For the present study, it was necessary to translate and adapt the four instruments in Romania. Therefore, before presenting the results of the research, we will describe the way in which the four tests were adapted to the Romanian population. For each instrument we used the same procedure, with certain variations, depending on the specifics of the questionnaire.

Adaptation of the Experiences in Close Relationships – Short form (ECR-S) in Romania

The adaptation of the ECR-S questionnaire in Romania was carried out with the consent of the author of the scale, going through the following stages to obtain the final version, in Romanian: translation, retroversion, pilot study. This version was subsequently applied to a sample (N=450) from the general population, with participants from all geographical regions of Romania, who also completed a sheet with socio-demographic data and a questionnaire for the assessment of depressive symptoms (necessary to investigate the validity of the instrument). The sample consisted of 63 (14%) men and 387 (86%) women, aged between 18 and 69 years (M=30.42; SD=11.21). After approximately two weeks, 87 participants from the total group – 7 (8%) men and 80 (92%) women, aged between 18 and 66 years (M=32.39; SD=11.98), completed the ECR-S questionnaire again, this step being necessary for investigating the fidelity of the questionnaire, in terms of the stability of the results over time.

The results indicated good psychometric properties of the *Experiences in Close Relationships – Short form* (ECR-S), adapted in Romania. Reliability was confirmed through the high internal consistency (Cronbach $\alpha=0.78$, McDonald $\omega=0.79$ for *Anxiety*;

Cronbach $\alpha=0.76$, McDonald $\omega=0.76$ for *Avoidance*), as well as through the stability of the results over a 2-week period (0.83 for *Anxiety*, 0.79 for *Avoidance*). Confirmatory factor analysis supported the bifactor model of the questionnaire ECR-S, but unlike the original version with 12 items, a number of 11 items were obtained for the Romanian version, this model having an adequate degree of fit: $\chi^2/df=2.77$; SRMR=0.079; RMSEA [90% CI]=0.064 [0.051–0.078]; CFI=0.963; TLI=0.953. The convergent validity of the tool was confirmed, through the statistically significant correlations between the dimensions of attachment and depression (0.378 for *Anxiety*, 0.265 for *Avoidance*), as well as the predictive validity for depression ($F(2, 410)=45.103$, $p < 0.001$). Regarding the influence of socio-demographic variables, it was found that men have a higher level of *Avoidance*, compared to women, being no statistically significant differences for the *Anxiety* dimension, depending on gender. The results of the present study indicated a negative correlation between age and *Anxiety*, and no correlation between age and *Avoidance*. Regarding the relationship status, it was found that single people have a higher level of *Anxiety* and *Avoidance*, compared to people in a relationship. Moreover, the results indicated that people with medium education and low income have a higher level of *Anxiety*, compared to people with higher education and medium and high income, and the groups do not differ statistically significantly in terms of *Avoidance*.

Adaptation of the Regulation of Emotion Systems Survey (RESS) in Romania

The adaptation of the RESS questionnaire in Romania was carried out with the consent of the author of the scale, following the same procedure as for the adaptation of the ECR-S questionnaire. The Romanian version of the RESS questionnaire was applied to two samples from the general population, with participants from all geographical regions of Romania, who also completed a sheet with socio-demographic data, those from the second batch, completing, in addition, another questionnaire to assess emotion regulation strategies, as well as a questionnaire to assess depressive symptomatology (necessary to investigate the validity of the instrument). The first sample (N=250), used for exploratory factor analysis, consisted of 44 (18%) men and 206 (82%) women, aged between 18 and 69 years (M=33.12; SD=12.07). The second sample (N=350), used for the confirmatory factor analysis, consisted of 38 (11%) men and 312 (89%) women, aged between 18 and 64 years (M=25.61; SD=7.57). After approximately two weeks, 53 participants from the first sample – 5 (9%) men and 48 (91%) women, aged between 18 and 66 years (M=33.30; SD=12.75), completed the RESS questionnaire again.

The results indicated good psychometric properties of the *Regulation of Emotion Systems Survey* (RESS), adapted in Romania. Reliability was confirmed through the high internal consistency (0.84–0.94 for the six subscales), as well as through the stability of the results over a 2-week period (0.70–0.84 for the six subscales). Exploratory factor analysis indicated a six-factor model. Confirmatory factor analysis supported the six-factor, 38-item model of the RESS questionnaire (similar model to the original version of the questionnaire) with an adequate degree of fit: $\chi^2/df=1.31$; SRMR=0.065; RMSEA [90% CI]=0.030 [0.024–0.036]; CFI=0.988; TLI=0.988. The convergent validity of the tool was confirmed, through the correlations between the emotion regulation strategies and the subscales of

another questionnaire for assessing the emotion regulation strategies (0.714 for *Suppression*, 0.487 for *Reappraisal*), respectively the correlations between the strategies and depression (0.471 for *Rumination*, 0.203 for *Suppression*, 0.136 for *Distraction*), as well as the predictive validity for depression (*Rumination*: $F(1, 337)=96.600$, $p<0.001$), *Suppression*: $F(1, 339)=20.910$, $p<0.001$, *Distraction*: $F(1, 339)=6.955$, $p=0.009$). Regarding the influence of socio-demographic variables, it was found that women use *Rumination*, *Engagement*, *Relaxation* and *Distraction* more often compared to men. The results of the present study indicated that age correlates positively with *Engagement* and negatively with *Suppression*. Moreover, it was found that people from rural areas use *Distraction* more often, compared to people from urban areas. Regarding relationship status, singles were found to use *Engagement* less often and *Suppression* more often compared to people in a relationship.

Adaptation of Patient Health Questionnaire-15 (PHQ-15) in Romania

The adaptation of the PHQ-15 questionnaire in Romania was carried out following the same procedure as for the adaptation of the previous questionnaires, without, however, the author's consent being necessary, according to the mentions on the website <https://www.phqscreeners.com/>. The Romanian version of the PHQ-15 questionnaire was applied to two samples from the general population, with participants from all geographical regions of Romania, who also completed a sheet with socio-demographic data, and those from the second sample, completing in addition, a questionnaire to assess depressive symptomatology (necessary to investigate the validity of the instrument). The first sample ($N=250$), used for exploratory factor analysis, consisted of 44 (18%) men and 206 (82%) women, aged between 18 and 69 years ($M=33.12$; $SD=12.07$). The second sample ($N=350$), used for the confirmatory factor analysis, consisted of 38 (11%) men and 312 (89%) women, aged between 18 and 64 years ($M=25.61$; $SD=7.57$). After approximately two weeks, 53 participants from the first sample – 5 (9%) men and 48 (91%) women, aged between 18 and 64 ($M=32.92$; $SD=11.96$) completed the PHQ-15 questionnaire again.

The results indicated good psychometric properties of the *Patient Health Questionnaire-15* (PHQ-15), adapted in Romania. Reliability was confirmed through high internal consistency (Cronbach $\alpha=0.81$, McDonald $\omega=0.82$), as well as through the stability of the results over a 2-week period ($r_s=0.71$). Exploratory factor analysis indicated a one-factor model. Confirmatory factor analysis supported the one-factor, 15-item model of the PHQ-15 questionnaire (similar model to the original version of the questionnaire) with an adequate degree of fit: $\chi^2/df=1.65$; SRMR=0.072; RMSEA [90% CI]=0.044 [0.031–0.056]; CFI=0.968; TLI=0.963. The convergent validity of the tool was confirmed, through the statistically significant correlation between somatic symptoms and depression ($r_s=0.632$), as well as the predictive validity for depression ($F(1, 330)=284.567$, $p<0.001$). Regarding the influence of socio-demographic variables, it was found that women present a higher level of somatic symptoms compared to men. Moreover, the results of the present study indicated a negative correlation between age and somatic symptoms.

Adaptation of the Somatic Symptom Disorder – B Criteria Scale (SSD-12) in Romania

The adaptation of the SSD-12 scale on the general population in Romania was carried out with the consent of the author of the scale, following the same procedure used for adapting the previous questionnaires. The Romanian version of the SSD-12 questionnaire was applied to the same samples used to adapt the PHQ-15 questionnaire. The participants also filled in a sheet with socio-demographic data, and those in the second group, in addition, filled in a questionnaire to assess depressive symptomatology (necessary to investigate the validity of the instrument). After approximately two weeks, 54 participants from the first sample – 5 (9%) men and 49 (91%) women, aged between 18 and 66 years ($M=33.76$; $SD=12.54$) completed the SSD-12 questionnaire again.

The results indicated good psychometric properties of the *Somatic Symptom Disorder – B Criteria Scale (SSD-12)*, adapted on the Romanian general population. Reliability was confirmed through high internal consistency (Cronbach $\alpha=0.93$, McDonald $\omega=0.94$), as well as through the stability of the results over a 2-week period ($r_s=0.82$). Exploratory factor analysis indicated a one-factor model. Confirmatory factor analysis supported the one-factor, 12-item model of the SSD-12 scale in the general population (similar model to the original version of the questionnaire), with an adequate degree of fit: $\chi^2/df=2.39$; SRMR=0.049; RMSEA [90% CI]=0.064 [0.034–0.075]; CFI=0.995; TLI=0.994. The convergent validity of the tool was confirmed through the statistically significant correlation between the total score of the scale and depression ($r_s=0.486$). Moreover, it was found that the psychological symptoms of the somatic symptoms disorder do not vary according to the socio-demographic characteristics.

5.4. The operationalization of diagnostic criteria for somatic symptom disorder

The operationalization of the diagnostic criteria was carried out in accordance with their description in DMS-5 (APA, 2013), as well as with empirical studies in the field. Thus, the selection of participants with somatic symptoms disorder was determined taking into account the scores obtained on the PHQ-15 and SSD-12 questionnaires, as well as the duration of the symptoms.

5.5. Statistical analysis

The statistical analysis was conducted, for all three studies, using Jamovi, version 2.3.12, Jasp, version 0.16.3 and Factor, version 12.01.02, free softwares available for research purposes. The normality of the data was assessed through graphical inspection of the histograms, as well as through calculation of the skewness and kurtosis indicators. The similarity of the two groups (research and control), in terms of socio-demographic characteristics, was investigated through the Mann-Whitney (U) test for numerical data, the Fisher exact test (FET) for categorical data with two categories and the χ^2 test for categorical data with three categories (Kim, 2017). Pearson (r) and Spearman (r_s) correlation coefficients were used to investigate correlations. The effect size was reported in terms of the coefficient of determination r^2 (Sava, 2011). The mediation relationships were assessed through the bootstrap method, with a number of 5000 bootstraps, according to the recommendations

from the specialized literature (Biesanz *et al.*, 2010; Hayes, 2009), controlling, at the same time, the socio-demographic variables. Mann-Whitney U test was used to investigate differences between groups, and the effect size was indicated through rank-biserial correlation r_B (Goss-Sampson, 2020).

5.6. Results

Descriptive statistics

The majority of participants are female (86%), from urban areas (81%), in a relationship (76%), having higher education (66%) and a low to middle income (84%). There is a deviation from the normal distribution for *Rumination* and somatic symptom disorder.

Hypothesis 1: *Anxiety* and *Avoidance* correlate positively with somatic symptom disorder.

Statistically significant correlations, with medium effect, were obtained between *Anxiety* and somatic symptoms of somatic symptoms disorder ($r_s=0.232$, $r_s^2=0.05$, $p=0.002$), *Anxiety* and psychological symptoms ($r_s=0.225$, $r_s^2=0.05$, $p=0.003$), as well as between *Avoidance* and psychological symptoms ($r_s=0.257$, $r_s^2=0.07$, $p<0.001$).

Hypothesis 2: *Anxiety* and *Avoidance* correlate with emotion regulation strategies.

A statistically significant correlation, with medium-strong effect, was obtained between *Anxiety* and *Rumination* ($r_s=0.309$, $r_s^2=0.10$, $p<0.001$). Moreover, statistically significant correlations, with a low-medium effect, were obtained between *Anxiety* and *Suppression* ($r=0.185$, $r^2=0.03$, $p=0.016$), respectively between *Avoidance* and *Suppression* ($r=0.177$, $r^2=0.03$, $p=0.021$).

Hypothesis 3: Emotion regulation strategies correlate with somatic symptom disorder.

A statistically significant correlation, with low-medium effect, was obtained between *Rumination* and psychological symptoms of somatic symptom disorder ($r_s=0.152$, $r_s^2=0.02$, $p=0.047$).

Hypothesis 4: Emotion regulation strategies mediate the relationship between attachment and somatic symptom disorder.

Taking into account the statistically significant correlations obtained in the previous hypotheses, only the mediation relationship *Anxiety* → *Rumination* → Psychological symptoms was investigated. The results obtained after testing the mediation relationship are shown in table 1.

Table 1. The mediation relationship between *Anxiety*, *Rumination* and psychological symptoms.

Effect	Standardized coefficients (β)	Standard error	t	p	Confidence interval (95%)
Direct effect	0.184	0.081	2.28	0.023	[0.010; 0.344]
Indirect effect	0.041	0.029	1.44	0.149	[-0.009; 0.110]
Total effect	0.225	0.076	2.94	0.003	[0.072; 0.380]

The confidence interval of the indirect effect includes the value 0, therefore the link between *Anxiety* and psychological symptoms of somatic symptom disorder is direct, not mediated by *Rumination*. *Anxiety* explains 4% of the variance of psychological symptoms ($r^2=0.04$). In order to have a broad perspective on the predictive role of attachment in the somatic symptom disorder, two regression equations were additionally investigated, showing that *Anxiety* is also a predictor for somatic symptoms ($F(1)=11.483$, $p<0.001$), explaining 6.4% of the variance of somatic symptoms ($r^2=0.064$), and *Avoidance* is a predictor for psychological symptoms ($F(1)=15.658$, $p<0.001$, explaining 8.5% of the variance of psychological symptoms ($r^2=0.085$).

Hypothesis 5: *Anxiety* and *Avoidance* are significantly higher in people with somatic symptom disorder compared to people without somatic symptom disorder.

Statistically significant differences were obtained between the two groups, in terms of attachment ($U_{Anxiety}=21391.5$, $p<0.001$, $r_B=0.480$, strong effect; $U_{Avoidance}=20173.5$, $p<0.001$, $r_B=0.396$, medium-strong effect). *Anxiety* and *Avoidance* are significantly higher in people with somatic symptom disorder (Median $_{Anxiety}=4.00$, Median $_{Avoidance}=3.00$), compared to people without this disorder (Median $_{Anxiety}=2.50$, Median $_{Avoidance}=1.80$).

Hypothesis 6: Emotion regulation strategies differ significantly in people with somatic symptom disorder compared to people without somatic symptom disorder.

Statistically significant differences were obtained between the two groups, in terms of the following emotion regulation strategies: *Rumination* ($U_{Rumination}=24017$, $p<0.001$, $r_B=0.662$, strong effect), *Suppression* ($U_{Suppression}=20650.5$, $p<0.001$, $r_B=0.429$, strong effect), *Distraction* ($U_{Distraction}=17401$, $p=0.001$, $r_B=0.204$, low-medium effect) and *Reappraisal* ($U_{Reappraisal}=12008$, $p=0.007$, $r_B= -0.169$, low-medium effect). People with somatic symptom disorder use *Rumination*, *Suppression* and *Distraction* more often and *Reappraisal* less frequently (Median $_{Rumination}=4.17$, Median $_{Suppression}=3.13$, Median $_{Distraction}=3.75$, Median $_{Reappraisal}=3.50$), compared to people without this disorder (Median $_{Rumination}=3.00$, Median $_{Suppression}=2.50$, Median $_{Distraction}=3.25$, Median $_{Reappraisal}=3.75$).

5.7. Discussions

Although the present study provides broad insight into the relationships between attachment, emotion regulation strategies and somatic symptom disorder, it has certain limitations. First, attachment was approached only from a global perspective, without considering its specificity according to the relationship. In addition, attachment was assessed through a self-report questionnaire, which did not allow the assessment of unconscious aspects relevant to the attachment pattern. Moreover, the research group and the control group were not similar in terms of socio-demographic characteristics, so it could not be determined whether the differences between the groups, in terms of attachment and emotion regulation strategies, are explained by the discrepancy in health status or, rather, are due to differences in socio-demographic characteristics. Additional clarification is needed regarding the role of emotion regulation strategies in the relationship between attachment and somatic symptom disorder. To overcome all these limitations, a new study was carried out, which will be presented next.

6. Study 2: The incremental effect of emotion regulation strategies, over attachment, in estimating somatic symptom disorder

The second study was correlational and approached attachment from the perspective of specificity, taking into account its variability in three attachment relationships: with the mother, with the father and with the romantic partner. In addition, attachment was assessed through an interview, which allowed the assessment of unconscious aspects. Moreover, for the research group and the control group, similar samples were used in terms of socio-demographic characteristics.

6.1. Objectives and hypotheses

The objectives of the study were the following:

- 1) Investigating the interactions between attachment in adulthood, emotion regulation strategies, and somatic symptom disorder (specifically, the incremental effect of emotion regulation strategies, over attachment, in estimating somatic symptom disorder), as well as comparisons between people with somatic symptom disorder and people without somatic symptom disorder, in terms of attachment and emotion regulation strategies.
- 2) The adaptation, in Romania, of the *Attachment Multiple Model Interview* (AMMI), which evaluates attachment in adulthood.

The hypotheses of the study were the following:

Hypothesis 1: *Security, Inhibition, Hyperactivation* and *Disorganization* correlate with somatic symptom disorder.

Hypothesis 2: *Security, Inhibition, Hyperactivation* and *Disorganization* correlate with emotion regulation strategies.

Hypothesis 3: Emotion regulation strategies correlate with somatic symptom disorder.

Hypothesis 4: Emotion regulation strategies have an incremental effect, adding predictive value over attachment in estimating somatic symptom disorder.

Hypothesis 5: Attachment differs significantly in people with somatic symptom disorder compared to people without somatic symptom disorder.

Hypothesis 6: Emotion regulation strategies differ significantly in people with somatic symptom disorder compared to people without somatic symptom disorder.

6.2. Participants and procedure

The sample consisted of 60 people (7 men, 53 women) with somatic symptom disorder, aged between 19 and 56 years ($M=34.53$; $SD=10.01$), and 60 people (11 men, 49 women) without somatic symptom disorder, aged between 19 and 56 years ($M=34.42$; $SD=9.71$). The procedure was similar to the previous study. Participants completed a socio-demographic data sheet, a sheet on qualitative aspects of somatic symptom disorder symptomatology, and three questionnaires assessing emotion regulation strategies and somatic symptom disorder. Afterwards, the participants were interviewed in order to assess attachment in three significant relationships: with the mother, with the father and with the romantic partner.

6.3. Instruments

The instruments used to assess emotion regulation strategies and somatic symptom disorder were the same as in the previous study. To assess attachment, however, an interview-type instrument was used.

Attachment Multiple Model Interview (AMMI), developed by Miljkovitch (2009, *apud* Miljkovitch *et al.*, 2015), allows for the assessment of attachment in significant adult relationships: with mother, father and each romantic partner. The instrument considers four dimensions of attachment within each significant relationship of the individual: *Security* (primary attachment strategy), *Inhibition/Deactivation*, *Hyperactivation* and *Disorganization* (secondary attachment strategies). *Security* is assessed based on the coherence of the speech as well as from the examples provided by the participant about the quality of the relationship with the attachment figure. *Inhibition* can occur both at the behavioral level, by not manifesting one's feelings and attachment needs, and at the mental level, by minimizing or even not being aware of them. *Hyperactivation* refers to the excessive focus on the attachment figure and the individual's attempts to get his/her attention or to approach him/her. *Disorganization* consists of using opposite strategies (both deactivation and hyperactivation) within the same relationship (Miljkovitch *et al.*, 2015). The AMMI interview includes 23 questions, related to both childhood and couple relationships. Participants describe how they felt and behaved in various situations that may cause distress or vulnerability (fear, illness, danger, major changes, loss) or that involve threatening the relationship (through separation, conflict or rivalry), describing both their reactions, in general, and the reactions they had in a specific situation (Miljkovitch *et al.*, 2015).

For the present study, it was necessary to translate and adapt the *Attachment Multiple Model Interview* (AMMI) in Romania. Therefore, before presenting the results of the research, we will the way in which the tool was adapted to the Romanian population.

Adaptation of the Attachment Multiple Model Interview (AMMI) in Romania

The adaptation of the AMMI interview in Romania was carried out with the consent of the author of the instrument, following the same procedure as when adapting the questionnaires from the previous study. Given the complexity of the AMMI instrument, training in the coding of this interview was also necessary, which was carried out with a team of specialists from France. To adapt the AMMI interview to the Romanian population, we used a sample (N=60) consisting of 6 (10%) men and 54 (90%) women, aged between 19 and 56 years (M=36.15; SD=10.04). The procedure was similar to that used to adapt the questionnaires from the previous study. Before being interviewed for the attachment assessment, participants completed a socio-demographic data sheet and a depressive symptomatology questionnaire (necessary to investigate the convergent validity of the AMMI interview).

The results indicated good psychometric properties of the *Attachment Multiple Model Interview* (AMMI), adapted in Romania. Internal validity was confirmed by the statistically

significant correlations between the dimensions of attachment, within each significant relationship (with the mother, with the father, with the romantic partner): negative correlations between the *Security* dimension and the dimensions corresponding to the secondary attachment strategies (*Inhibition*, *Hyperactivation* and *Disorganization*), respectively positive correlations between secondary strategies. Convergent validity of the tool was confirmed through the statistically significant correlations between the dimensions of attachment and depression: negative between depression and *Security* (values between – 0.28 and – 0.32) and positive between depression and *Inhibition*, *Hyperactivation* and *Disorganization* (values between 0.27 and 0.37).

6.4. Statistical analysis

The statistical analysis was performed similarly to the previous study. In order to investigate the incremental effect of emotion regulation strategies, over attachment, in estimating somatic symptom disorder, two nested regression analyzes were performed (in the first model, attachment was considered a predictor for the somatic symptom disorder, and in the second model the predictors were both attachment and emotion regulation strategies) and the coefficients of determination R^2 corresponding to the two equations were compared (Sava, 2011).

6.5. Results

Descriptive statistics

The majority of participants are female (85%), from urban areas (86%), in a relationship (74%), having higher education (76%) and a low to middle income (69%). The research group and the control group are similar in terms of all socio-demographic characteristics. There is a deviation from the normal distribution for the attachment subscales, *Rumination* and the psychological symptoms of somatic symptom disorder.

Regarding the qualitative aspects of the symptomatology of people with somatic symptom disorder, it was found that the majority of participants have gastrointestinal (30%), metabolic and endocrine (25%) disorders and symptoms, followed by joint and skeletal muscle disorders (15%), cardiovascular (13%), sexual (8%), dermatological (5%) and respiratory disorders (4%). Moreover, 57% of the participants have a medical diagnosis and 43% do not have such a diagnosis. Regarding the evolution of the symptoms, the participants mentioned that the conditions were triggered due to emotional stress, family conflicts, the loss of a loved one or various changes that occurred at a given time in life. The participants also stated that the symptomatology aggravates when they face emotional stress, conflict situations or intense, unpleasant emotions.

Hypothesis 1: *Security*, *Inhibition*, *Hyperactivation* and *Disorganization* correlate with somatic symptom disorder.

Statistically significant correlations were obtained between somatic symptoms and the following dimensions of attachment: *Security (mother)* ($r_s = -0.261$, $r_s^2 = 0.07$, $p = 0.044$, medium effect), respectively *Security (father)* ($r_s = -0.358$, $r^2 = 0.13$, $p = 0.005$, strong effect).

Moreover, statistically significant correlations with a medium-strong effect were obtained between psychological symptoms and the following dimensions of attachment: *Security (mother)* ($r_s = -0.348$, $r_s^2 = 0.12$, $p = 0.006$), respectively *Inhibition (mother)* ($r_s = 0.339$, $r_s^2 = 0.11$, $p = 0.008$).

Hypothesis 2: Security, Inhibition, Hyperactivation and Disorganization correlate with emotion regulation strategies.

Statistically significant correlations, with a medium-strong effect, were obtained between the following dimensions of attachment and emotion regulation strategies: *Inhibition (mother)* and *Engagement* ($r_s = -0.275$, $r_s^2 = 0.08$, $p = 0.033$), *Inhibition (partner)* and *Engagement* ($r_s = -0.306$, $r_s^2 = 0.09$, $p = 0.018$), *Security (mother)* and *Distraction* ($r_s = 0.297$, $r_s^2 = 0.09$, $p = 0.021$), *Inhibition (mother)* and *Distraction* ($r_s = -0.304$, $r_s^2 = 0.09$, $p = 0.018$), *Security (partner)* and *Distraction* ($r_s = 0.286$, $r_s^2 = 0.08$, $p = 0.027$), *Hyperactivation (partner)* and *Distraction* ($r_s = -0.354$, $r_s^2 = 0.12$, $p = 0.006$).

Hypothesis 3: Emotion regulation strategies correlate with somatic symptom disorder.

Statistically significant correlations were obtained between *Rumination* and the somatic symptoms of the somatic symptom disorder ($r_s = 0.364$, $r_s^2 = 0.13$, $p = 0.004$, strong effect), respectively between *Rumination* and the psychological symptoms of the somatic symptom disorder ($r_s = 0.279$, $r_s^2 = 0.08$, $p = 0.031$, medium-strong effect).

Hypothesis 4: Emotion regulation strategies have an incremental effect, adding predictive value over attachment in estimating somatic symptom disorder.

The security of attachment to the mother explains 8% of the variance of somatic symptoms and 6.9% of the variance of psychological symptoms of somatic symptom disorder, and emotion regulation strategies add 17.6% and 14.5% respectively to the estimation of these symptoms. Attachment inhibition to the mother explains 8.5% of the variance in psychological symptoms of somatic symptom disorder, and emotion regulation strategies add 27.7% to the estimation of these symptoms. Attachment security to father explains 10.3% of the variance in somatic symptoms of somatic symptom disorder, and emotion regulation strategies add 18% to the estimation of these symptoms.

Hypothesis 5: Attachment differs significantly in people with somatic symptom disorder compared to people without somatic symptom disorder.

Statistically significant differences, with a medium effect, were obtained between the two groups, in terms of attachment to the mother: $U_{S(mother)} = 1261.5$, $p = 0.004$, $r_B = -0.299$; $U_{I(mother)} = 2291$, $p = 0.009$, $r_B = 0.273$; $U_{H(mother)} = 2258.5$, $p = 0.012$, $r_B = 0.255$; $U_{D(mother)} = 2379$, $p = 0.002$, $r_B = 0.322$. *Security* in the relationship with the mother is significantly lower in people with somatic symptom disorder (Median $S(mother) = 3.00$), compared to people without this disorder (Median $S(mother) = 4.00$). Moreover, *Inhibition*, *Hyperactivation* and *Disorganization* in the relationship with the mother are significantly higher in individuals with somatic symptom disorder (Median $I(mother) = 6.00$; Median $H(mother) = 4.00$; Median $D(mother) = 8.00$), compared to people without this disorder (Median $I(mother) = 4.00$; Median $H(mother) = 4.00$; Median $D(mother) = 4.00$).

Statistically significant differences were obtained, with a medium-strong effect, between the two groups, in terms of attachment to the father: $U_{S(father)} = 1099.5$, $p < 0.001$, $r_B = -0.389$; $U_{I(father)} = 2396.5$, $p = 0.001$, $r_B = 0.331$; $U_{H(father)} = 2484$, $p < 0.001$, $r_B = 0.380$; $U_{D(father)} = 2526$, $p < 0.001$, $r_B = 0.403$. *Security* in the relationship with the father is significantly lower in people with somatic symptom disorder (Median $S(father) = 2.00$) compared to people without this disorder (Median $S(father) = 4.00$). Moreover, *Inhibition*, *Hyperactivation* and *Disorganization* in the relationship with the father are significantly higher in people with somatic symptom disorder (Median $I(father) = 6.00$; Median $H(father) = 4.00$; Median $D(father) = 8.00$), compared to people without this disorder (Median $I(father) = 4.75$; Median $H(father) = 2.50$; Median $D(father) = 4.00$).

Statistically significant differences were obtained between the two groups, in terms of attachment to the romantic partner, with a medium effect: $U_{S(partner)} = 1290$, $p = 0.006$, $r_B = -0.283$; $U_{I(partner)} = 2390$, $p = 0.001$, $r_B = 0.328$; $U_{H(partner)} = 2365$, $p = 0.002$, $r_B = 0.314$; $U_{D(partner)} = 2450.5$, $p < 0.001$, $r_B = 0.361$. *Security* in the relationship with the romantic partner is significantly lower in people with somatic symptom disorder (Median $S(partner) = 4.00$), compared to people without this disorder (Median $S(partner) = 5.50$). Moreover, *Inhibition*, *Hyperactivation* and *Disorganization* in the relationship with the romantic partner are significantly higher in people with somatic symptom disorder (Median $I(partner) = 4.00$; Median $H(partner) = 5.00$; Median $D(partner) = 6.00$), compared to people without this disorder (Median $I(partner) = 2.00$; Median $H(partner) = 3.00$; Median $D(partner) = 4.00$).

Hypothesis 6: Emotion regulation strategies differ significantly in people with somatic symptom disorder compared to people without somatic symptom disorder.

Statistically significant differences were obtained between the two groups, in terms of *Rumination* ($U_{Rumination} = 2862.5$, $p < 0.001$, strong effect $r_B = 0.590$) and *Suppression* ($U_{Suppression} = 2242$, $p = 0.020$, medium effect $r_B = 0.246$). People with somatic symptom disorder use *Rumination* and *Suppression* more often (Median $Rumination = 4.33$, Median $Suppression = 2.38$), compared to people without this disorder (Median $Rumination = 3.25$, Median $Suppression = 2.13$).

6.6. Discussions

Results indicated correlations between attachment, emotion regulation strategies and somatic symptom disorder, as well as the incremental effect of emotion regulation strategies, over attachment, in estimating somatic symptom disorder. Moreover, statistically significant differences were obtained between people with somatic symptom disorder and people without this disorder in terms of attachment and emotion regulation strategies. The results obtained in this study, using the new attachment approach, are similar to the previous study.

Therefore, it can be concluded that an in-depth understanding of somatic symptom disorder requires the integration of attachment theory (both from a global perspective and from a specific perspective) and emotion regulation theory. Intervention studies on attachment and emotion regulation are also needed to capture how changes in these, affect somatic symptom disorder symptomatology.

7. Study 3: A training and intervention program for improving emotion regulation strategies

This study is a practical validation study of the research results. The results obtained in the two correlational studies of the present thesis indicate that the somatic symptom disorder is closely related to attachment style and emotion regulation strategies, suggesting that an improvement in attachment or emotion regulation could lead to a reduction of the symptomatology of somatic symptom disorder. Considering the limited time resources of the present thesis, which do not allow for an in-depth therapeutic intervention to modify the attachment, a training and intervention program was created to improve emotion regulation strategies.

7.1. Objectives and hypotheses

The objective of the study is to investigate the impact that changes in emotion regulation strategies have on the symptomatology of somatic symptom disorder.

We expect that individuals with somatic symptom disorder who participate in a training and intervention program to improve emotion regulation strategies will show beneficial changes in both emotion regulation and somatic symptom disorder symptomatology.

7.2. Participants and procedure

The sample consisted of 69 people with somatic symptom disorder: 35 participants (one man, 34 women), aged between 18 and 62 years ($M=36.20$; $SD=12.33$), assigned to the research group (participated in the training and intervention program for improving emotion regulation strategies), respectively 34 participants (4 men, 30 women), aged between 19 and 61 years ($M=39.53$; $SD=14.00$), assigned to the control group. The final sample used for hypothesis testing consisted of 60 people with somatic symptom disorder (9 participants dropped from the study), equally divided into the two groups. Both participants who followed the training and intervention program, as well as those in the control group, were assessed before starting the program, as well as after its completion. The assessment was carried out by applying three questionnaires that capture emotion regulation strategies and somatic symptom disorder. Participation was voluntary, without financial benefits.

The training and intervention program for improving emotional regulation strategies

This program was developed based on the process model of emotion regulation, proposed by Gross (1998), as well as based on previous research in the field. The program took place over a period of eight weeks, each week comprising one group meeting of approximately 90 minutes.

The objectives of the sessions were of increasing difficulty, with each stage of training building on previous acquisitions. The objectives were the following:

- understanding the role of emotion regulation in physical and mental health;
- developing emotion awareness skills;
- developing the skills of recognizing and naming emotions (expanding the emotional vocabulary);
- developing the skills to use relaxation techniques;
- reduction of rumination;
- developing the ability to accept emotions;
- reducing the tendency to suppress emotions;
- developing the skills to regulate specific emotions (anger, fear, sadness);
- developing the use of the cognitive reevaluation strategy;
- developing skills to express emotions.

To achieve the objectives, the training and intervention program consisted of a psychoeducation module, intervention techniques applied during the eight sessions, as well as individual exercises (homework).

The psychoeducation module included information on relevant aspects of emotion regulation. Psychoeducation aimed to increase the participants' awareness of the importance of emotional health, to facilitate their understanding of the theoretical aspects that formed the basis of the intervention program, as well as to contribute to increasing the participants' motivation for involvement in the program and practicing the proposed exercises.

The intervention techniques consisted of exercises aimed at developing emotion regulation skills. These techniques, in ascending order, from the first session to the last session, were the following:

- exercises for exemplifying the mind-body relationship;
- mindfulness exercises for awareness of body sensations;
- exercises for developing the emotional vocabulary (we used the wheel of emotions, as a visual support; it illustrates the basic emotions, divided into three intensities);
- breathing techniques;
- mindfulness exercises for detached observation of one's thoughts;
- mindfulness exercises for accepting bodily sensations;
- exercise regarding the role of emotions and their use as an "inner compass" for connecting with personal values and needs;
- exercise related to suppressed emotions and the physiological changes that accompany the non-expression of that emotion;
- identifying the advantages and disadvantages of using the suppression strategy for emotion regulation, as well as alternative ways to obtain those advantages;
- guided imagery exercise to activate and manage anger;
- practicing how to express anger in an assertive way;

- guided imagery and mindfulness exercise to activate and manage fear;
- dialogue in teams about one's approach to the emotion of sadness and the strategies used to manage it;
- guided imagery exercise to activate and manage sadness;
- dialogue in teams about the stages of mourning felt on a personal level in a situation of loss;
- cognitive restructuring techniques;
- practicing the ability to change maladaptive thoughts into functional thoughts;
- assertive communication techniques;
- mindfulness exercise for self-compassion;
- relaxation techniques (abdominal breathing, progressive muscle relaxation – Jacobson method).

Moreover, at the end of each meeting, the participants received by email a summary of the theoretical aspects covered in the respective session, as well as individual exercises to practice between sessions, to train emotion regulation skills.

7.3. Instruments

The instruments used to assess emotion regulation strategies and somatic symptom disorder were the same as in previous studies: **Regulation of Emotion Systems Survey (RESS)**, **Patient Health Questionnaire-15 (PHQ-15)**, respectively **Somatic Symptom Disorder – B Criteria Scale (SSD-12)**.

7.4. Statistical analysis

Similarity of groups, from the point of view of socio-demographic and clinical characteristics, was carried out similar to previous studies. The condition of normality of the data was verified through Shapiro-Wilk test, suitable for samples smaller than 50 participants (Shapiro & Wilk, 1965). To investigate the correlations between the study variables, we used the Spearman r_s coefficient. For the comparison of the results obtained before and after the intervention program, we used the t and Wilcoxon signed-rank tests, according to the recommendations from the specialized literature (Sava, 2011). The effect size was reported through Cohen's d (Sava, 2011).

7.5. Results

Preliminary analysis

The results indicated that the research group and the control group were similar in terms of socio-demographic and clinical characteristics. The Shapiro-Wilk test indicated that the data were not normally distributed for *Rumination* and psychological symptoms of somatic symptom disorder. The results also revealed statistically significant correlations between the study variables, with somatic symptom disorder correlating positively with *Rumination* and *Suppression* and negatively with *Reappraisal*.

People who participated in the training and intervention program have a lower level of maladaptive emotion regulation strategies and a higher level of adaptive emotion regulation strategies, compared to the level before the intervention program.

After participating in the training and intervention program, statistically significant improvements were found in emotion regulation strategies, participants obtaining a lower level of *Rumination* ($t(29)=4.631$; $p<0.001$; strong effect $d=0.846$) and a higher level of *Reevaluation* ($t(29)= -2.086$; $p=0.046$; average effect $d= -0.381$), compared to the period before the program was carried out.

People who participated in the training and intervention program show a lower level of symptomatology of the somatic symptoms, compared to the level before the intervention program.

After participating in the training and intervention program, a statistically significant reduction in the symptomatology of the somatic symptom disorder was found, both in terms of somatic symptoms ($t(29)= 4.491$; $p<0.001$, strong effect $d=0.820$), which were reduced by 26%, as well as in terms of psychological symptoms ($t(29)= 3.632$; $p=0.001$, medium-strong effect $d=0.663$), which were reduced by 27%.

The improvements regarding the symptomatology of the somatic symptom disorder were maintained over a longer period of time, the results obtained after a follow-up three months after the completion of the training and intervention program indicating a statistically significant reduction both in terms of somatic symptoms ($t(9)= 2.538$; $p=0.032$, strong effect $d=0.802$), as well as in terms of psychological symptoms ($t(9)=2.906$; $p=0.017$, strong effect $d=0.919$) specific to the somatic symptom disorder. However, considering the small number of respondents ($N=10$, 33% of the initial group), caution is recommended in the interpretation of the results.

People in the control group do not obtain statistically significant changes in emotion regulation strategies or somatic symptom disorder symptomatology.

In the control group, no statistically significant differences were obtained in terms of emotion regulation strategies or symptomatology (somatic and psychological) of the somatic symptom disorder.

7.6. Discussions

This study makes significant contributions to research in the field, by including a high number of strategies and, at the same time, addressing a diverse spectrum of emotion regulation strategies, targeting several components of emotion regulation: cognitive, behavioral and physiological. The study also has implications at a practical level, providing clues for intervention on those emotion regulation strategies that are relevant to the somatic symptom disorder, leading to a more rapid reduction in symptomatology.

CONCLUSIONS AND GENERAL DISCUSSIONS

1. Synthesis of research results

The first study was correlational and had two objectives. **The first objective** was to investigate interactions between adult attachment, emotion regulation strategies and somatic symptom disorder (specifically, the mediation relationship), as well as comparisons between people with somatic symptom disorder and people without somatic symptom disorder, in terms of attachment and emotion regulation strategies. **The second objective** consisted in the adaptation, in Romania, of four questionnaires that evaluate attachment in adulthood, emotion regulation strategies and somatic symptom disorder: a) *Experiences in Close Relationships – Short form* (ECR-S); b) *Regulation of Emotion Systems Survey* (RESS); c) *Patient Health Questionnaire-15* (PHQ-15); d) *Somatic Symptom Disorder – B Criteria Scale* (SSD-12). In this study, we used the global approach of attachment, which is considered a characteristic of the individual, manifesting itself identically in all of his significant relationships.

The results obtained in the first study indicated **statistically significant correlations between attachment, emotion regulation strategies and somatic symptom disorder**, as follows: a) positive correlations between *Anxiety* and the somatic symptoms of the somatic symptom disorder, *Anxiety* and the psychological symptoms of the somatic symptom disorder, *Avoidance* and the psychological symptoms of the somatic symptom disorder; b) positive correlations between *Anxiety* and *Rumination*, *Anxiety* and *Suppression*, *Avoidance* and *Suppression*; c) positive correlation between *Rumination* and psychological symptoms of somatic symptom disorder.

The mediation relationship was not confirmed, this result could be explained by the fact that emotion regulation strategies develop not only within attachment relationships, but also within other interpersonal relationships (Leblanc *et al.*, 2016; Röhrich *et al.*, 2019). Moreover, the result could be biased due to the pandemic context in which the data were collected. Recent studies have indicated that the pandemic caused both a change in the use and effectiveness of emotion regulation strategies (Tag *et al.*, 2022; Tyra *et al.*, 2021) and an increase in the prevalence of anxiety among the general population (from 7 % to approximately 30%, according to Delpino *et al.*, 2022 and Santabárbara *et al.*, 2021), this inducing a somatic and psychological symptomatology additional to that specific to the somatic symptoms disorder. The results of the study indicated that **the relationship between attachment and somatic symptom disorder is direct, attachment representing a predictive factor**, as follows: *Anxiety* explains 6.4% of the variance of somatic symptoms of the somatic symptom disorder and 4% of the variance of psychological symptoms, and *Avoidance* explains 8.5% of the variance of psychological symptoms.

Comparisons between people with somatic symptom disorder and people without this disorder indicated statistically significant differences between the two groups, both in terms of attachment (*Anxiety* and *Avoidance* are higher among people with somatic symptom disorder compared to people without this disorder), **as well as in terms of**

emotion regulation strategies (people with somatic symptom disorder use more often *Rumination*, *Suppression* and *Distraction* and less often *Reappraisal*, compared to people without this disorder).

Regarding **the adaptation of the four questionnaires in Romania, good psychometric properties were obtained**, comparable to those of the original instruments, and **the factorial structure of the translated versions was similar to the original versions, with the exception of the ECR-S questionnaire**, for which the English version has 12 items, and the Romanian version has only 11 items.

In order to extend the conclusions from the first study, **a second correlational study** was carried out, in which the complementary perspective on attachment was taken into account, namely its specificity (its variability depending on the relationship), evaluating the attachment in three relationships: with the mother, with the father and with the romantic partner. In addition, an interview-type tool was used to assess attachment, which allowed the capture of unconscious aspects, not assessed in the previous study. This study had two objectives. **The first objective** was to investigate interactions between adult attachment, emotion regulation strategies and somatic symptom disorder (specifically, the incremental effect of emotion regulation strategies, over attachment, in estimating somatic symptom disorder), as well as comparisons between people with somatic symptom disorder and people without somatic symptom disorder, in terms of attachment and emotion regulation strategies. **The second objective** consisted in the adaptation, in Romania, of the *Attachment Multiple Model Interview* (AMMI), which allows the assessment of attachment in multiple attachment relationships: with the mother, with the father, with the romantic partner.

The results obtained in the second study indicated **statistically significant correlations between attachment, emotion regulation strategies and somatic symptom disorder**, as follows: a) negative correlations between *Security (mother)* and the somatic symptoms of the somatic symptom disorder, *Security (mother)* and the psychological symptoms, *Security (father)* and somatic symptoms, respectively positive correlation between *Inhibition (mother)* and psychological symptoms; b) positive correlations between *Security (mother)* and *Distraction*, *Security (partner)* and *Distraction*, respectively negative correlations between *Inhibition (mother)* and *Engagement*, *Inhibition (mother)* and *Distraction*, *Inhibition (partner)* and *Engagement*, *Hyperactivation (partner)* and *Distraction*; c) positive correlations between *Rumination* and somatic and psychological symptoms of somatic symptom disorder.

The results of the present study also **indicated the incremental effect of emotion regulation strategies, which add predictive value over attachment in estimating somatic symptom disorder**. It was found that the *Security (mother)* and *Security (father)* dimensions, as sole predictors, explain 8%, respectively 10.3% of the variance of the somatic symptoms of the somatic symptom disorder, with emotion regulation strategies bringing an increment of 17.6%, respectively 18%. Moreover, the *Security (mother)* and *Inhibition (mother)* dimensions, as the sole predictors, explain 6.9%, respectively 8.5% of the variance of psychological symptoms, emotion regulation strategies bringing an increment of 14.5%, respectively 27.7%.

Comparisons between people with somatic symptom disorder and people without this disorder indicated statistically significant differences between the two groups, both in terms of attachment (*Security* is lower, and *Inhibition*, *Hyperactivation* and *Disorganization* are higher among people with somatic symptom disorder, compared to people without this disorder), **as well as in terms of emotion regulation strategies** (people with somatic symptom disorder use *Rumination* and *Suppression* more often, compared to people without this disorder).

Regarding **the Romanian adaptation of the attachment assessment interview**, good **psychometric properties were obtained**, comparable to those of the original instrument.

The third study was a practical validation study of the research results and its **objective** was the investigation of changes in emotion regulation strategies (through a training and intervention program, carried out during eight weeks), on the symptomatology of somatic symptom disorder. After the participation in the training and intervention program, there was an **improvement in the use of emotion regulation strategies** (less use of *Rumination* and more frequent *Reappraisal*), as well as a **reduction in the symptomatology of somatic symptom disorder** (reduction of somatic symptoms by 26%, respectively reduction of psychological symptoms by 27%), results that were also maintained at the follow-up evaluation carried out three months after the completion of this program. In the control group, there were no statistically significant changes in emotion regulation.

2. Research contributions

Theoretical contributions

First of all, a summary of the relevant theoretical aspects related to attachment, emotion regulation and psychosomatic conditions was made, accompanied by schemes and concrete examples designed by the author for the adequate understanding of the concepts presented. Moreover, a synthesis of the studies from the specialized literature was made, the results of these researches providing clues about the objectives and hypotheses of the three studies of the present thesis.

The present thesis integrates the theory of attachment and the theory of emotion regulation for the investigation of psychosomatic disorders, being the first thesis at the national level and among the first at the international level to investigate the links between all these three concepts.

In addition, the present research is notable for its use of current conceptualizations of attachment, emotion regulation and psychosomatic disorders. Thus, in the present thesis, we used the conceptualization of psychosomatic disorders from the perspective of the new approach, found in DSM-5 (APA, 2013) under the name "Somatic Symptom Disorder". Moreover, to the author's knowledge, it is the first research in the field of psychosomatic that approaches attachment in adulthood both from a global perspective (attachment is

considered an invariable characteristic of the individual) and from a specific perspective (attachment is considered to vary according to each significant relationship: with the mother, with the father, with the romantic partner). In this thesis, attachment was approached taking into account both the representational and the behavioral level. Unlike most research in the field, which considers only two emotion regulation strategies (suppression and reappraisal), the present thesis investigates six emotion regulation strategies, corresponding to the cognitive, behavioral and physiological components of the emotional response.

The results obtained in the present thesis, during the three studies, contribute to the field of research, by understanding how attachment, emotion regulation strategies and somatic symptom disorder interact and, implicitly, by a better knowledge of the factors involved in the evolution of somatic symptom disorder.

Clinical and practical contributions

The present thesis stands out for the operationalization of the diagnostic criteria of the somatic symptom disorder, based on the three diagnostic criteria mentioned in DSM-5 (APA, 2013), as well as on the basis of the information obtained from empirical studies in the field.

Another contribution of the thesis consists in the adaptation, on the general population in Romania, of five recent instruments to assess attachment in adulthood, emotion regulation strategies and somatic symptom disorder, instruments that capture a high number of characteristics of the studied concepts. These tools are useful both for researchers, who will thus be encouraged to carry out studies at the level of Romania, as well as for psychologists and psychotherapists, who will be able to obtain, through these tools, information on which to build their therapeutic intervention.

The results obtained are also relevant from a practical perspective, at an individual and social level, indicating the need for a holistic treatment of the somatic symptom disorder, which includes, in addition to drug treatment, training and intervention programs focused on improving emotion regulation strategies. The thesis thus contributes to the awareness of the need for a close collaboration between specialists in the field of physical and mental health.

3. Limitations and future research directions

Although the present thesis contributes significantly to the research in the field of psychosomatic, there are, however, certain limits of the research, among which we mention: the specific context in which the research was carried out (the pandemic period), the gender disproportion (the majority of the participants were female), age limitation (adult participants only), assessment of somatic symptom disorder by self-report questionnaires only, lack of therapeutic intervention for attachment modification in individuals with somatic symptom disorder. These limitations indicate possible research directions.

Therefore, future studies could investigate the replication of the results outside the pandemic context, using samples with a relatively balanced proportion, from the perspective of gender, respectively samples consisting in people of other age categories (children, adolescents). Future research could also include a clinical assessment based on an interview, which would allow more accurate identification of individuals with somatic symptom disorder. Moreover, further studies could focus on the manipulation of the “attachment” variable in people with somatic symptom disorder, by including the participants in individual psychotherapy programs focused on increasing the security of the attachment, followed by the investigation, at the end of the therapy, of the changes occurred both in terms of attachment security and somatic symptom disorder. The extensive study of the links between attachment, emotion regulation and somatic symptom disorder is necessary in order to acquire a high level of knowledge regarding the appropriate treatment of somatic symptom disorder, treatment which will be based on approaching the patient from a bio-psycho-social perspective.

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