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Ph.D THESIS SUMMARY

SELF-CONSCIOUS EMOTIONS IN ANXIETY DISORDERS: AN EMOTION REGULATION APPROACH

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(2) This is to certify by Cândea Diana-Mirela that:

(a) The resume includes the original research work of Cândea Diana-Mirela (author) towards the Ph.D.; the research was scientifically supervised by Professor Aurora Szentagotai-Tătar

(b) Parts of the thesis have been accepted for publication or presented as conference papers; appropriate citations for these publications were included in the thesis. Other co-authors have been included in the publications, if they contributed to the exposition of the published text, data interpretation etc. (their contribution was clearly explained in the footnotes of the thesis);

(c) The thesis was written according to the academic writing standards. All the text of the thesis and its summary was written by Cândea Diana-Mirela who assumes the all responsibility for the academic writing; also:

(3) All the Tables and Figures are numbered within the corresponding chapter or subchapter of the thesis.

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Keywords: self-conscious emotions, shame, guilt, anxiety, shame-proneness, self-compassion, cognitive reappraisal

CHAPTER I. INTRODUCTION

Self-conscious emotions are more complex emotions which require the presence of self-awareness and self-representations (Tracy & Robins, 2004). This category of emotions which include shame, guilt, pride and embarrassment, was significantly understudied compared with the so-called basic emotions. However, in the last two decades, their investigation grew exponentially beginning with the introduction of fine distinctions between each self-conscious emotion. An important distinction is that between shame, which involves a negative evaluation of the entire self, and guilt, which involves negative evaluations of specific behaviors (Lewis, 1971). These two emotions are associated with a wide array of psychological disorders, including anxiety disorders. Although, there are studies showing that both the tendency to experience shame and guilt are associated with different types of anxiety disorders (e.g., Fergus, Valentiner, McGrath, & Jencius, 2010; Tangney, Wagner, & Gramzow, 1992) it is not yet clear whether these associations are significant and most importantly of clinical relevance. Also, it is assumed that shame-proneness might be more important for some anxiety disorders, for example social anxiety disorder, while guilt-proneness might be especially relevant in case of PTSD, however the inconsistency of findings does not permit clear conclusions to be drawn. Further, studies that take into consideration the shared variance between shame and guilt fail to identify significant associations between guilt-proneness and psychological symptoms (Fergus et al., 2010; Pineles, Street, & Koenen, 2006; Tangney et al., 1992), thus questioning the relevance of guilt-proneness. As in case of depressive symptoms, a quantitative meta-analysis showed a medium magnitude of the association with shame-proneness and clarified when guilt becomes maladaptive and is strongly related to depression (Kim, Thibodeau, & Jorgensen, 2011), in case of anxiety disorders a similar analysis lacks.

While clarifying the magnitude of the associations of shame and guilt and psychological symptoms is an important step, equally important is to investigate potential variables that might influence these relationships. It has been proposed that it might not be the experience of emotion which it particularly pathological, but rather its regulation (Bybee, Zigler, Berliner, & Merisca, 1996; Quiles & Bybee, 1997). A huge number of studies investigated the regulation of basic emotions, but such studies are almost inexistent when it comes to self-conscious emotions. A few studies showed that rumination mediated the relationship between shame-proneness and depressive symptoms (Cheung, Gilbert, & Irons, 2004, Orth, Berking, & Burckhardt, 2006), while another study indicated that the regulation of shame and guilt might follow different patterns than those observed in the case of basic emotions, with self-distancing being inefficient in reducing these emotions (Katzir & Eyal, 2013). The investigation of both potentially adaptive and maladaptive regulation strategies would be an important step in shedding more light about the role of shame in the development and maintenance of psychopathology. Also, as most data are correlational cross-sectional, we cannot say anything about the evolution overtime of these experiences and whether they are simply correlates of anxiety disorders or have a more important role by predicting these symptoms.

There are some new strategies such as self-compassion that given its components is assumed to be especially useful in addressing the often painful emotion of shame (Neff, 2003a). However, there are only a few studies looking at its efficiency in reducing levels of shame and shame-proneness. Also, it is not clear if this strategy would be better than the well-established strategies used to down-regulate basic emotions, such as cognitive reappraisal. Finally, the question is whether targeting shame with such strategies would contribute to an increased efficacy of the existing treatments for social anxiety disorder. This

thesis aims to address these gaps in literature while trying to surpass the methodological limitations of previous studies, by using longitudinal and experimental designs which allow us to more thoroughly control for confounding variables.

Relevance and impact of the research

The aim of the present thesis is to investigate the relationship between self-conscious emotions, especially shame, and anxiety disorders, with a focus on social anxiety disorder, while exploring emotion regulation as a relevant factor.

First, clarifying the magnitude of the associations between shame, guilt-proneness and anxiety disorders would help establishing whether these relationships are relevant from a clinical perspective point of view. As the target of research in the clinical domain is related to better understand psychological disorders and finding more efficient and cost-effective means to address them, it is important to investigate factors which might have a significant contribution. If the magnitude of these relationships would be a medium/large one, this would suggest that these factors warrant further exploration, however, if the magnitude of these associations would be a small and insignificant one, this might indicate that they do not add an important explanatory value on the understanding of the clinical picture and etiological mechanisms of anxiety disorders.

Second, investigating the associations between shame-proneness and anxiety disorder in a longitudinal design would allow us to explore the evolution over time of these processes and test shame-proneness as a predictor of anxiety symptoms. This would be an important progress as it would be a first step in clarifying the role of shame in these disorders. If shame-proneness would be a significant predictor of anxiety symptoms this would suggest that shame is not simply a correlate of anxiety, but a potential etiological factor.

Third, it is important to understand how shame, an emotion which evolved to served important social goals, can become maladaptive and be associated with psychological disturbances. Our hypothesis is that the way people regulate shame might intensify this experience thus leading to a series of negative and dysfunctional consequences. Investigating shame's regulation might help us understand which strategies might be unhelpful and how this process relates to the development and maintenance of anxiety disorders. Further, the exploration of strategies that might lessen this emotion might an important path for building more efficient ways to address shame.

Finally, integrating new strategies to address shame in existing golden standard treatments might be an important direction in improving the efficacy of psychological interventions. This thesis has direct practical implications as it might lead to important developments for the psychological treatment of social anxiety disorder.

CHAPTER II. OBJECTIVES AND GENERAL METHODOLOGY

The present research aimed to address several theoretical and methodological objectives related to self-conscious emotions. We started from the differentiation between shame and guilt, two negative self-conscious emotions frequently associated with psychological disturbances. Building from here, we conducted several studies to answer four questions. The studies' structure following the research objective is presented in Figure 1.

The first question refers to the association between shame and guilt-proneness and anxiety disorders: are shame and guilt-proneness significantly associated with anxiety disorders and if yes, are they significant predictors of these symptoms? In order to answer this question, our formulated objective was to investigate the association between shame-proneness, guilt-proneness and anxiety symptoms. In order to attain this objective, we conducted a quantitatively review of the associations between shame-proneness, guilt-proneness and each category of anxiety symptoms (Study 1). We decided to conduct such an analysis, as the field is inconsistent in what concerns the significance and magnitude of these associations. While some models of anxiety disorders (e.g., cognitive models of social anxiety disorders) consider shame and guilt important features, the existing data do not offer clear evidence regarding their relevance from a clinical point of view (e.g., associations are significant at a medium or large effect size). Also, in Study 2 we investigated the associations between shame-proneness and anxiety disorders using a longitudinal design while testing whether shame-proneness is a predictor of anxiety disorders symptoms. Most of the existing evidence on the association between shame-proneness and anxiety disorders is correlational using cross-sectional designs. As a consequence, it is not clear if shame-proneness is a predictor of anxiety symptoms or it is merely a correlate of these symptoms. To answer this question, Study 3 investigates the role of shame-proneness as a predictor of anxiety symptoms over a period of 1 year.

The second question addressed by this thesis refers to the specific contribution of shame-proneness to anxiety symptoms. In other words, the objective was to investigate whether shame-proneness explains a significant percent of the variance in anxiety symptoms when controlling for well-established factors. Given that shame is mainly characterized by negative self-evaluations, in Study 2, we tested if shame-proneness adds explanatory value in case of social anxiety symptoms beyond that explained by irrational beliefs in general, and global self-evaluations in particular. Also, in Study 3, we tested whether shame-proneness is a significant predictor of each category of anxiety symptoms when controlling for depressive symptoms, irrational beliefs and difficulties in emotion regulation.

The third question is how the use of different emotion regulation strategy impacts the emotion of shame. To address this question, we formulated two research objectives:

3.1. Test if shame is associated with maladaptive emotion regulation strategies. The existing studies show an association between shame-proneness and rumination in the context of depressive symptoms. Therefore, we tested if shame and shame-proneness are associated with post-event rumination, a type of rumination specific to social anxiety disorder (Study 4).

3.2. Investigate how well-established adaptive emotion regulation strategies function in case of shame. Starting with a study which showed that the regulation of shame and guilt might follow different patterns compared to the regulation of basic emotions, we tested the effect of two reappraisal strategies on the level of state shame (Study 5).

The last question addressed by the current research is whether new strategies targeting shame are effective in reducing both the level of shame and social anxiety symptomatology. The following two objectives were formulated to address this question:

4.1. Analyze self-compassion as an effective strategy for reducing shame-proneness. To this end, Study 6 looked at the efficacy of self-compassion compared with cognitive reappraisal in reducing shame-proneness and social anxiety symptoms in a high socially anxious sample.

4.2. Test the efficacy of a self-compassion training added to a classic cognitive-behavioral protocol in treating social anxiety disorder. It is not clear if targeting shame-proneness might contribute to an increased efficacy of existing psychological treatments of social anxiety disorder and whether self-compassion is useful in case of clinical samples. Therefore, in Study 7, we compared the efficacy of group self-compassion enhanced CBT with the standard protocol in individuals diagnosed with social anxiety disorder.

Answering these research questions also has methodological implications. First, it was important to clarify if guilt has a significant contribution to anxiety disorders or whether its associations with anxiety symptoms are entirely explained by its shared variance with shame. In this sense, Study 1 consisted of a quantitative meta-analysis aimed to summarize the associations of shame and guilt-proneness with anxiety, while controlling for their shared variance. This study offers a more precise picture of the significance and magnitude of these relations. Next, there are very few longitudinal designs on the association of shame and psychopathology (e.g., Troop & Redshaw, 2012). It is important to have a temporal perspective and to establish the nature of these connections, a goal which cannot be achieved in a cross-sectional design. Finally, there is only one study which used an experimental design to investigate shame and guilt regulation. We conducted two experimental studies which looked at the efficacy of several emotion regulation strategies on both state shame and shame-proneness. This type of design allows us to formulate causal inferences on the effect of emotion regulation strategies on shame levels.

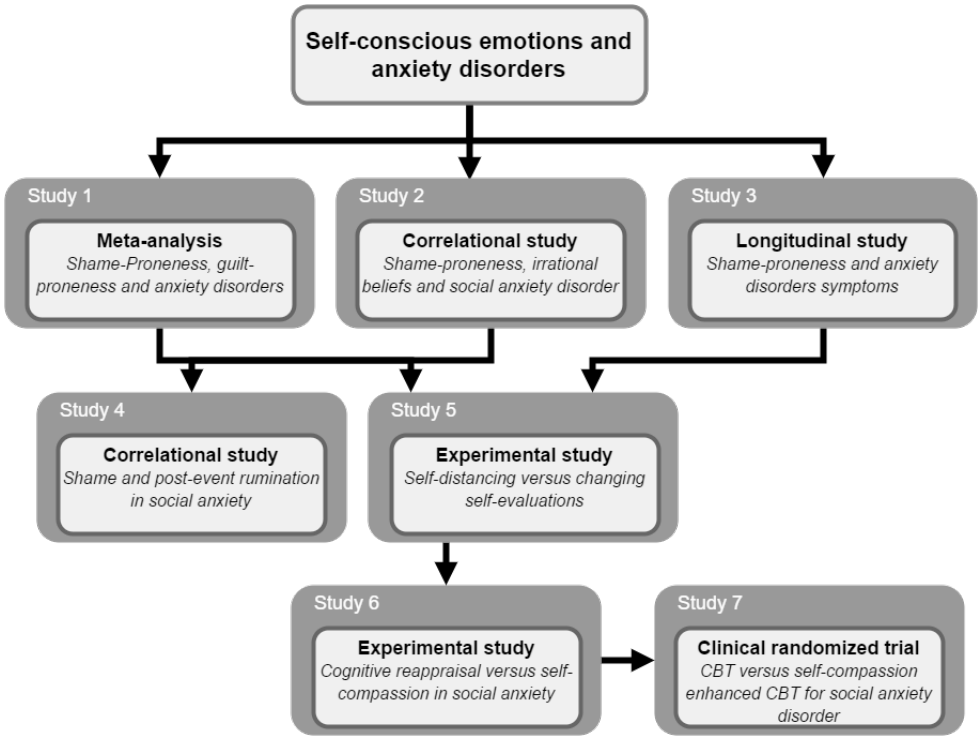

Figure 1. The schematic structure of the Ph.D. project

CHAPTER III. ORIGINAL RESEARCH

3.1. STUDY 1. A META-ANALYSIS OF THE ASSOCIATIONS BETWEEN SHAME PRONENESS, GUILT-PRONENESS AND ANXIETY DISORDERS

Introduction

Despite the significant advances in understanding the difference between shame, guilt and their distinct correlates, the clinical and empirical literature is inconsistent regarding their links with psychopathology (Tangney et al., 1992). In both psychological assessment (e.g., see diagnostic criteria for major depressive disorder) and clinical literature, guilt is viewed as a pathological emotion (Tangney, 1995). However, there are studies showing that shame-proneness is stronger associated with different psychological symptoms (Fergus et al., 2010; Pineles, Street, & Koenen, 2006; Tangney et al., 1992) compared with guilt. Shame and guilt both involve negative evaluation of the self or behavior (Tracy & Robins, 2004) and they often occur simultaneously/in tandem (Lewis, 1971). Evidence shows that, when controlling for the shared variance between shame-proneness and guilt-proneness (reflecting the features common to both shame and guilt), guilt-proneness is no longer related to psychopathology (Harder, Cutler, & Rockart, 1992; Pineles et al., 2006; Tangney et al., 1995). However, there is also evidence suggesting that guilt can be maladaptive. Authors and clinicians argue that guilt becomes maladaptive when the individual experience personal responsibility for things on which had no or little control (e.g., the case of trauma/combat-related guilt; Kubany, 1994). Also, this emotion becomes maladaptive when the guilt experience is magnified and generalized to the self (Tangney, 1995), a "free-floating" guilt unrelated to specific contexts. These types of guilt appear to be conceptually distinct from the situationally appropriate guilt experienced in the aftermath of a genuine transgression (Tangney & Dearing, 2002).

Most of the research on the clinical implication of shame and guilt is correlational and has investigated mainly their associations with depression (e.g., Andrews, Qian, & Valentine, 2002; Orth, Berking & Burkhardt, 2006), anxiety disorders (e.g., Fergus et al., 2010), eating disorders (e.g., Keith, Gillanders, & Simpson, 2009) or borderline personality disorders (e.g., Rusch et al., 2007). While in case of depression, the existing data are consistent and shows stronger associations between shame and depressive symptoms compared with guilt (see Kim, Thibodeau, & Jorgensen, 2011 for a review), for the other disorders, the results are scarce, inconsistent or less systematized. Of specific interest is the domain of anxiety disorders as there is a significant body of investigations showing associations between different type of symptoms and shame/guilt. In addition, clinical conceptualization of most anxiety disorders include shame and guilt as important features. For example, shame appears to be especially relevant in social anxiety disorder (SAD). Preeminent models of social anxiety stress that the perceptions regarding others' evaluations together with a strong desire to make a good impression but failing to do so are important features of social anxiety disorder (Clark & Wells, 1995; Rapee & Heimberg, 1997). Also, shame related negative self-evaluative cognitions are more frequent in high socially anxious persons (Beidel, Turner, & Dancu, 1985; Schulz, Alpers, & Hofmann, 2008) and numerous studies show significant associations between shame and social anxiety symptoms (Fergus et al., 2010; Gilbert & Miles, 2000; Lutwak & Ferrari, 1997).

Shame and guilt are relevant for other anxiety disorders as well. In generalized anxiety disorder (GAD), some researchers posit that worry might be used as a strategy to reduce negative emotions such as shame and guilt (Schoenleber, Chow, & Berenbaum, 2014). Further, shame might be relevant in panic disorder (PD; i.e., shame surrounding the potential consequences of panic attacks; Austin & Richards, 2001) or phobias (Harder et al., 1992),

however these associations received less empirical investigation. Obsessive-compulsive disorder (OCD) and post-traumatic stress disorder (PTSD) are not anymore included in the category of anxiety disorders (see *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition: DSM-5*; American Psychiatric Association, 2013), but shame and guilt might be relevant in their cases too.

The current study

As many theoretical models of anxiety disorder mention shame and guilt as an important feature (e.g., cognitive models of social anxiety disorder and PTSD), the purpose of the present study was to provide the first quantitative summary of the magnitude of the associations of shame and guilt with anxiety symptoms severity. Also, we aimed to investigate the unique associations of shame and guilt with anxiety symptoms by controlling for their shared variance. Finally, the impact of several theoretical and methodological factors on the strength of these associations was evaluated.

Method

Literature search

We identified the potential relevant studies by an extensive literature search conducted through the following databases: PsychINFO, PubMed, Scopus and Web of Science. Studies published by 1st March 2016 were included in the meta-analysis. We used the following key search terms: "shame", "guilt", "anxiety", "social anxiety", "social phobia", OCD, "obsessive compulsive", "obsessive-compulsive", PTSD, "post traumatic stress", "post-traumatic stress", "general* anxiety", GAD, "panic disorder", "specific phobia", "simple phobia", "acute stress disorder".

Selection of studies

The search strategy produced a total number of 8772 potentially relevant articles. After removing duplicates, a total of 4019 articles were analyzed in detail for relevance based on their abstract. Only studies that met the following criteria were included into the meta-analysis: (a) reported data regarding the association between shame/guilt and anxiety symptoms (b) were published in English, (c) were published in a peer-reviewed journal, and (d) reported enough information for computation of an effect size. We excluded 4753 studies for not complying with the aforementioned criteria. A total number of 143 studies from 141 distinct articles remained to be included in the meta-analysis.

Recorded variables

For each included study, we retained the following information: identification data (author, year of publication), number of participants, mean age of the participants, percentage of female participants per study, the specific shame and/or guilt scales used, the categorization of shame and guilt scales for purposes of moderator analyses (for shame: generalized vs. contextual, internal vs. external; for guilt: generalized vs. contextual-legitimate vs. contextual-maladaptive), the specific anxiety measures used, and clinical status of the sample.

Meta-analytic procedure

Effect size (ES) computation. We calculated overall effect sizes for the association between shame/guilt and anxiety symptoms. Also, separated effect sizes were computed for each category of anxiety symptoms (i.e., undifferentiated anxiety-anxiety symptoms which are not specific to a certain anxiety disorder, trait anxiety, state anxiety, separation anxiety, phobic anxiety, SAD, PD, GAD, OCD. PTSD and acute stress disorder). Also, we calculated

the associations between partial shame (guilt-free shame)/ partial guilt (shame-free guilt) and anxiety symptoms. Only studies that used the same scale to measure both shame and guilt (e.g., PFQ, TOSCA) were included in these analyses. When these partial correlations were not presented in the articles, they were estimated if sufficient data were available (i.e., correlation coefficient between shame and guilt).

Moderator analyses. Two continuous moderators (i.e., age and percentage of females) were tested using the unrestricted maximum likelihood meta-regression analysis. A significant *Z* value, indicates a significant relationship between the continuous variable and the ESs. Categorical moderators were tested with a mixed-effect meta-analytic test, which pools the studies within a category using random effects model, whereas tests for significant differences between groups using a fixed effect model. Two categorical moderators were tested: type of shame and guilt measure and the clinical status of the sample. According to the type of shame scale used, the moderator was divided in the following categories: internal shame, external shame, generalized shame and contextual shame. For guilt, the categories which were analyzed were: generalized guilt, contextual-legitimate guilt and contextual-maladaptive guilt. This categorization of the scales follows the one used by Kim and collaborators (2011) in their meta-analysis on the association of shame/guilt and depressive symptoms. In what concerns the clinical status of the sample, the following categories were coded: clinical, non-clinical and special population (includes individuals which sustain a trauma but were not assessed for a PTSD diagnosis, e.g., veterans, war prisoners or sexually/physically abused individuals). We also performed moderation analyses on the "guilt-free" shame (partial shame) and "shame-free" guilt (partial guilt) effect sizes. Categorical moderation analyses were tested only if there were at least three studies in at least two of the moderator categories.

Results

Overall, 800 effect sizes were computed from the 143 studies included in the meta-analysis, 341 for the association of anxiety symptoms with shame and 459 for the association with guilt, with a total of 29001 participants. Studies included in the meta-analysis were published between 1976 and 2016.

Overall effect size

The overall effect size of the associations between shame and anxiety symptoms (k = 106), was a medium one, $r = 0.383$ (95% CI = [0.352; 0.413]). Heterogeneity was high and significant, $Q(105) = 526.566$, $p < 0.001$, $I^2 = 80.059$. For the association between guilt and anxiety symptoms the overall effect size (k = 112) was also a medium one, $r = 0.341$ (95% CI = [0.295; 0.385]). Also in this case, heterogeneity was high and significant, $Q(11) = 1181.300$, $p < 0.001$, $I^2 = 90.604$.

A parallel set of analyses was performed using partial correlations between shame (with guilt partialled out) and guilt (with shame partialled out) and anxiety symptoms. The overall effect size for the association of partial shame and anxiety symptoms (k = 34) was a medium one, $r = 0.323$ (95% CI = [0.278; 0.367]). Heterogeneity was high and significant, $Q(33) = 112.378$, $p < 0.001$, $I^2 = 70.635$. On the other hand, the overall effect size for the association of partial guilt and anxiety symptoms was not significant, $r = -0.014$ 95% CI [-0.057; 0.030]. Partial shame was significantly stronger associated with anxiety symptoms compared with partial guilt ($Q(1) = 107.317$, $p < 0.001$).

Association of shame/guilt and undifferentiated anxiety symptoms. The effect size of the association between shame and undifferentiated anxiety symptoms (k = 29) was medium, $r = 0.394$ (95% CI [0.340; 0.446]). The effect size of the association of guilt with

undifferentiated anxiety symptoms (k = 24) was a small to medium one, r = 0.299 (95% CI [0.225; 0.369]). Shame was significantly stronger associated with undifferentiated anxiety symptoms compared with guilt (Q(1) = 4.449, p = 0.035). In case of partial shame, the effect size was a small one, r = 0.213 (95% CI [0.086; 0.334]), while for partial guilt it was not significant, r = -0.057 (95% CI [-0.121; 0.017]). Partial shame was significantly stronger associated with undifferentiated anxiety symptoms compared with partial guilt (Q(1) = 12.782, p < 0.001).

Association of shame/guilt and trait anxiety symptoms. For the association between shame and trait anxiety (k = 12) the effect size was medium, r = 0.375 (95% CI [0.286; 0.457]), while for the association between guilt and trait anxiety (k = 14) it was small, r = 0.210 (95% CI [0.102; 0.314]). Shame was significantly stronger associated with trait anxiety compared with guilt (Q(1) = 5.620, p = 0.018). The effect size for the association between shame and trait anxiety was even larger when controlling for guilt (partial shame; k = 7), r = 0.394 (95% CI [0.314; 0.468]). For partial guilt the effect size was not significant. Partial shame was significantly stronger associated with trait anxiety compared with partial guilt (Q(1) = 69.616, p < 0.001).

Association of shame/guilt and state anxiety symptoms. The effect size of the association between shame and state anxiety (k = 7) was a medium one, r = 0.426, (95% CI [0.215; 0.599]), while for guilt (k = 6) it was a small one, r = 0.145 (95% CI [0.075; 0.213]). Shame was significantly stronger associated with state anxiety compared with guilt (Q(1) = 5.999, p = 0.014). The effect size for the association between partial shame and state anxiety (k = 2) was medium, r = 0.359 (95% CI [0.276; 0.437], however it should be interpreted with caution as only two studies were available. For partial guilt the effect size did not reach statistical significance. Partial shame was significantly stronger associated with state anxiety compared with partial guilt (Q(1) = 20.072, p < 0.001).

Association of shame/guilt and separation anxiety symptoms. For separation anxiety we identified only one study so cannot draw any conclusion regarding the magnitude of these associations (r = 0.480, 95% CI [0.333; 0.604] for both shame and guilt associations).

Association of shame/guilt and phobic anxiety symptoms. The magnitude of the association of phobic anxiety symptoms with shame (k = 3) was medium, r = 0.300 (95% CI [0.224; 0.273]) and that with guilt (k = 5) was small, r = 0.210 (95% CI [0.126; 0.290]). A lower magnitude was observed for partial shame (k = 3, r = 0.220, 95% CI [0.141; 0.297]), but the effect size for partial guilt was not significant. Partial shame was significantly stronger associated with phobic anxiety symptoms compared with partial guilt (Q(1) = 13.230, p < 0.001).

Association of shame/guilt and social anxiety symptoms. The effect size for the association of shame with social anxiety symptoms (k = 32) was a medium one, r = 0.414 (95% CI [0.351; 0.473]) and a small magnitude was obtained for the association of guilt with social anxiety symptoms (k = 15), r = 0.234 (95% CI [0.140; 0.323]). Shame was significantly stronger associated with social anxiety compared with guilt (Q(1)= 10.504, p = 0.001). For the association with partial shame (k = 10) the effect size remained a medium one, r = 0.380 (95% CI [0.303; 0.453]), but for partial guilt it was no longer a significant one. Partial shame was significantly stronger associated with social anxiety symptoms compared with partial guilt (Q(1)= 50.950, p < 0.001).

Association of shame/guilt and panic symptoms. Shame was not significantly associated with panic symptoms and guilt was associated with panic (k=4) at a medium effect size, r = 0.374 (95% CI [0.204; 0.522]). Also the effect size of the association between partial

shame and panic symptoms (k = 2) reached statistical significance, r = 0.167 (95% CI [0.040; 0.228]), however we should note that only two studies were available.

Association of shame/guilt and GAD symptoms. A medium to large effect size was obtained for the association between shame and GAD symptoms (k = 7), r = 0.442 (95% CI [0.352; 0.524]) and a medium effect size for the association between guilt and GAD (k = 6), r = 0.346 (95% CI [0.254; 0.432]). For partial shame and GAD the magnitude of the effect size was medium (k = 4), r = 0.392 (95% CI [0.339; 0.443]), while for partial guilt it was not significant. Partial shame was significantly stronger associated with GAD symptoms compared with partial guilt ($Q(1)$= 32.250, $p < 0.001$).

Association of shame/guilt and OCD symptoms. For the association between shame and OCD symptoms (k = 10) the effect size was medium, r = 0.317 (95% CI [0.231; 0.398]), and a similar magnitude was found for the association between guilt and OCD (k = 29), r = 0.346 (95% CI [0.280; 0.409]). The effect size for the association between partial shame and OCD symptoms was also the same magnitude, k = 4, r = 0.272 (95% CI [0.208; 0.334]). For partial guilt the effect size was not significant. Partial shame was significantly stronger associated with OCD symptoms compared with partial guilt ($Q(1)$= 32.357, $p < 0.001$).

Association of shame/guilt and PTSD symptoms. The effect size for the association of shame with PTSD symptoms (k = 30) was a medium one, r = 0.357 (95% CI [0.287; 0.424]) and a similar magnitude was obtained for the association of guilt with PTSD symptoms (k = 49), r = 0.409 (95% CI [0.342; 0.472]). For the association with partial shame (k = 8) the effect size remained a medium one, r = 0.345 (95% CI [0.277; 0.410]), but for partial guilt it was no longer a significant one. Partial shame was significantly stronger associated with PTSD symptoms compared with partial guilt ($Q(1)$ = 15.977, p = 0.001).

Association of shame/guilt and acute stress disorder. For the association between shame and acute stress disorder symptoms (k = 2) the effect size was small, r = 0.165 (95% CI [0.028; 0.297]), and a similar magnitude was found for the association between guilt and acute stress disorder (k = 3), r = 0.261 (95% CI [0.136; 0.378]).

Categorical Moderator Analyses

The coding of the scales was done based on the specific categorization of scales provided by Kim and collaborators (2011).

Generalized versus contextualized shame. Type of shame, generalized versus contextualized shame moderated the effect size of the association between shame and overall anxiety symptoms, $Q(1)$ = 6.299, p = 0.012 with generalized shame yielding higher effect sizes, k=16, r = 0.485 (95% CI [0.406; 0.556]), when compared with contextual shame, k = 95, r = 0.376 (95% CI [0.344; 0.407]). For the other associations we found no moderation effects.

Internal versus external shame. Type of shame, internal versus external, significantly moderated the effect size of the association between shame and social anxiety, $Q(1)$ = 6.405, p = 0.011, with external shame yielding higher effect sizes, k = 7, r = 0.576 (95% CI [0.473; 0.663]), when compared with internal shame, k = 17, r = 0.409 (95% CI [0.325; 0.487]). No moderation effect was found for other associations.

Generalized versus contextual-legitimate versus contextual-maladaptive guilt. Type of guilt significantly moderated the effect size of the association between guilt and overall anxiety symptoms, $Q(2)$ = 50.078, $p < 0.001$, with contextual-legitimate (k = 30) yielding lower effect sizes, r = 0.152 (95% CI [0.097; 0.207]), when compared with contextual-maladaptive guilt (k = 48), r = 0.390 (95% CI [0.314; 0.461]), and generalized

guilt (k = 43), r = 0.399 (95% CI [0.350; 0.445]). Also, type of guilt significantly moderated the effect size of the association between partial guilt and the overall anxiety symptoms, $Q(1) = 25.009$, $p < 0.001$, contextual-legitimate (k = 27) yielding lower effect sizes, r =- 0.062 (95% CI [-0.046; -0.100]), when compared with generalized guilt (k = 11), r = 0.131 (95% CI [0.069; 0.192]). A significant moderation effect of type of guilt on the effect size for the associations between guilt and trait anxiety, social anxiety and OCD was found. For all associations the higher effect size was found for generalized guilt (r = 0.529, 95% CI [0.467; 0.586] for trait anxiety; r = 0.335, 95% CI [0.221; 0.440] for social anxiety; r = 0.397 95% CI [0.308; 0.453] for OCD). In case of social anxiety there was a higher effect size for contextual-maladaptive guilt obtained in one study, but was excluded from the moderation analysis. Type of guilt also significantly moderated the effect size of the association between partial guilt and social anxiety, $Q(1) = 9.208$, $p = 0.002$, with contextual-legitimate (k = 8) yielding lower effect sizes, r = -0.100 (95% CI [-0.182; 0.016]), when compared with generalized guilt (k = 4), r = 0.108 (95% CI [0.003; 0.210]).

Clinical versus non-clinical versus special population. Status of sample moderated the associations between guilt and overall anxiety symptoms, partial shame and overall anxiety symptoms, and guilt and PTSD. In all cases, higher effect sized were obtained for special population samples, r = 0.450 (95% CI [0.371; 0.523]) for guilt and overall anxiety symptoms, r = 0.404 (95% CI [0.347; 0.458]) for partial shame and overall anxiety symptoms, and r = 0.457 (95% CI [0.377; 0.529]) for guilt and PTSD.

Continuous Moderator Analyses

Age negatively predicted the effect sizes for the association of shame and overall anxiety symptoms (B = -0.003, z = -5.590, $p < 0.001$), undifferentiated anxiety symptoms (B = -0.016, z = -7.002, $p < 0.001$), trait anxiety (B = -0.017, z = -6.313, $p < 0.001$), state anxiety (B = -0.025, z = -5.620, $p < 0.001$) and OCD (B = -0.007, z = -2.217, p = 0.0267). Also, age positively predicted the effect sizes of the associations of partial shame and overall anxiety symptoms (B = 0.002, z = 2.803, p = 0.005), and partial shame and PTSD (B = 0.003, z = 2.181, p = 0.029). On the other hand, age negatively predicted the effect sizes of the associations of partial shame and undifferentiated anxiety symptoms (B = -0.017, z = -4.288, $p < 0.001$) and partial shame and trait anxiety (B = -0.009, z = -2.388, p = 0.017). The associations between guilt and overall anxiety symptoms (B = 0.005, z = 13.692, $p < 0.001$), guilt and undifferentiated anxiety symptoms (B = 0.005, z = 5.315, $p < 0.001$), guilt and social anxiety (B = 0.006, z = 3.115, p = 0.002), guilt and OCD (B = 0.006, z = 4.923, $p < 0.001$) were positively predicted by age. Also, age negatively predicted the effect size of the association of guilt and trait anxiety (B = -0.026, z = -7.975, $p < 0.001$) and guilt and PTSD (B = -0.001, z = -3.107, p = 0.034). Furthermore, age negatively predicted the effect sizes of the associations of partial guilt and overall anxiety symptoms (B = -0.003, z = -3.187, p = 0.002) and partial guilt and PTSD (B = -0.006, z = -4.958, $p < 0.001$), and positively predicted the effect size of the association between partial guilt and state anxiety (B = 0.104, z = 2.037, p = 0.042).

Percentage of female negatively predicted the effect sizes of the associations between shame and overall anxiety symptoms (B =-0.001, z = -5.543, $p < 0.001$), social anxiety (B = -0.003, z = -7.055, $p < 0.001$), GAD (B = -0.005, z = -2.391, p = 0.017), and PTSD (B = -0.002, z = -6.180, $p < 0.001$). On the other hand, percentage of female positively predicted the effect sizes of the associations between shame and trait anxiety (B = 0.006, z = 4.807, $p < 0.001$) and state anxiety (B = 0.016, z = 9.419, $p < 0.001$). Percentage of female was also a positive predictor of the effect sizes of the associations between partial shame and overall anxiety symptoms (B = 0.001, z = 2.246, p = 0.025), undifferentiated anxiety symptoms (B = 0.002, z

= 3.242, p = 0.001) and social anxiety (B = 0.004, z = 2.828, p = 0.005). For the associations with guilt, percentage of female negatively predicted the effect sizes of the associations with overall anxiety symptoms (B = -0.003, z = -17.398, p < 0.001), phobic anxiety (B =- 0.040, z = -3.030, p = 0.002), OCD (B = -0.006, z = -7.188, p < 0.001) and PTSD (B = -0.003, z = -13.299, p < 0.001), and positively predicted the effect size of the association with trait anxiety (B = 0.002, z = 3.914, p < 0.001), social anxiety (B = 0.004, z = 2.883, p = 0.004), and panic (B = 0.029, z = 3.952, p < 0.001). Percentage of female positively predicted the effect sizes of the associations between partial guilt and trait anxiety (B = 0.004, z = 1.997, p = 0.046), and social anxiety (B = 0.005, z = 3.156, p = 0.002), and negatively predicted the effect size of the association with state anxiety (B =- 0.166, z = -2.036, p = 0.042).

Publication bias

The fail-safe N analysis indicated no publication bias. The trim and fill procedure identified 7 studies to the left of the mean which would reduce the effect size of the association between shame and PTSD to r = 0.275 (95% CI [0.245; 0.304]). A similar pattern was obtained for the association between partial shame and overall anxiety symptoms where this procedure identified 13 studies to the left of the mean which would decrease the effect size to r = 0.256 (95% CI [0.236; 0.275]). In case of the association between partial shame and undifferentiated anxiety symptoms this procedure identified 3 studies to the left of the mean which would decrease the effect size to r = 0.162 (95% CI [0.126; 0.198]), while for the association between partial shame and GAD where 2 studies to the left of the mean would decrease the effect size to r = 0.375 (95% CI [0.325; 0.423]).

One study to the left of the mean would reduce the effect size for the association between guilt and state anxiety to r = 0.139 (95% CI [0.070; 0.206]), while for the association between guilt and phobic anxiety, 1 study to the left of the mean would reduce the effect size to r = 0.200 (95% CI [0.147; 0.252]). Also, 1 study to the left of the mean would reduce the effect size of the association of guilt with panic to r = 0.336 (95% CI [0.283; 0.386]). For the association between partial guilt and trait anxiety, 2 studies would reduce the effect size to r = -0.07 (95% CI [-0.110; -0.031]), while for the association between partial guilt and social anxiety, 4 studies to the left of the mean would reduce the effect size to r = -0.129 (95% CI [-0.178; -0.079]). Finally, 2 studies to the left of the mean would reduce the effect size for the association between partial guilt and GAD to r = 0.375 (95% CI [0.325; 0.423]).

Discussion

The current meta-analysis aimed to estimate the magnitude of the associations between shame, guilt and anxiety symptoms (overall and separately for each category of symptoms, including also OCD and PTSD symptoms). We performed a quantitative synthesis of 143 studies that investigated these associations, both at a bivariate level and while controlling for the shared variance between shame and guilt (partial correlations). We also examined potential moderators of the strength of these relationships (i.e., type of measurement, clinical status, age and gender).

First, both shame and guilt were significantly associated with overall anxiety symptoms, with a medium effect size for both shame and guilt. When controlling for the influence of the other emotion, only shame was significantly associated with anxiety symptoms, at a medium effect size. A similar pattern emerged for the associations between shame, guilt and undifferentiated anxiety symptoms. Both shame and partial shame were significantly associated with trait and state anxiety (medium effect sizes). Guilt was significantly associated with trait and state anxiety (small effect sizes) only when we did not control for the influence of shame. Both shame and partial shame were significantly stronger

associated with these symptoms compared with guilt, respectively partial guilt. The lack of significant associations with partial guilt suggests that as in case of depressive symptoms (see Kim et al., 2011), its relationship with anxiety symptoms might be mainly due to the shared variance with shame.

Second, we looked at the associations between shame, guilt and different types of anxiety symptoms and we found similar results. Shame was significantly associated with all but one type of anxiety symptoms investigated, namely panic symptoms (results should be interpreted with caution in this case as only two studies were identified). In most cases, the magnitude of these relationships indicates a medium effect size and the strongest correlations were those with GAD, social anxiety and separation anxiety (in the last case, only one study was available so the results are not reliable enough). In addition, partial shame was significantly associated with each category of symptoms, aside from separation anxiety symptoms, but the effect sizes were somehow smaller. In a similar way, we found statistical significant associations between guilt and each type of symptoms, with one exception, separation anxiety symptoms. The highest effect sizes were obtained for the associations with PTSD and panic disorder (i.e., medium effect sizes). None of the associations with partial guilt (shame-free guilt) were significant. Shame was significantly stronger associated only with social anxiety symptoms compared with guilt, while partial shame was stronger associated with all but two categories of symptoms, panic and separation anxiety symptoms (it should be noted that in these cases only 1 or 2 studies were identified). These results support that idea that shame is more relevant to anxiety disorders than guilt.

This meta-analysis indicates that shame-proneness is more strongly associated with anxiety symptoms compared with guilt-proneness whose magnitudes of the associations are in general small ones. These results pose a challenge to current views that guilt is a maladaptive emotion highly relevant for psychopathology, including anxiety symptoms. In contrast, evidence from this meta-analysis advances the idea that shame might be more relevant for anxiety disorders. As the main difference between shame and guilt resides in their focus either on the entire self (shame) or on the behavior (guilt), it suggests that these stronger associations between anxiety and shame might be due to the negative self-evaluations. While this meta-analysis confirms the associations of shame with different anxiety symptoms, more research is needed in order to clarify the mechanisms that might explain these relationships.

3.2. STUDY 2. DOES SHAME-PRONENESS ENHANCE OUR UNDERSTANDING OF SOCIAL ANXIETY BEYOND CLASSICAL COGNITIVE CONSTRUCTS?[1]

Introduction

Several features of social anxiety are linked to the construct of shame. Shame is a type of self-conscious emotion characterized by self-awareness and negative self-evaluations (Tracy & Robins, 2004). When feeling ashamed the individual tends to have a sense of inferiority, worthlessness and powerlessness, expressed at the behavioral level by the use of strategies aimed at hiding the inadequacies or at escaping from the situation (Tangney, 1992; Tangney, Miller, Flicker, & Barlow, 1996). Shame is considered a painful emotion, as it is focused on the entire self that is evaluated in a negative manner. A distinction that needs to be made is between shame as an emotional state and shame-proneness, which refers the tendency to experience shame (Tangney, 1996).

Several studies show that shame-proneness is associated with social anxiety symptoms (e.g., Gilbert & Miles, 2000; Lutwak & Ferrari, 1997). Also, there is a wealth of empirical evidence indicating that negative self-evaluations, the defining feature of shame, have higher levels in high socially anxious individuals (e.g., Beidel et al., 1985; Schulz, et al., 2008). On the other hand, cognitive factors like negative global evaluations are a category of cognitive distortions known as having an important role in psychopathology, including social anxiety (e.g., Stopa & Clark, 1993; Schulz et al., 2008). Thus, the question is whether shame-proneness is a construct that deserves further scrutiny in relation to social anxiety or whether its relation with social anxiety symptoms could be explained through negative global self-evaluation or, more generally, through the presence of cognitive distortions. In order to answer this question, in this study we sought to explore whether shame-proneness explains an additional variance in social anxiety symptoms, aside from that explained by cognitive distortions/irrational beliefs and specifically by negative global self-evaluations.

Method

Participants

Research participants were undergraduate students in psychology who were recruited through online announcements. The sample of this study included participants who participated in two of our experimental studies. One hundred twenty-nine students completed all the measures for this study (7 males and 122 females). Their ages ranged between 18 and 49 (M= 22.46, SD=5.24). They received extra credit for participating in the study. The scores for social anxiety symptoms in this sample ranged between 2 and 126. Eighty-one participants (62.8%) had a score higher or equal to 30 which is the cut-off score for clinical symptoms of social anxiety disorder on the *Liebowitz Social Anxiety Scale: Self-Report Version* (Rytwinski et al., 2009).

Measures

Shame-proneness. The shame subscale of the *Test of Self-Conscious Affect-3* (TOSCA-3; Tangney, Dearing, Wagner, & Gramzow, 2000) was used to measure shame-proneness. The instrument includes a description of 16 different scenarios, and participants indicate the extent to which they agree with suggested potential reactions.

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[1] This study has been published.

Candea, D. M., & Szentágotai-Tatar, A. (2014). Does Shame-Proneness Enhance our Understanding of Social Anxiety beyond Classical Cognitive Constructs? *Transylvanian Journal of Psychology*, 15(1), 33-47.

The authors contributed to the article as follows: Candea, D. M.: study design, conducting the study, data analysis and interpretation, writing the manuscript; Szentágotai-Tatar, A.: study design, data analysis and interpretation, writing the manuscript.

Irrational beliefs. *Attitudes and Beliefs Scale- II* (DiGiuseppe, Leaf, Exner, & Robin, 1988) was used to measure negative global self-evaluations and other irrational beliefs. ABS-2 items assess (1) four cognitive processes: (a) demandingness (i.e., the tendency of making absolutistic evaluations regarding the self, the others or the world), (b) awfulizing (i.e., the appraisal of a situation as being catastrophic or more than 100% bad), low frustration tolerance (i.e., the inability to tolerate a particular situation), and negative global self-evaluation (the tendency of labeling oneself, other people or life as being either entirely negative/bad or positive/good); (2) three content areas (approval, achievement, and comfort), and (3) two types of phrasing (rational and irrational).

Social anxiety. *Liebowitz Social Anxiety Scale: Self-Report Version* (LSAS-SR; Fresco et al., 2001) is a well-validated scale used to measure the dimensional severity of social anxiety symptoms.

Procedure

All measures for this study were administered online, prior to the experimental phases of the research project.

Results

Table 1 presents the means and standard deviations of shame-proneness, negative global self-evaluation, irrational beliefs, social anxiety symptoms and correlations among these variables. We found significant positive correlations between all the variables.

Table 1

Descriptive statistics and correlations

Variable	Mean	SD	Correlations		
			1	2	3
1. LSAS-SR	39.78	21.96			
2. ABS-II-NGSE	13.20	11.63	.41**		
3. ABS-II	104.55	39.87	.35**	.85**	
4. TOSCA-3-shame	38.12	10.64	.49**	.48**	.34**

Note. LSAS-SR= Liebowitz Social Anxiety Scale: Self-Report Version; ABS-II-NSE= Negative Global Self-Evaluation Scale of Attitudes and Beliefs Scale-II; ABS-II = Attitudes and Beliefs Scale-II Total Score; TOSCA-3-shame= Test of Self-Conscious Affect-3 shame subscale. ** $p < .01$.

We tested whether shame-proneness contributes to the understanding of social anxiety symptoms above and beyond negative global self-evaluations by conducting a two-step hierarchical regression to predict social anxiety symptoms from shame-proneness while controlling for the influence of negative global self-evaluations. The results show that negative global self-evaluations accounts for a 17% of the variance in social anxiety symptoms. When shame-proneness was added into the regression after negative global self-evaluations results indicated that the change in R^2 associated with shame-proneness is a significant one, with shame-proneness explaining an additional 11% of the variance in social anxiety [$F (1, 126) = 20.38$, $p < .001$] (see Table 2).

Table 2

Summary of Hierarchical Regression Analyses Predicting Social Anxiety Symptoms from Negative Global Self-Evaluation and Shame-Proneness

Variable	β	R^2 change
Step 1		.17**
ABS-II-NGSE	.41**	
Step 2		.11**
ABS-II-NGSE	.22*	
TOSCA-3-shame	.38**	

Note. ABS-II-NGSE= Negative Global Self-Evaluation Scale of Attitudes and Beliefs Scale-II; TOSCA-3-shame= Test of Self-Conscious Affect-3 shame subscale. *p <.05. **p <.001.

Next, we conducted a two-step hierarchical regression to predict social anxiety symptoms from shame-proneness while controlling for irrational beliefs total score. Irrational beliefs accounted for a significant part of the variance in social anxiety symptoms (12%). When controlling for irrational beliefs total score the change in R^2 associated with shame-proneness is a significant one, with shame-proneness explaining an additional 15% of the variance in social anxiety [$F(1, 126)= 28.13$, $p< .001$] (see Table 3).

Table 3
Summary of Hierarchical Regression Analyses Predicting Social Anxiety Symptoms from Irrational Beliefs and Shame-Proneness

Variable	β	R^2 change
Step 1		.12**
ABS 2	.35**	
Step 2		.15**
ABS 2	.21*	
TOSCA-3-shame	.42**	

Note. ABS 2=Attitudes and Beliefs Scale 2 Total Score; TOSCA-3-shame= Test of Self-Conscious Affect-3 shame subscale. *p <.05. **p <.001.

Discussion

The aim of this study was to explore whether the association between shame-proneness and social anxiety symptoms can be explained by the influence of cognitive distortions such as negative global self-evaluations. Given that negative self-evaluations are the central cognitive feature of shame, we were interested to see whether shame-proneness has a unique contribution to social anxiety symptoms distinct from that of cognitive

distortions in general and these evaluations in particular. We found positive correlations between all the variables included in the study, namely shame-proneness, social anxiety symptoms, negative global self-evaluations and irrational beliefs. The regression analysis indicated that shame-proneness explains an additional 11% of the variance in social anxiety symptoms, when controlling for the effect of negative global self-evaluation. Also, shame-proneness explains an additional 15% of the variance in social anxiety symptoms, when controlling for irrational beliefs. Although as expected shame-proneness was significantly correlated with both negative global self-evaluation and irrational beliefs, our results indicate that the link between shame and social anxiety it cannot be solely attributed to these cognitive factors. These findings suggest that shame-proneness deserves further scrutiny in relation with social anxiety as it explains a unique proportion of the variance in social anxiety symptoms, different from that explained by the well-validated construct of irrational beliefs.

3.3. STUDY 3. A LONGITUDINAL STUDY OF THE ASSOCIATIONS BETWEEN SHAME-PRONENESS AND ANXIETY SYMPTOMS

Introduction

There is a growing body of investigations which show that shame-proneness is associated with social anxiety (Gilbert & Miles, 2000; Lutwak & Ferrari, 1997), generalized anxiety disorder (Schoenleber, Chow, & Berenbaum, 2014), panic disorder (Muris, Meesters, Bouwman, & Notermans, 2015), obsessive-compulsive disorder (Field & Cartwright-Hatton, 2008) and post-traumatic stress disorder (Schoenleber, Sippel, Jakupack, & Tull, 2015). Also, our meta-analysis (Study 1), which synthesized these correlations, found significant positive associations between shame-proneness and each category of anxiety symptoms (except panic disorder, but only 2 studies were available for this category), with the largest effect sizes for social anxiety and generalized anxiety disorder. Although, our meta-analysis included a large number of studies, the big majority of them are cross-sectional and the association with shame-proneness is most of the times a secondary outcome.

Overview of the present study

This study aimed to investigate the relationship between shame-proneness and anxiety disorders symptoms in a longitudinal design in undergraduate college students. We looked at the role of shame-proneness as a predictor of social anxiety disorder, generalized anxiety disorder, panic disorder, obsessive-compulsive disorder and post-traumatic stress disorder over a period of 1 year. In order to test for the evolution of shame-proneness and anxiety disorder during college, we evaluated them at the beginning of the first year, after six months and after one year. Given the existence of well-established associated factors of anxiety disorders (i.e., irrational beliefs and deficits in emotion regulation), we controlled for their effect in order to distillate shame-proneness distinct contribution. Also, given that shame-proneness is also associated with depressive symptoms (Kim et al., 2011) and to test if the associations between anxiety disorder symptoms and shame might simply be due to the symptom overlap between depression and anxiety disorders as some authors assume (e.g., Mineka, Watson, & Clark, 1998), depression symptoms were also controlled for in these analyses.

Method

Participants

One hundred and forty-nine 1st year undergraduate students completed the baseline measures. The participants age ranged between 18 and 55 years (M=20.13,

SD=4.04). Most participants were girls (133 girls and 16 boys). A number of 82 participants completed the questionnaires after 6 months and after 1 year.

Measures

Shame-proneness. The predisposition to experience shame was evaluated with the shame subscale of the *Test of Self-Conscious Affect–3* (TOSCA-3; Tangney et al., 2000).

Depressive symptoms. The Beck Depression Inventory-II (Beck, Steer, & Brown 1996) was used to assess depressive symptoms.

Irrational beliefs. Dysfunctional thinking was measured with *The Attitude and Beliefs Scale-II* (ABS-II; DiGiuseppe et al., 1988) which is a self-report scale with 72 items.

Difficulties in emotion regulation. *Difficulties in Emotion Regulation Scale* (DERS; Gratz & Roemer, 2004) was used to evaluate emotion regulation. The scale assesses six dimensions of emotion regulation: nonacceptance, goals, impulse, strategies, clarity, and awareness. The 36 items are rated on a 5-point scale based on how often participants believe each item applies to them.

Social anxiety symptoms. *The Liebowitz Social Anxiety Scale: Self-Report Version* (LSAS-SR; Fresco et al., 2001) was used to assess social anxiety symptoms.

Generalized anxiety disorder symptoms. *The Penn State Worry Questionnaire* (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990) was used to asses generalized anxiety symptoms.

Panic disorder symptoms. *The Panic Disorder Severity Scale* (PDSS; Shear et al., 1997, 2001) was used to assess panic symptoms (i.e., panic frequency, distress during panic, anticipatory anxiety, avoidance of situations etc.).

Obsessive-compulsive disorder symptoms. *The Obsessive–Compulsive Inventory—Revised* (OCI-R; Foa et al., 2002) was used to evaluate OCD related symptoms.

Post-traumatic stress disorder symptoms. *The PTSD Symptom Scale-Self Report* (PSS-SR; Foa, Riggs, Dancu &, Rothbaum, 1993) was used to evaluate PTSD symptoms.

Procedure

Participants were recruited via discussion groups and social media networks. All the study measures were completed online. The link containing the informed consent and the baseline measures was included in the advertisement. At the second time point (6 months later), participants received the questionnaires via the e-mail they offered at the enrollment in the study. The same procedure was followed at the third time point (1 year).

Data analytic strategy

Hierarchical regression analyses were carried out to determine the influence of shame proneness, depressive symptoms, irrational beliefs and difficulties in emotion regulation on the extent of each anxiety symptoms category. In order to control for depressive symptoms, irrational beliefs and difficulties in emotion regulation, they were entered in the first step. Shame-proneness was entered in the second step. For the 6-months anxiety symptoms we used the baseline measures as predictors, while for the 1-year time point we used the 6 months results.

Results

Shame-proneness as a predictor of social anxiety symptoms

Baseline

Depressive symptoms, irrational beliefs and difficulties in emotion regulation accounted for 30% of the variance in social anxiety and was statistically significant, $F_{change}(3, 145)= 20.93$, $p < .001$. When shame-proneness was added in the second step, it explained an additional 16.3% of the variance in social anxiety and the change was significant, $F_{change}(1,$

144)= 43.97, $p < .001$. Together, the four variables accounted for 46.5% of the variance in social anxiety.

6 months

Depressive symptoms, irrational beliefs and difficulties in emotion regulation measured at T1 accounted for 6.5% of the variance in social anxiety measured 6 months later and was not statistically significant, $F_{change}(3, 78)= 20.93$, $p = .152$. Shame-proneness explained an additional 15% of the variance in social anxiety, $F_{change}(1, 77)= 14.73$, $p < .001$. Together, the four variables accounted for 21.5% of the variance in social anxiety measured at T2, but only shame-proneness and irrational beliefs were significant predictors.

1 year

At 1 year, depressive symptoms, irrational beliefs and difficulties in emotion regulation measured at 6 months accounted for 1.8% of the variance in social anxiety measured at 1 year. The model was not statistically significant, $F_{change}(3, 58)= .36$, $p = .784$. Shame-proneness explained an additional 15% of the variance in social anxiety, $F_{change}(1, 57)= 10.24$, $p = .002$. The full model explained 16.8% of the variance in social anxiety measured at T3 and shame proneness was the only significant predictor.

Shame-proneness as a predictor of generalized anxiety disorder symptoms

Baseline

Depressive symptoms, irrational beliefs and difficulties in emotion regulation accounted for 25.2% of the variance in generalized anxiety symptoms and was statistically significant, $F_{change}(3, 145)= 16.26$, $p < .001$. When shame-proneness was added in the second step, it explained an additional 7.7% of the variance in generalized anxiety and the change was significant, $F_{change}(1, 144)= 16.47$, $p < .001$. Together, the four variables accounted for 32.9% of the variance in generalized anxiety. Shame-proneness and difficulties in emotion regulation were the only significant predictors.

6 months

Depressive symptoms, irrational beliefs and difficulties in emotion regulation measured at T1 accounted for 11.5% of the variance in generalized anxiety measured 6 months later and was statistically significant, $F_{change}(3, 78)= 3.37$, $p = .023$. Shame-proneness explained an additional 6.4% of the variance in generalized anxiety, $F_{change}(1, 77)= 6.04$, $p = .016$. Together, the four variables accounted for 17.9% of the variance in generalized anxiety measured at T2, but only shame-proneness was a significant predictor.

1 year

At 1 year, depressive symptoms, irrational beliefs and difficulties in emotion regulation measured at 6 months accounted for 21.6% of the variance in generalized anxiety measured at 1 year and the model was statistically significant, $F_{change}(3, 58)= 5.33$, $p = .003$. Shame-proneness explained an additional 2.1% of the variance in generalized anxiety, $F_{change}(1, 57)= 1.59$, $p = .213$. The full model explained 23.7% of the variance in generalized anxiety measured at T3 and irrational beliefs were the only significant predictor.

Shame-proneness as a predictor of panic disorder symptoms

Baseline

Depressive symptoms, irrational beliefs and difficulties in emotion regulation accounted for 38.1% of the variance in panic disorder symptoms and was statistically significant, $F_{change}(3, 145)= 29.74$, $p < .001$. When shame-proneness was added in the second step, it explained an additional 0.3% of the variance in panic disorder but the change was not significant, $F_{change}(1, 144)= .71$, $p = .402$. Together, the four variables accounted for 38.4% of the variance in panic disorder symptoms.

6 months

Depressive symptoms, irrational beliefs and difficulties in emotion regulation measured at T1 accounted for 19% of the variance in panic disorder measured 6 months later

and was statistically significant, $F_{change}(3, 58)= 6.11$, $p = .001$. Shame-proneness did not explained an additional percent of the variance in panic disorder, $F_{change}(1, 77)= .01$, $p = .966$. Depressive symptoms were the only significant predictor.

1 year

At 1 year, depressive symptoms, irrational beliefs and difficulties in emotion regulation measured at 6 months accounted for 26.6% of the variance in panic disorder measured at 1 year. The model was not statistically significant, $F_{change}(3, 58)= .7$, $p < .001$. Shame-proneness explained an additional 0.6% of the variance in panic disorder, $F_{change}(1, 57)= .46$, $p = .503$. The full model explained 27.2% of the variance in panic disorder symptoms measured at T3 and depressive symptoms were the only significant predictor.

Shame-proneness as a predictor of obsessive-compulsive disorder symptoms

Baseline

Depressive symptoms, irrational beliefs and difficulties in emotion regulation accounted for 22.8% of the variance in OCD symptoms and was statistically significant, $F_{change}(3, 145)= 14.24$, $p < .001$. When shame-proneness was added in the second step, it explained an additional 1.3% of the variance in OCD but the change was not significant, $F_{change}(1, 144)= 2.44$, $p =.121$. Together, the four variables accounted for 24% of the variance in OCD.

6 months

Depressive symptoms, irrational beliefs and difficulties in emotion regulation measured at T1 accounted for 5.3% of the variance in OCD measured 6 months later and was not statistically significant, $F_{change}(3, 78)= 1.46$, $p = .233$. Shame-proneness explained an additional 3.1% of the variance in OCD, $F_{change}(1, 77)= 2.61$, $p = .111$. Together, the four variables accounted for 8.4% of the variance in OCD measured at T2, but none variables were significant predictors.

1 year

At 1 year, depressive symptoms, irrational beliefs and difficulties in emotion regulation measured at 6 months accounted for 13.6% of the variance in OCD measured at 1 year which was statistically significant, $F_{change}(3, 58)= 3.05$, $p = 036$. Shame-proneness explained an additional 1.1% of the variance in OCD, $F_{change}(1, 57)= .76$, $p = .386$. The full model explained 14.8% of the variance in OCD symptoms measured at T3 and irrational beliefs were the only significant predictor.

Shame-proneness as a predictor of post-traumatic stress disorder symptoms

Baseline

Depressive symptoms, irrational beliefs and difficulties in emotion regulation accounted for 39.7% of the variance in PTSD and was statistically significant, $F_{change}(3, 145)= 31.86$, $p < .001$. When shame-proneness was added in the second step, it explained an additional 2.7% of the variance in PTSD symptoms and the change was significant, $F_{change}(1, 144)= 6.83$, $p =.010$. Together, the four variables accounted for 42.5% of the variance in PTSD.

6 months

Depressive symptoms, irrational beliefs and difficulties in emotion regulation measured at T1 accounted for 23.8% of the variance in PTSD measured 6 months later and was statistically significant, $F_{change}(3, 78)= 8.10$, $p < .001$. Shame-proneness explained an additional 5.8% of the variance in PTSD, $F_{change}(1, 77)= 6.39$, $p = .014$. Together, the four variables accounted for 29.6% of the variance in PTSD measured at T2, with shame-proneness and irrational beliefs the only significant predictors.

1 year

At 1 year, depressive symptoms, irrational beliefs and difficulties in emotion regulation measured at 6 months accounted for 38.2% of the variance in PTSD symptoms

measured at 1 year which was statistically significant, $F_{change}(3, 58)= 11.956$, $p < .001$. Shame-proneness did not explained an additional percent of the variance in PTSD, $F_{change}(1, 57)= .005$, $p = .944$. Depressive symptoms were the only significant predictor.

Discussion

This study investigated shame-proneness as a predictor of anxiety disorders over a 1-year period. The results indicate that shame-proneness explains a significant percent of the variance in social anxiety symptoms at baseline, after 6 months and after 1 year when controlling for depressive symptoms, irrational beliefs and deficits in emotion regulation. While the portion of variance explained by the other three variables decreased from baseline to 1 year (from 30% to 1.8%), shame-proneness continue to explained around 15% of the variance at each time point and was the only significant predictor when all variables were included in the model. Shame-proneness explained an additional significant percent of the variance in generalized anxiety disorder and post-traumatic stress disorder at baseline and after 6 months, but was not a significant predictor one year after. Also, shame was the solely significant predictor only in case of generalized anxiety disorder measured after 6 months. Shame-proneness did not explain an additional portion in the variance of panic disorder and obsessive-compulsive disorder at none of the time points. These results are in line with those obtained in our meta-analysis and confirm the fact that shame-proneness might especially relevant in the case of social anxiety and generalized anxiety disorders. Also, our results replicate those of a previous study which showed that only symptoms of social anxiety disorder and generalized anxiety disorder shared significant associations with shame-proneness when controlling for other types of anxiety disorder symptoms, depression symptoms, and guilt-proneness (Fergus et al., 2010).

3.4. STUDY 4. SHAME AS A PREDICTOR OF POST-EVENT RUMINATION IN SOCIAL ANXIETY[2]

Introduction

Models of social anxiety describe post-event rumination/post-event processing (PER/PEP) as an important feature in the maintenance of social anxiety (e.g., Clark & Wells, 1995). PER is defined as the tendency to mentally rehearse or dwell on the negative aspects of a social situation after it has passed. While rumination is focused on depressive symptoms and their causes and consequences, PER is conceptualized as rumination related to perceived flaws and mistakes pertaining to one's social performance (Kocovski & Rector, 2007). Studies show that high socially anxious individuals engage in more PER after an anxiety-provoking situation (Abbott & Rapee, 2004; Edwards, Rapee, & Franklin, 2003; Mellings & Alden, 2000) compared to low socially anxious individuals.

According to Clark and Wells (1995) PER is mainly centered on the individual's anxious feelings and on his/her negative self-evaluations related to the anxiety-provoking situation. The same authors argue that thoughts and feelings experienced in an anxious situation guide the rumination process. These claims are supported by research investigating the potential predictors of PER (e.g., Abbott & Rapee, 2004; Kocovski & Rector, 2007;

[2] This study has been accepted for publication in this form.
Candea, D. M., & Szentágotai-Tatar, A. (in press). Shame as a predictor of post-event rumination in social anxiety. *Cognition and Emotion*. doi: 10.1080/02699931.2016.1243518
The authors contributed to the article as follows: Candea, D. M.: study design, conducting the study, data analysis and interpretation, writing the manuscript; Szentágotai-Tatar, A.: study design, data analysis and interpretation, writing the manuscript.

Perini, Abbott, & Rapee, 2006). Indeed, social anxiety related symptoms, thoughts and feelings, including state and trait anxiety, are significant predictors of PER (Kiko et al., 2012; Mellings & Alden, 2000).

Shame, a self-conscious emotion characterized by self-awareness and global negative evaluations of the self (Tracy & Robins, 2004) is another candidate predictor of post-event rumination. A study by Zoccola, Dickerson and Lam (2012) shows that shame-related cognitions and emotions in a social-evaluative threat condition are a significant predictor of PER, and that they mediate the effect of the socially threatening context on later PER. Positive correlations have also been found between shame and rumination in the context of depressive symptoms (e.g. Orth et al., 2006). These data suggest that dwelling on a shameful experience could link that experience to further psychological distress.

On the other hand, there is a growing body of empirical data showing that shame is associated with social anxiety symptoms (e.g., Gilbert, 2000; Fergus et al, 2010). These results indicate strong associations between shame-proneness and social anxiety, both in non-clinical and clinical samples (Gilbert, 2000).

The present study aimed to investigate the role of shame in PER related to a socially stressful event. This research extends previous findings by specifically focusing on social anxiety symptoms and by testing whether shame (state and trait) has a unique contribution to post-event rumination in relation to social anxiety, distinct from that of well-established factors such as state anxiety and self-evaluation of performance. A speech task was used to elicit state social anxiety, and PER was evaluated at two time points: after one day and after one week. We expected that high anxious individuals would experience higher levels of state shame during the speech, and engage in more frequent negative PER later. We also hypothesized that shame would be a significant predictor of PER, and a mediator in the relation between social anxiety symptoms and PER.

Method

Participants

Participants were 104 undergraduate students at Babeş-Bolyai University, Cluj-Napoca, who volunteered to take part in the study in exchange for extra course credit. The sample included 95 women and 19 men, with ages ranging between 18 to 28 years (M = 19.70, SD = 1.72). A

Measures

Social anxiety. The *Liebowitz Social Anxiety Scale: Self-Report Version* (LSAS-SR; Fresco et al., 2001) was used to assess social anxiety symptoms.

State anxiety. The *Profile of Affective Distress* (PAD; Opriş & Macavei, 2007) was used to assess state anxiety. The PAD consists of 39 adjectives that evaluate dysfunctional and functional negative emotions of the "fear/anxiety" and "sadness/depression" categories, as well as positive emotions.

Depressive symptoms. The *Beck Depression Inventory-II* (Beck et al., 1996) was used to assess depressive symptoms.

Shame. Trait shame was evaluated by the *Test of Self-Conscious Affect-3* (TOSCA-3; Tangney et al., 2000).

Self-evaluation of speech performance. We used the *Modified Perception of Speech Performance* (MPSP; Cody & Teachman, 2011) as a subjective measure of public speaking performance.

PER. The *Thoughts Questionnaire* (TQ; Edwards et al., 2003) was used to assess participants' tendency to engage in PER after the speech task.

Self-evaluation/experimenter-evaluation discrepancy index. A modified version of the MPSP was used to evaluate participants' perception of the feedback, by asking them how they thought the experimenters had rated their performance, based on the oral feedback they had received. The discrepancy between how participants thought they had been rated by the experimenters and their self-evaluation of the speech was calculated, and used as a covariate in the analysis, on the assumption that a large discrepancy would be associated with lower feedback credibility.

Procedure

Participants registered online for the study. They were then scheduled for the laboratory session and were asked to fill in online the trait measures and social anxiety symptoms measure. The procedure was adapted from Rapee and Abbott (2007), with a socially relevant situation being used for eliciting PER. Participants were asked to deliver a three-minute speech on a topic of their own choice (aside from their participation in the research and the way it made them feel) in front of two experimenters and a video camera. They were told that they would receive feedback from the two experimenters at the end of the speech, and that their performance would afterwards be evaluated by an expert in communication, based on the filmed sequence. During the task, the experimenters pretended to rate the participant's performance. Before participants received instructions about their task, they completed the state shame and state anxiety measures. At the end of the speech, participants filled in the self-evaluation of performance measure and received feedback. In order to increase the likelihood of PER, all participants received a standard negative feedback. Immediately following feedback, participants filled in the state shame and anxiety measures and the modified MPSP. At the end of the session, participants were told that their participation in the study would end after they would fill in two online questionnaires received via e-mail, the next day and one week later. Participants were debriefed after one week via e-mail, when they had filled in all the measures.

Data Analytic Strategy

To assess whether the speech was socially distressing, paired-sample t tests were conducted, with state anxiety and shame as dependent variables. To study the evolution of PER depending on social anxiety symptom levels, a mixed between-within ANOVA was conducted. Pearson *r* correlations were conducted to investigate the association of PER with potential predictors at both time points. Subsequently, to explore whether shame is a unique and significant predictor of PER one week after the speech, a hierarchical regression analysis was performed. Finally, a mediation analysis using ordinary least squares path analysis was conducted with state shame as a mediator between social anxiety and PER.

Results

Missing data, descriptive statistics and clinical characteristics of the sample

We had some missing data due to some of the participants failing to respond to all the items of the questionnaires. The maximum number of participants for which data were not available in the analyses did not exceed 5.8% (N = 6) on any of the measures. No data imputation was performed for these cases. Social anxiety symptoms scores ranged between 2 and 109. Sixty percent of the participants (N = 60) had a score higher or equal to 30, which is the cut-off score for clinical symptoms of social anxiety on LSAS-SR (Rytwinski et al., 2009). However, studies on student samples emphasize that scores above 55 more reliably indicate moderate and severe social anxiety (Russell & Shaw, 2009). Twenty-six percent of the

participants (N=26) scored above 55. Based on this cut-off, participants were divided into two groups: participants with subclinical symptoms and participants with clinically relevant symptoms.

Manipulation checks

A paired sample t test was conducted to examine if the speech task was a relevant anxious situation. Results show that state anxiety significantly increased after receiving feedback compared to the baseline measure, $t(101)=-5.91$, $p <.001$, Cohen's $d = .35$. Also, shame experienced after the feedback was significantly higher than before receiving the instructions for the speech $t(101)=-7.55$, $p < .001$, $d = .64$.

Differences in post-event rumination based on social anxiety clinical cut-off

To assess the effect of social anxiety on PER, we computed a mixed within-between analysis of variance (ANOVA; Type III sum of squares, which are robust in case of unequal sample sizes) using time of assessment as within-subjects factor and group (based on social anxiety clinical cut-off) as between-subjects factor. We found significant main effects of time, $F(1, 92) = 24.47$, $p < .001$, $\eta_p^2 = .21$, group, $F(1, 92) = 5.00$, $p = .028$, $\eta_p^2 = .05$ and time*group interaction, $F(1, 92) = 12.73$, $p = .001$, $\eta_p^2 = .12$. Within-subjects pairwise comparisons (Sidak adjustment) showed a significant increase in PER from one day to one week in participants with clinically relevant social anxiety symptoms, $p < .001$, while no significant changes were observed in participants with subclinical symptoms. Between-subjects pairwise comparisons indicated no significant differences between groups at one day, but PER was significantly higher in participants with clinically relevant symptoms one week later, $p = .001$. Sequential independent and paired sample t tests using Bonferroni correction (with the correction for the inequality of variance, where the case), which are less sensitive to unbalanced designs, pointed to an identical conclusion. A similar analysis was run controlling for the discrepancy between perceptions of the experimenters' evaluations and own performance evaluations, and results were identical. Neither the main effect of the discrepancy index ($F(1,90)= .189$, $p = .664$) nor the interaction effect with time ($F(1, 90) = 1.738$, $p = .191$) were significant. Also, given the high comorbidity between social anxiety and depression, we re-run the analysis with depressive symptoms as a covariate, and we found a significant time*group interaction ($F(1, 89)= 8.909$, $p =.004$), and no other significant effects. The results of this analysis and subsequent pairwise comparisons point to the same conclusions as the primary analysis.

Relations between social anxiety, state anxiety, appraisal of speech performance, shame and negative post-event rumination

Bivariate Pearson correlations were calculated between each pair of measures. Data are presented in Table 1. As expected, PER at one week was positively related with social anxiety symptoms, state anxiety, state shame and shame-proneness, and negatively related with self-evaluated performance. Interestingly, PER measured one day after the speech was unrelated to social anxiety symptoms, state anxiety and shame-proneness, positively related with self-evaluated performance, and negatively associated with state shame.

Hierarchical regression analysis on the predictors of post event rumination.

A hierarchical regression analysis was carried out to determine the influence of anxiety, shame-related variables, and self-perceived performance on the extent to which participants engaged in PER one week after the speech. Social anxiety was entered in the first step. State anxiety and self-evaluation of speech performance were entered in the second step. State shame and shame-proneness were entered in the third step of the model.

Social anxiety accounted for 6.6% of the variance in PER and was statistically significant, $F_{change}(1, 90)= 6.34$, $p = .014$. When state anxiety and self-evaluation of speech performance were added in the second step, they explained an additional 13.8% of the variance in PER and the change in $R^2= .138$ was significant, $F_{change}(2, 88)= 7.60$, $p = .001$. When all variables were introduced, in the third step, the model explained an additional 17.2% of the variance, $F_{change}(2, 86)= 11.84$, $p < .001$, but only state shame was a significant predictor. Together, the five variables accounted for 37.5% of the variance in PER.

Table 1

Pearson r correlation coefficients for each pair of variables

	1	2	3	4	5	6	7
1. Social anxiety							
2. State anxiety after feedback	.39**						
3. Shame-proneness	.55**	.26*					
4. State shame after feedback	.51**	.68**	.44**				
5. Self-evaluation of speech performance	-.39**	-.41**	-.23*	-.59**			
6. Self-evaluation/experimenter-evaluation discrepancy index	-.27**	-.24*	-.16	-.23*	.52**		
7. Post-event rumination after 1 day	-.14	-.18	-.00	-.29*	.42**	.18	
8. Post-event rumination after 1 week	.32*	.44**	.30*	.62**	-.29*	-.12	.00

Note. *p<.05. **p<.001.

Mediation analysis

A mediation analysis using ordinary least squares path analysis was conducted by estimating state shame from social anxiety symptoms and PER from both social anxiety symptoms and state-shame, with state-shame as the proposed mediator (see Figure 1). Social anxiety symptoms were positively related to state shame (a path=.187, $p < .001$). Also, state shame positively predicted PER when controlling for social anxiety symptoms (b path=.946, $p < .001$). A bias-corrected bootstrap confidence interval for the indirect effect (ab path= .177) based on 10,000 bootstrap samples was entirely above zero (.111 to .261). The direct effect of social anxiety on PER (c′ path= -.036) was not statistically significant (p = .508).

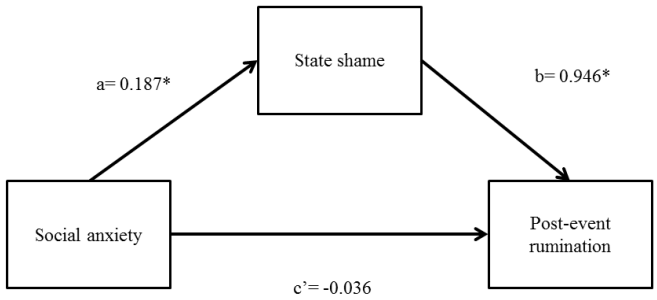

Figure 1. Mediation analysis with state shame as a mediator of the relationship between social anxiety and post-event rumination. *p<.001.

Discussion

The present study examined the role of shame as a potential predictor of PER related to an anxiety-provoking social situation (i.e., speech). The emotion induction was successful; both levels of state anxiety and shame increased after the speech. Participants with clinically

relevant social anxiety symptoms experienced higher levels of PER one week later. This is consistent with previous research conducted both on non-clinical samples and on patients diagnosed with social anxiety disorder (Abbott & Rapee, 2004). However, one day after the speech there were no differences between the two groups in PER levels. Also, results based on the continuous scores of social anxiety symptoms indicated a high significant correlation between these symptoms and PER one week after, but not one day after the speech. A possible explanation for these discrepant results at the two different time points might be related to the procedure used in this study. While in most previous studies participants did not receive feedback regarding their performance, we gave them a standardized negative feedback after their speech. Our results may reflect the fact that, on the short-term, a negative social situation elicits rumination in most people, as a way of reflecting and learning from it.

One of the main contributions of this research is related to establishing shame as a unique significant predictor of PER and a mediator of its association with social anxiety symptoms. Regression analysis showed that state shame explained PER above and beyond other well-established variables (i.e., social anxiety symptoms, state anxiety, self-evaluations of performance). Also, state shame was a mediator in the relation between social anxiety symptoms and PER measured one week after the social anxiety eliciting event. Shame-proneness was not a significant predictor of PER, but this is consistent with studies showing that state measures are better predictors of PER than trait ones, when both are taken into account (Kiko et al., 2012).

To our knowledge, this is one of the few studies showing that shame might play an important role in activating processes that are relevant for social anxiety. Studies focusing on the way people appraise their own performance in socially distressing situations have found that these self-appraisals are significant predictors of PER (e.g., Abbott & Rapee, 2004). Our results indicate that the experience of shame is more important than self-appraisals of performance, as they are no longer a significant predictor of PER when shame is stepped into the regression model. However, our study indirectly suggests that the way a person evaluates herself as a whole (i.e., global evaluation of the self), an important feature of shame, might also be a relevant factor for PER. Future studies should directly investigate whether the contribution of shame to PER is carried through these negative global self-appraisals.

3.5. STUDY 5. COGNITIVE REAPPRAISAL IN CASE OF SHAME- THE ROLE OF NEGATIVE GLOBAL SELF-EVALUATIONS

Introduction

The ability to adequately regulate one's emotions has been conceptualized and emerged in empirical studies as central to emotional well-being. It is estimated that up to 75% of mental disorders included in diagnostic manuals are characterized by the presence of difficulties related to emotion and emotion regulation (Kring & Werner, 2004; Werner & Gross, 2010). Empirical evidence summarized in several meta-analytical reviews indicates that deficits in emotion regulation are associated with psychopathology and longer and more severe distress (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Hu et al., 2014; Webb, Miles, & Sheeran, 2012).

The self-conscious emotion of shame has been consistently associated with various forms of psychopathology, including depression, anxiety, eating disorders and borderline personality disorder (e.g. Andrews et al., 2002; Gilbert, Pehl, & Allan, 1994; Keith et al.,

2009; Rusch et al., 2007; Tangney et al., 1992). Despite the associations between shame and psychopathology and the fact that emotion regulation deficits are considered central to many psychological disorders (Gross & Munoz, 1995), there is very little research on the regulation of shame. This is surprising taking into account that it has been suggested that it may not be the tendency to experience this emotion that contributes to psychopathology, but its poor regulation (Bybee, Zigler, Berliner, & Merisca, 1996; Quiles & Bybee, 1997). Existing data show that shame-proneness is positively associated with rumination (Joireman, 2006) and that the relation between shame and depressive symptoms is mediated by rumination (Cheung et al., 2004; Orth et al., 2006). Also, one study showed that the regulation of self-conscious emotions may differ from the regulation of basic emotions. Specifically, while a self-distanced perspective reduced the experience of anger and sadness, this emotion regulation strategy did not attenuate the experience of shame and guilt (Katzir & Eyal, 2013).

Overview of the current study

The main purpose of the present study was to compare the efficacy of two types of cognitive reappraisal in regulating shame. Building on the hypothesis proposed by Katzir and Eyal (2013), we also tested whether the effect of the emotion regulation strategy was carried by its impact on the negative global self-evaluations underlying the emotion of shame. First, shame was experimentally induced using a recall task in which participants were asked to remember a shameful experience from their past. Next, we compared the effect of self-distancing reappraisal, negative self-evaluations focused reappraisal and a control condition on the level of state shame. The instructions for self-distancing reappraisal were similar to those used by Katzir & Eyal (2013) and required participants to reappraise the situation while adopting the perspective of a third person/an observer. We choose to compare self-distancing with a reappraisal strategy targeting the negative global self-appraisals underlying shame by changing the focus of evaluation on specific behaviors while highlighting that these wrongdoings do not reflect the value of the individual as a whole. This form of reappraisal is ecological, similar to the cognitive restructuring used to challenge global evaluations in cognitive-behavioral therapy. Our study expands previous research by directly assessing negative self-evaluations and testing their mediating effect on the relation between emotion regulation strategy and the experience of shame.

Method

Participants

One hundred and thirteen undergraduate psychology students at Babes-Bolyai University, Cluj-Napoca participated, in exchange for course credit. Participants included 99 women and 14 men, whose ages ranged between 18 to 45 years (M = 22.12, SD= 4.33).

Measures

State shame. The shame subscale of the *Personal Feelings Questionnaire-2* (PFQ-2; Harder & Zalma, 1990) was used to assess state shame. The subscale includes 10 items evaluating feelings of shame by using adjectives (e.g., humiliated, embarrassed) which are rated on a 5-point Likert scale.

Negative self-evaluations. An adapted version of the *Automatic Thoughts Questionnaire Short Version* (ATQ; Netemeyer et al., 2002) was used to assess state negative self-evaluations. The ATQ is a 15-item questionnaire, with items assessed on a 5-point Likert-type scale. The questionnaire was developed to measure the most frequent negative thoughts and negative self-evaluations associated with depression. We added 3 more items targeting negative self-evaluations and we asked participants to evaluate the extent to which they thought like that while imagining the shameful situation.

Manipulation check. In order to check if participants followed the instructions, we developed a 12-item measure evaluating the extent to which participants re-imagined the situation: (1) in the same way they had before (from their own perspective; 4 items); (2) using a third-person perspective (4 items); (3) reappraising the situation while challenging negative self-evaluations.

Procedure

Training phase. Participants in the two experimental groups took part in a training session meant to familiarize them with the emotion regulation strategy they had to use in the experimental phase. They were told that there are several ways in which we can appraise stressful situations in our lives, and were presented with the strategy assigned to their group (adopting the perspective of a third person or reappraisal of negative self-evaluations). These strategies were then practiced using five scenarios depicting stressful situations. At the end of this phase, they were given a ten-minute break, followed by the experimental phase. Participants in the control condition did not receive any training prior to their participation in the laboratory session.

Experimental phase. A free-recall strategy was used, in which participants were instructed to think about three shameful situations, then choose the event in which shame was the most intense and describe it to the experimenter for five minutes while being videotaped. At the beginning and at the end of this phase, participants filled in state shame measures. After the emotion induction, negative self-evaluations were assessed. Each participant then received the instructions assigned to one of the three conditions: self-distancing reappraisal, negative self-evaluations focused reappraisal and control. At the end of the 5-minute period, participants rated their current state shame, negative self-evaluations and completed the manipulation check questionnaire. They were then debriefed and thanked for their participation.

Results

Descriptive statistics and manipulation checks

One-way analysis of variance (ANOVAs) revealed main effects of emotion regulation condition on self-reported self-distancing reappraisal, $F(2, 53.10) = 62.91$, $p < .001$ and negative self-evaluations focused reappraisal $F(2, 53.91) = 9.60$, $p < .001$. Post-hoc Games-Howell test showed that participants in the self-distancing condition reported engaging in self-distancing to a greater extent than participants in the negative self-evaluations focused reappraisal group ($p < .001$) and control group ($p < .001$). Also, participants in the negative self-evaluations focused reappraisal condition reported reappraising to a greater extent than participants in the control condition ($p < .001$), while the difference between the negative self-evaluations focused reappraisal group and the self-distancing group was marginally significant ($p = .058$). These results suggest effective emotion regulation manipulation.

Effect of strategy on state shame levels

In order to test for the effect of the emotion regulation strategy on state shame, we conducted a mixed within-between analysis of variance. Results indicated significant main effects of time $F(1.80, 194.62) = 24.47$, $p < .001$, $\eta_p^2 = .44$, and time*group interaction, $F(3.60, 194.62) = 82.99$, $p = .042$, $\eta_p^2 = .05$, but no effect for group. Within-subjects pairwise comparisons (Sidak adjustment) showed significant increases in state shame from T1 (baseline) to T2 (after emotion induction), $p < .001$, and from T1 to T3 (after using the emotion regulation strategy), $p < .001$, and no significant changes between T2 and T3. Time*group pairwise comparisons showed that after the use of the emotion regulation

strategy, state shame levels of participants in the negative self-evaluations focused reappraisal condition significantly decreased compared to the control group, $p = .012$.

Effect of strategy on negative self-evaluation levels

A similar analysis was conducted with level of negative self-evaluations as dependent variable. We found a significant main effect of time*group interaction, $F(2, 82)= 11.75$, $p< .001$, $\eta_p^2= .22$, but no effects of time and group. Time*group pairwise comparisons indicated that negative self-evaluation levels significantly decreased in the negative self-evaluations focused reappraisal group, $p = .001$, significantly increased in the control group, $p = .002$, and did not change significantly in the self-distancing reappraisal condition, $p = .096$. Also, while there were no differences between groups before the use of the emotion regulation strategy, the level of negative self-evaluations was significantly lower in the negative self-evaluations focused reappraisal condition compared to the self-distancing condition ($p = .025$) and the control group ($p = .001$) after using the strategy.

Mechanism of change

We tested whether changes in negative self-evaluations mediated the effect of negative self-evaluations focused reappraisal on state shame (Figure 1). We used as predictor the dummy coded emotion regulation strategy, with the control condition as the reference group, and the negative self-evaluations focused reappraisal condition as the group of interest. We conducted a mediation analysis using ordinary least squares path analysis, by estimating changes in negative self-evaluations from the effect of group and changes in state shame from both the effect of group and changes in negative self-evaluations, with changes in negative self-evaluations as the proposed mediator. Group was positively related with changes in negative self-evaluations (a path = -7.302, $p < .001$). Also, changes in negative self-evaluations predicted changes in state shame while controlling for the effect of group (b path= .375, $p < .001$). The bias-corrected bootstrap confidence interval for the indirect effect (ab path = -2.739) based on 5000 bootstrap samples was entirely above zero (-4.659 to -1.325). The direct effect of group on changes in state shame (c′ path = -.053) was not statistically significant ($p = .968$).

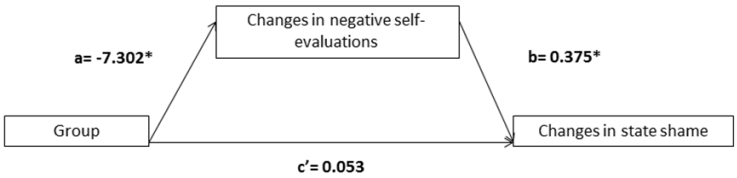

Figure 1. Mediation analysis with changes in negative self-evaluations as a mediator of the relationship between group and changes in state shame. *$p < .001$.

Discussion

The present study compared the impact of two types of reappraisal on state shame levels following shame induction in the laboratory. The emotion induction procedure was efficient, as levels of state shame significantly increased after participants recollected and described a past shameful experience. Data also reflect effective manipulation of the emotion regulation strategy. Our main results show that only negative self-evaluations focused reappraisal reduced state shame significantly compared to the control condition. However, it

should be noted that although shame levels decreased after using the strategy, this difference was not statistically significant. Also, we did not find a significant difference between the negative self-evaluations focused reappraisal and the self-distancing reappraisal conditions. While these results suggest that reappraisal focused on negative self-evaluations might be an effective strategy of reducing shame, more intense and complex trainings might be needed to increase the credibility of the alternative perspective, and thus its efficacy. In this study, we used a general and standard reappraisal of negative self-evaluations, but personalized and more content-focused reappraisals may be more suitable in challenging global self-evaluations.

One of the main contributions of this research is related to the investigation of changes in negative self-evaluations as a mechanism of the influence of reappraisal on state shame. The current study found that changes in negative self-evaluations mediate the impact of reappraisal targeting these cognitions on state shame. Most research in field of self-conscious emotions assumes that global evaluations of the self are the core cognitive characteristic of shame; however, empirical data testing this hypothesis is missing. To our best knowledge, this is the first study showing that changes in negative self-evaluations are associated with changes in shame. These findings are consistent with the models proposed by Lewis (1971) and Tracy and Robins (2004), both of them describing global evaluations of the self as central elements of shame.

The findings presented here address an important gap in the literature on self-conscious emotions and emotion regulation by showing that shame regulation might follow distinct patterns compared to the regulation of basic emotions. Moreover, this is one of the few studies exploring emotion regulation in the context of experimentally induced shame.

3.6. STUDY 6. THE EFFECT OF COGNITIVE REAPPRAISAL VERSUS SELF-COMPASSION ON SHAME-PRONENESS AND SOCIAL ANXIETY

Introduction

While in the case of basic emotions it is well-established that deficits in their regulation are associated with longer and more severe distress (Aldao et al., 2010), research regarding the regulation of shame and other self-conscious emotions is in its incipient phases. There are only a few studies, which point to an association between shame, rumination and depressive symptoms (Cheung et al., 2004; Joireman, 2004; Orth et al., 2006). One could assume that shame regulation follows the same patterns as those identified in the case of basic emotions, however there are some indications that this is not the case. For example, Katzir and Eyal (2013) have shown that self-distancing is efficient in reducing feelings of anger and sadness, but it does not attenuate the experiences of shame and guilt. A strategy that might be particularly efficient in reducing shame and self-criticism is that of self-compassion (Gilbert & Irons, 2004; Gilbert & Procter, 2006). Self-compassion involves three main components: self-kindness, common humanity and mindfulness (Neff, 2003a). These components are reflected in "*being open to and moved by one's own suffering, experiencing feelings of caring and kindness toward oneself, taking an understanding, nonjudgmental attitude toward one's inadequacies and failures, and recognizing that one's experience is part of the common human experience*" (Neff, 2003a, p. 224).

Although self-compassion is viewed as a promising strategy for reducing shame and shame-proneness, only two studies investigated this hypothesis. The first study found that using self-compassion exercises during a two-week period significantly reduced shame-proneness compared to a control condition (Kelly, Zuroff, & Shapira, 2009). The second

study included three self-compassion exercises over a one-week period and it showed that the self-compassion condition is associated with significantly lower levels of shame compared with an expressive writing condition, but no significant differences were observed when compared with a control group (Johnson & O'Brien, 2013). Same study shows that in the self-compassion condition shame-proneness significantly decreased from baseline to the two-week follow-up.

Despite the encouraging findings regarding the effects of self-compassion on shame, it is unclear whether this strategy is more or equally efficient compared to well-established adaptive emotion regulation strategies such as cognitive reappraisal. There are two studies which show that self-compassion is equally effective as cognitive reappraisal in reducing depressive mood (Dietrich, Grant, Hofmann, Hiller, & Berking, 2014) and negative self-conscious emotions (a total score including shame, embarrassment, shyness, guilt, and regret; Armitsu & Hofmann, 2015).

Overview of the current study

The main purpose of the present study was to compare the efficiency of a self-compassion training and a cognitive reappraisal training in reducing social anxiety symptoms and the tendency to experience shame (i.e., shame-proneness) in socially anxious individuals. The self-compassion training focused on the three components of self-compassion proposed by Neff (2003a), while the reappraisal training was inspired from the cognitive restructuring used in rational-emotive behavioral therapy (REBT).

We also tested whether individuals trained in using these emotion regulation strategies can better regulate their negative emotions in a laboratory shame-inducing situation. More specifically, we tested the hypotheses that self-compassion would be more efficient in reducing social anxiety symptoms and shame-proneness compared with cognitive reappraisal, and that both strategies would lead to significant decreases compared to a wait-list condition. Also, we expected that after a shame induction procedure, those in the training conditions to experience lower levels of shame and negative emotions compared with those in the control group. Finally, we explored the impact of these strategies on trait self-compassion and irrational beliefs and whether changes in social anxiety symptoms are associated with changes in shame-proneness, self-compassion and irrational beliefs.

Method

Participants

One hundred thirty-six undergraduate psychology students participated in exchange for course credit. Recruitment occurred in two waves, in March 2015 and October 2015, through online advertisements posted on students' discussion groups. In order to subscribe for the study, participants completed online several demographical questions and the *Liebowitz Social Anxiety Scale: Self-Report Version* (LSAS-SR; Fresco et al., 2001). Only participants who scored at least 30 on this measure were included in this study. LSAS-SR shows good sensitivity and specificity to clinical American Psychiatric Association's criteria for SAD as a cut-off score of 30 on LSAS-SR correctly identifies over 90% of SAD sufferers (Mennin et al., 2002). Participants included 120 women and 16 men whose ages ranged from 18 to 45 years (M = 21.85, SD= 4.49). Participants were randomly assigned to reappraisal training, compassion training or to wait-list using a computerized random number generator.

Measures

Social anxiety. Social anxiety symptoms were assessed using two scales, the *Liebowitz Social Anxiety Scale: Self-Report Version* (LSAS-SR; Leibowitz, 1987) and the *Brief Fear of Negative Evaluation* scale (BFNE; Leary, 1983). The BFNE is a 12-item

measure evaluating the fear of being negatively judged by others, considered to be a hallmark of social anxiety.

Shame-proneness. The tendency to experience shame was evaluated with the *Test of Self-Conscious Affect–3* (TOSCA-3; Tangney et al., 2000).

Self-compassion. The *Self-Compassion Scale* (SCS; Neff, 2003b) is a 26-item questionnaire designed to assess overall self-compassion and its three components: common humanity, mindfulness and self-kindness.

Irrational/rational beliefs. *The Attitude and Beliefs Scale-II* (ABS-II; DiGiuseppe et al., 1988) is a self-report scale that measures irrational thinking.

State-shame. The *Personal Feelings Questionnaire-2* (PFQ-2; Harder & Zalma, 1990) is a 16-item adjective checklist that measures trait-shame and guilt. For this study, the shame subscale of the PFQ-2 was adapted to measure state-shame.

Positive and negative emotions. The *Positive and Negative Affect Schedule* (PANAS, Watson & Clark, 1999) is a widely used instrument that assess specific emotional states. The PANAS includes 2 subscales, each containing 10 positive and 10 negative affective descriptors.

State negative self-evaluations. To assess the level of state negative self-evaluations and, we adapted the *Automatic Thoughts Questionnaire Short Version* (ATQ; Netemeyer et al., 2002), by adding 3 items assessing negative self-evaluations to the existing 5 items.

Procedure

After enrolment, participants received the informed consent and filled in the baseline measures evaluating social anxiety, shame-proneness, self-compassion and dysfunctional thinking online. Participants who met the including criteria were then randomly assigned to one of the three groups: reappraisal training, self-compassion training and wait-list.

Training phase

Participants in the experimental groups completed the reappraisal or self-compassion training online. Training consisted of six exercises, implemented during a two-week period. Participants received an e-mail providing a hyperlink Internet address that allowed them to access the exercises. The first exercise began with a detailed description of the strategy to be practiced; these instructions were presented both in written format, and in a video of the first author explaining what reappraisal/self-compassion meant. Participants were then asked to think of a negative situation that had happened to them in the past two days, and to describe the context, what they had thought and how they had felt or behaved. They were then prompted to analyze the situation by answering several questions. The reappraisal strategy targeted the four irrational beliefs described in REBT (i.e., demandingness, awfulizing, low frustration tolerance and global evaluation) by logical, pragmatic and empirical strategies (Dryden & Branch, 2008). That is, participants were asked whether their cognitions follow logically from other rational beliefs, whether they were helpful, and whether they could find examples consistent with the reality that contradict those cognitions.

The self-compassion strategy targeted the three components of self-compassion: self-kindness, common humanity and mindfulness. The procedure was similar to the one used by Leary and collaborators (2007). The first instruction, intended to foster common humanity, asked participants to list situations experienced by other people which are similar to that described by them. In order to promote self-kindness, the second instruction asked participants to write one or two paragraphs expressing understanding, kindness, and concern towards their own person in a way they would do it for a friend going through a similar experience. Finally, the third instruction aiming to induce a mindful perspective, required participants to describe the situations in an objective and unemotional manner, like an observer who watches the event progressing.

Participants completed the same exercise three times a week, at a two-day interval. After each exercise they received personalized feedback from the first author. At the end of the two-week period all participants filled in the baseline measures again. Participants in the wait-list condition filled in the measures at baseline and two weeks later; following the laboratory session, they were assigned to one of the two training conditions.

Laboratory phase.

Upon arrival to the laboratory, participants signed the informed consent and filled in state-shame and positive and negative emotions measures. To induce shame, participants were instructed to think about a shameful situation they had experienced and describe it to the experimenter for five minutes. After emotion induction, negative self-evaluations were assessed, along with the baseline measures. At the end of this phase, participants were debriefed and thanked for their participation.

Results

Dropout

The overall dropout rate was 26.5% (n=36), with a rate of 14% for wait-list, 43.14% for cognitive reappraisal and 19.05% for self-compassion. The difference in dropout rates was statistically significant (χ^2= 11.93, df=2, p = .003). Pairwise comparisons indicated that the dropout rate in the cognitive reappraisal condition was significantly higher than in the self-compassion condition (χ^2=6.12, df=1, p= 0.013) and wait-list condition (χ^2= 9.5, df=1, p = .002). There were no statistically significant differences on any baseline measure between dropouts and completers.

In order to assess the effects of training on social anxiety symptoms, shame-proneness, self-compassion and irrational beliefs, we conducted separate mixed within-between analyses of variance (ANOVAs) for each outcome, with time of assessment as within-subjects factor and group as between-subjects factor. Results for each outcome are presented below.

Effect of training on social anxiety

To test for the effect of training on social anxiety symptoms we conducted two separate mixed within-between ANOVAs for LSAS-SR and BFNE. For LSAS-SR, we found a significant main effect of time, F(1, 97) = 15.98, p< .001, η_p^2 = .14, but no significant effects of group and time*group interaction. For BFNE, significant main effects of time F(1, 96) = 10.21, p = .002, η_p^2 = .09, and time*group interaction, F(2, 96) = 3.35, p = .039, η_p^2 = .07 were observed, but no effect of group. Within-subjects pairwise comparisons (Sidak adjustment) showed significant decreases in social anxiety for the participants receiving the self-compassion training, p < .001, while no significant changes were observed in the other two groups. Between-subjects pairwise comparisons indicated no significant differences between groups, neither at baseline nor after training.

Effect of training on shame-proneness

Results indicate significant main effects of time F(1, 96) = 26.76, p< .001, η_p^2 = .22, and time*group interaction, F(2, 96) = 5.63, p = .005, η_p^2 = .11, but no effect of group. Within-subjects pairwise comparisons (Sidak adjustment) showed significant decreases in shame-proneness both in the reappraisal, p< .001 and self-compassion group, p< .001, while no significant changes were observed in the wait-list group. Between-subjects pairwise comparisons indicated no significant differences between groups, neither at baseline nor after training.

Effect of training on self-compassion

For self-compassion, the analysis indicates significant main effects of time F(1, 96) = 24.74, p< .001, η_p^2 = .21, and time*group interaction, F(2, 96) = 3.85, p = .038, η_p^2 = .07, but no effect of group. Within-subjects pairwise comparisons (Sidak adjustment) showed significant increases in self-compassion in participants receiving self-compassion training, p

< .001, while no significant changes were observed in the other two groups. Between-subjects pairwise comparisons indicated no significant differences between groups, neither at baseline nor after training.

Effect of training on irrational beliefs

We found significant main effects of time $F(1, 96) = 33.71$, $p < .001$, $\eta_p^2 = .26$, and time*group interaction, $F(2, 96) = 9.35$, $p < .001$, $\eta_p^2 = .16$, but no effect of group. Within-subjects pairwise comparisons (Sidak adjustment) showed significant decreases in irrational beliefs in participants receiving reappraisal training, $p < .001$, and participants receiving self-compassion training, while no significant changes were observed for the other two groups. Between-subjects pairwise comparisons reflected significant differences between the reappraisal group and the wait-list group after training, $p = .02$. No other significant differences were found.

Effect of training on state measures after the emotion induction in the laboratory

Next, we tested whether the training had any effect on the state measures.

For state-shame we found significant main effects of time $F(1, 91) = 73.85$, $p < .001$, $\eta_p^2 = .45$, and time*group interaction, $F(2, 91) = 3.19$, $p = .046$, $\eta_p^2 = .07$, but no effect of group. Within-subjects pairwise comparisons showed significant increases in state-shame in all three groups ($p < .001$ for wait-list and self-compassion groups, and $p = .006$ for reappraisal group). Between-subjects pairwise comparisons indicated no significant differences.

For negative emotions we only found a significant main effect of time $F(1, 92) = 37.92$, $p< .001$, $\eta_p^2 = .29$. Similar results were obtained for positive emotions, $F(1, 92) = 70.77$, $p< .001$, $\eta_p^2 = .44$. A one-way ANOVA showed that the three groups did not significantly differ in terms of negative self-evaluations measured after the emotion induction, $F(2, 89) = 1.20$, $p = .307$.

Mechanisms of change analysis

Bivariate correlations showed that changes in social anxiety symptoms measured with LSAS-SR were positively correlated with changes in shame-proneness, $r = .213$, $p < .05$, and irrationality, $r = .217$, $p < .05$. Changes in social anxiety measured with BFNE were also positively correlated with changes in shame-proneness, $r = .208$, $p < .05$, and irrationality, $r = .440$, $p < .01$, and negatively correlated with changes in self-compassion, $r = -.387$, $p < .01$.

Discussion

The present study examined the efficacy of self-compassion and cognitive reappraisal in reducing social anxiety symptoms and shame-proneness in socially anxious individuals. Results indicate that self-compassion significantly reduces shame-proneness and social anxiety-related cognitions from pre to post-test. Also, following training, participants in the self-compassion condition had increased levels of self-compassion and lower levels of irrationally. However, there were no significant differences among the self-compassion, reappraisal and wait-list conditions. Previous studies reported that both self-compassion and cognitive reappraisal were efficient in reducing state emotions (Armitsu & Hoffman, 2015), and self-compassion was found efficient in reducing shame-proneness in a high shame-prone sample (Johnson & O'Brien, 2013). The fact that in our study none of these strategies reduced shame-proneness or social anxiety symptoms compared to wait-list suggests that more complex interventions might be needed to achieve significant change in socially anxious individuals. This conclusion is also supported by the lack of effect of training on state-shame levels and negative emotions following shame induction in the laboratory. Longer interventions, involving various types of exercises and higher clinician involvement might be more efficient in addressing shame-proneness and social anxiety symptoms. While our results suggest that self-compassion might be a promising strategy, more research is needed to clarify its efficacy in clinical populations.

The current study extends previous findings by showing that self-compassion training decreases dysfunctional thinking. While it does not directly address irrational thinking, self-compassion might indirectly target global self-evaluations and awfulizing by its common humanity and self-kindness components. To our knowledge, this is the first study that taps into the underlying mechanisms of self-compassion by showing that it changes dysfunctional thinking patterns. We also found that changes in social anxiety symptoms are positively correlated with changes in shame-proneness and irrational beliefs, and negatively correlated with changes in self-compassion. These results support the role of shame-proneness and self-compassion as underlying mechanisms in social anxiety. Our study indirectly suggests that targeting shame-proneness might be a relevant way of increasing the efficacy of psychological interventions for social anxiety.

3.7. STUDY 7. A PILOT RANDOMIZED CLINICAL TRIAL OF COGNITIVE BEHAVIORAL GROUP THERAPY VERSUS SELF-COMPASSION ENHANCED COGNITIVE BEHAVIORAL GROUP THERAPY FOR SOCIAL ANXIETY DISORDER

Introduction

The psychological treatment of choice for social anxiety disorder (SAD) is cognitive behavioral therapy (CBT), recommended by both the Society of Clinical Psychology of the APA and National Institute for Health and Care Excellence (2013). There is strong support for the efficacy of CBT for social anxiety, however data from longitudinal long-term studies show that only 35% of patients with SAD recover after 10 years of prospective follow-up (Keller, 2006). The same data indicate that once recovery is achieved, relapse rates are about 34% during the 10-year follow-up. On the other hand, treatment is underutilized in patients with SAD and a meta-analysis synthesizing data from clinical trials on the efficacy of psychological and pharmaceutical interventions found attrition rates for CBT around 11% (Gould et al., 1997). Moreover, data from randomized clinical trials indicate that the percent of non-responders or partial-responders to CBT varies between 25 to up to 86% (Cottraux et al., 2000; Heimberg et al., 1998; Kocovski, Fleming, Hawley, Huta, & Antony, 2013).

Numerous studies show that shame-proneness is associated with social anxiety disorder (Fergus et al., 2010; Gilbert & Miles, 2000; Lutwak & Ferrari, 1997). These results are supported by our meta-analysis (Study 1) which showed that shame-proneness is associated with social anxiety symptoms at a medium to large effect size. Also, as we found in Study 4, shame might play an important role in the development and maintenance of social anxiety by predisposing the individual to post-event rumination. Cognitive models of social anxiety assert that negative self-evaluations and the distortions regarding the probability and importance of being negatively evaluated by others are central features of this disorder (Clark & Wells, 1995, Rapee & Heimberg, 1997). These cognitive processes are also important features in experiencing the emotion of shame and as Clark and Wells (1995) state "*some social phobics report a sense of shame that persists for a while after the anxiety has subsided*" (p. 75). In addition, in Study 6 we found that changes in shame-proneness are associated with changes in social anxiety in high socially anxious individuals. Similar results were obtained by Fergus and colleagues (2010) in a clinical sample.

In this context, addressing shame-proneness might improve the efficacy of existing treatments for social anxiety. The only study who investigate the effect of CBT on shame-proneness found that that shame-proneness decreased significantly, however to a small to medium effect size (d=.44; Hedman, Ström, Stünkel, & Mörtberg, 2013). On the other hand, interventions developing self-compassion were built specifically for people with high shame and self-criticism (Gilbert & Procter, 2006). The empirical literature suggest that self-

compassion might be efficient in reducing both shame (Armitsu & Hofmann, 2015; Leary et al., 2007) and shame-proneness (Johnson & O'Brien, 2013; Study 6). Finally, it seems that high socially anxious individuals experience low levels of self-compassion (Werner et al., 2012).

Overview of the study

The aim of this study was to test the efficacy of a cognitive behavioral group therapy enriched with self-compassion elements on social anxiety symptoms in diagnosed social anxiety disorder suffers. We compared the efficacy of this intervention with a standard 12-week cognitive-behavioral group therapy protocol proposed by Heimberg & Becker (2002). Several controlled studies show that this intervention produces outcomes superior to waiting list (Hope, Heimberg, & Bruch, 1995) and psychological placebo treatment (Heimberg et al., 1990; Heimberg et al., 1998). Also participants following this type of therapy had maintained their gains at follow-up assessments 4 to 6 years after end of treatment (Heimberg, Salzman, Holt, & Blendell, 1993). Given the established absolute efficacy of this treatment, we did not include a wait-list or placebo comparisons groups. We hypothesized that the addition of self-compassion exercises would improve the efficacy of the cognitive behavioral treatment.

Method

Design

This is a double blind randomized controlled trial of group CBT vs group self-compassion enhanced CBT with a 12-week treatment phase. Forty-three participants were randomized in the two conditions immediately after establishing that they met the inclusion criteria. Treatment began 1–3 weeks after completion of baseline assessment. The twelve sessions were conducted on a weekly basis. Comprehensive assessments were conducted at baseline, after 6 sessions (mid-treatment) and at the end of the therapy.

Participants

Volunteer applicants were screened for the study (n = 176). Participants were recruited via student's discussion groups and social media networks. Eligibility criteria were: (a) being over 18 years old, (b) exceeding the cutoff score on *Liebowitz Social Anxiety Scale—Self Report Version* (≥30), *Social Phobia Inventory* (≥24), and *Social Interaction and Anxiety Scale* (≥19), (c) fulfilling the DSM-5 criteria for SAD (d) having SAD as the primary diagnostic, (e) presenting no suicidal ideation (i.e., not exceeding a score of 2 on the suicide item of *Beck Depression Inventory-II*), (f) not currently receiving other forms of treatment for SAD, (g) having no diagnosis of psychoses or personality disorders on the SCID-II. After several selection stages forty-six participants meeting DSM-5 criteria for social anxiety were randomized to CBT (n = 23) or self-compassion-enhanced CBT (n = 23). Six participants withdraw before the individual session, while other seven withdraw after the individual session. These participants dropped prior to completing the pretreatment assessment; therefore, we could not determine if they differed from participants who initiated treatment on any measures. All these participants were blinded to treatment randomization (unaware if they had been randomized to CBT or self-compassion enhanced CBT) and the main reason for dropout was lack of time. All participants who completed pre-assessment were included in the intent-to-treat (ITT) analysis with the last observation carried forward. As between sessions only a few measures were completed, data collected at the baseline and after the sixth session was used in the ITT analysis. Completers were considered participants who participated in at least half the sessions and completed the post-assessment at the end of the last session.

Participants' age ranged from 18 to 29 years, with a mean age of 22.64 (SD = 2.79). The sample included 29 females and 4 males.

Measures

Primary outcomes

The *Liebowitz Social Anxiety Scale—Self-Report Version* (LSAS-SR; Fresco et al., 2001) includes 24 commonly anxiety-provoking situations (social interaction and performance situations), and asks participants to rate their fear and avoidance for each situation.

The *Social Phobia Inventory* (SPIN; Connor et al., 2000) is a 17-item self-report instrument measuring three social anxiety related symptom: fear, avoidance of performance/social events, and physiological discomfort in social situations.

Secondary outcomes

Besides these primary outcome measures, social anxiety symptoms were evaluated with two additional measures. The *Social Interaction and Anxiety Scale* (SIAS; Mattick & Clarke, 1998), is a 20-item measure that assesses fears of general social interactions. The *Brief Fear of Negative Evaluation scale* (BFNE; Leary, 1983) is a 12-item measure evaluating the extent to which a person experiences apprehension when he expects to be negatively evaluated.

Shame-proneness. The experience of shame was measured with two scales. *The Test of Self-Conscious Affect–3* (TOSCA-3; Tangney et al., 2000) was used to measure the predisposition to experience shame.

Self-compassion. The *Self-Compassion Scale* (SCS; Neff, 2003b) includes 26 items which assess overall self-compassion using six subscales: self-kindness, self-judgment, humanity, isolation, mindfulness and over-identification. A short version of this scale was also used, The *Self-Compassion Scale-Short Form* (SCS-SF; Raes, Pommier, Neff, & Van Gucht, 2010). The scale consists of 12 items divided in the same six subscales.

Depressive symptoms. The *Beck Depression Inventory-II* (Beck et al., 1996) was used to assess the severity depressive symptoms.

Negative and positive affect. The *Positive and Negative Affect Schedule* (PANAS, Watson & Clark, 1999) was used to evaluate positive and negative affect.

Cognitive outcomes. Cognitive factors related to emotional disorders were explored to see whether treatments significantly contribute to their reduction. Dysfunctional thinking was measured using two scales: the *Attitude and Beliefs Scale II* (ABS-II; DiGiuseppe et al., 1988) and the *Shorten General Attitudes and Beliefs Scale* (S-GABS; Lindner, Kirkby, Wertheim, & Birch, 1999). S-GABS is a 26-items scale which measures a global score for irrational beliefs, as well as six specific areas of irrationality: achievement, approval, comfort, justice, self-downing and other-downing.

Emotion regulation. Emotion regulation process was evaluated using the *Difficulties in Emotion Regulation Scale* (DERS; Gratz & Roemer, 2004) and the *Emotion Regulation Questionnaire* (ERQ; Gross & John, 2003). DERS has 36 items rated on a 5-point scale which assess six dimensions of emotion regulation: nonacceptance, goals, impulse, strategies, clarity, and awareness. ERQ is a 10-item measure that assesses individual differences in the dispositional use cognitive reappraisal and expressive suppression.

Nonspecific Therapy Factors

Expectation of improvement was assed using one question which asked participants to evaluate on a visual analogue scale the extent to which they expect that their psychological health will improve by the end of the therapy. This question was filled in at the end of the first session.

Therapeutic alliance was assessed with one item at the end of the therapy when each participant was asked to evaluate how was the therapeutic alliance from their point of view on a 5-point Likert scale.

Therapists' competence was evaluated following the same approach as in case of therapeutic alliance.

Procedure

After learning about the study, participants registered online and they read the informed consent and completed a demographic data questionnaire and screening measures (LSAS-SR, SPIN and SIAS). Recruitment involved a 3-stage process: (1) completing the online screening measures; (2) those with social anxiety scores above the mentioned cut-off scores were contacted for a telephone interview based on the DSM-5 criteria for social anxiety and SCID screening questionnaire (3) those who fulfilled the minimal inclusion criteria were contacted for a face-to-face interview based on the DSM-5 criteria for SAD, SCID and SCID-II for assessing comorbidity. Both telephone and face-to-face interviews were conducted by a master- or doctoral-level assessor.

Following these assessments stages 46 participants (23 in each condition) were randomly assigned to one of the two conditions: group CBT or group self-compassion enhanced CBT. Participants were randomized in each category using opaque sealed envelopes. The randomization process was conducted by a doctoral student which was not involved in another way in the study. The author received and opened the envelope when the participant has formally entered the trial. After randomization, each participant was invited to an individual session with one of the therapists. This individual session was focused on building an individualized fear and avoidance hierarchy, training the participants for the use of subjective units of discomfort, familiarize the client with the specific group procedures (in-session exposures, cognitive restructuring), addressing the participants' fears about participating in a group and discussing the schedule of the sessions. Participants were blind to the condition in which they were assigned. Also, after this session the participants received the baseline self-report assessment pack (which included all the described measures) and were asked to complete and bring the scales at the first group session.

Sessions took place weekly and were delivered by two therapists. Each group included 10 participants and had lasted for 2 hours and a half. After each session participants received a pack of scale including LSAS-SR, PANAS, BFNE, SCS-SF and PFQ-2 which they brought back to the therapists at the next session. After the third and the ninth session the pack also included the TOSCA-3. After sixth session and at the end of the treatment participants completed all the measures included in the baseline assessment. At the end of the treatment completers were contacted for a telephone interview based on the DSM-5 criteria for SAD. The telephone interviews were conducted by master- or doctoral-level assessors blinded to treatment assignment.

Treatments

CBT

The cognitive behavioral group therapy was a manualized intervention with 12 therapy sessions. The intervention followed the protocol of Heimberg & Becker (2002). The

first session was focused on grounding rules for group membership, sharing individual problems and goals, presenting the cognitive behavioral model of SAD, discussing the components of the treatment and conducting the initial training in cognitive restructuring. In the second session participants were taught how to identify thinking errors (i.e., automatic thoughts -ATs), to observe the covariation between anxiety and thinking errors, to dispute automatic thoughts and develop rational responses. In the third session therapists presented the rational for in-session exposures and made the preparation for the first exposures. After each session participants received homework assignments (i.e., monitoring and challenging of ATs, real life exposures) which were reviewed at the beginning of the next session. The last session was focused on the identification of participants' accomplishments and remaining anxieties, setting future goals for each participant, identification of methods to accomplish these goals and discussing termination issues.

Self-compassion enhanced CBT

The first three sessions were identical to those of the CBT group. For the next eight sessions one of the three in-session exposure was replaced with 30-40 minutes of self-compassion activities. The self-compassion exercises were adapted following the Mindful Self-Compassion Program (MSC) developed by Neff and Germer (2013) and Germer's (2009) "*The mindul path to self-compassion: Freeing yourself from destructive thoughts and emotions*" book. The activities used the same structure as that proposed by the MSC program and were centered on (1) discovering mindful self-compassion, (2) practicing mindfulness, (3) practicing self-kindness meditation, (4) finding the inner compassionate voice, (5) living deeply, (6) managing difficult emotions, (7) transforming relationships, and (8) embracing the life. Beside the homework used in the CBT group participants were also asked to practice at home several meditations and self-compassion exercises (e.g., listening to an audiotaped meditation, taking a mindful walk etc.). The last session was the same as that from the CBT group.

Therapists

All therapy sessions were delivered by six master's level clinicians who were trained in both therapies and were certified as CBT therapists. Each group was conducted by two therapists. All therapists were in their first or second year of treating patients. Therapists assigned to CBT, self-compassion enhanced CBT or both depending on the needs. Approximately 20 h of specific training in CBT and self-compassion enhanced CBT occurred over a 4-week period prior to enrollment of participants. Therapists received the treatment manuals and each session was discussed with the author. Weekly face-to-face meetings were held with the therapists to discuss treatment fidelity, general patient management and supervision, and to assist with planning future sessions.

Clinical responder definition and significant change

Recovery rates based on patient's self-reported social anxiety was estimated by the proportion of patients who scored below the clinical cut-off at the post-intervention assessment. Also, participants who did not meet the DSM-5 criteria for SAD at the post-intervention interview (i.e., did not met at least three SAD diagnosis criteria) were considered responders.

Results

Pre-treatment group differences

At pre-treatment, CBT and self-compassion enhanced CBT groups evidenced no significant differences on social anxiety symptoms, shame-proneness, self-compassion,

negative and positive affect, cognitive outcomes, emotion regulation. However, participants in the CBT group had significantly higher levels of depressive symptoms, $t(27)= 2.727$, $p = 011$.

Adherence and attrition

On average participants in the CBT group participated at 8.81 sessions (SD=3.83), while participants in the self-compassion enhanced CBT group participated at 8.76 sessions (SD=2.99). Post-interventions questionnaires were collected from 25/33 participants (75.76%) and post-interventions interview were conducted with 23/33 participants (69.70%). Eight of the 33 participants who completed the baseline measured did not finish therapy (3 in the CBT group and 5 in the self-compassion enhanced CBT group). For 3/8 non-completers mid-treatment assessment was available, while for the other 5 baseline assessment data were used in the intent-to-treat analysis.

Nonspecific therapy factors

CBT and self-compassion enhanced CBT did not differ in terms of expectation of improvement, $t(30)=-.476$, $p = .638$, therapeutic alliance, $t(23)=.314$, $p = .756$, and therapists' competence, $t(23)= 1.025$, $p = .316$.

Primary outcome measures

In order to test for the effect of the interventions on different outcomes, we conducted mixed within-between analyses of variance with time as the within factor (baseline, mid-treatment and at the end of the treatment) and the group as the between factor.

When social anxiety was measured with LSAS-SR results indicated significant main effect of time, $F(1.51, 43.66) = 40.57$, $p < .001$, $\eta_p^2 = .58$, but no effect for group and time*group interaction. Within-subjects pairwise comparisons (Sidak adjustment) showed significant decreases in social anxiety from baseline to mid-treatment, $p < .001$, and from mid-treatment to end of the therapy, $p < .001$. Similar results were obtained when social anxiety was measured with SPIN; we found only significant effect of time, $F(1.34, 40.06) = 27.58$, $p < .001$, $\eta_p^2 = .48$. Time*group pairwise comparisons (Sidak adjustment) showed that in the CBT group the level of social anxiety did not significantly decrease from baseline to mid-treatment, $p = .071$, but significantly decrease from mid-treatment to the end of the treatment, $p = .007$, while in the self-compassion enhanced CBT group, social anxiety decreased between each time point, $p < .001$, respectively, $p = .036$.

Secondary outcome measures

When social anxiety was measured with SIAS results indicated significant main effect of time, $F(1.60, 49.51) = 23.37$, $p < .001$, $\eta_p^2 = .42$, but no effect for group (marginally significant $F(1, 31) = 4.09$, $p = .052$, $\eta_p^2 = .12$) and time*group interaction. Within-subjects pairwise comparisons (Sidak adjustment) showed significant decreases in social anxiety from baseline to mid-treatment, $p = .006$, and from mid-treatment to end of the therapy, $p < .001$. Time*group pairwise comparisons showed that level of social anxiety did not decrease in the CBT group, neither from baseline to mid-treatment, $p = .411$, nor from mid-treatment to post-intervention, $p = .085$. In the self-compassion enhanced CBT group, social anxiety decreased between each time point, $p = .006$, respectively, $p <.001$. Finally, when social anxiety was measured with BFNE we found significant main effect of time, $F(1.43, 44.32) = 27.84$, $p < .001$, $\eta_p^2 = .47$, but no effect for group and time*group interaction. Time*group pairwise comparisons showed that level of social anxiety did not decrease in the CBT group, from baseline to mid-treatment, $p = .092$, but significantly decreased from mid-treatment to post-intervention, $p = .012$. In the self-compassion enhanced CBT group, social anxiety decreased

from baseline to mid-treatment, $p < .001$, but did not significantly decreased from mid-treatment to post-intervention, $p = .351$. Also, at mid-treatment participants in this group had significantly lower levels of social anxiety compared with the CBT group, $p = .038$.

Effect of interventions on shame-proneness

When shame-proneness was measured with TOSCA-3 results indicated significant main effect of time, $F(1.44, 44.72) = 14.13$, $p < .001$, $\eta_p^2 = .31$, but no effect for group and time*group interaction. Time*group pairwise comparisons showed that level of shame-proneness did not decrease in the CBT group, neither from baseline to mid-treatment, $p = .446$, nor from mid-treatment to post-intervention, $p = .072$. In the self-compassion enhanced CBT group, shame-proneness decreased between baseline to mid-treatment, $p = .005$, but no significant changes were observed between mid-treatment to post-intervention, $p = .090$. Similar results were obtained when shame-proneness was measured with PFQ-2 (main effect of time, $F(2, 58) = 12.54$ $p < .001$, $\eta_p^2 = .30$).

Effect of intervention on self-compassion

We found significant main effect of time, $F(1.36, 38.09) = 15.52$, $p < .001$, $\eta_p^2 = .36$, but no effect for group and time*group interaction. In the CBT group we did not find changes in self-compassion between time points, while in the self-compassion enhanced CBT group the levels of self-compassion increased between baseline and mid-treatment, $p = .027$, as well as from mid-treatment to post-intervention, $p = .008$.

Effect of intervention on depressive symptoms

We found significant main effects of time, $F(2, 54) = 4.57$, $p = .015$, $\eta_p^2 = .15$ and group, $F(1, 27) = 45.65$, $p = .025$, $\eta_p^2 = .17$, but no effect for time*group interaction. Time*group pairwise comparisons showed that level of depressive symptoms decreased in the CBT group between baseline to end of treatment, $p = .049$, while no changes were observed in the other group.

Effect of intervention on negative and positive affect

For negative emotions we found significant main effects of time, $F(1.56, 46.78) = 13.58$, $p < .001$, $\eta_p^2 = .31$ and group, $F(1, 30) = 4.22$ $p = .049$, $\eta_p^2 = .12$, but no effect for time*group interaction. Time*group pairwise comparisons showed that level of negative emotions decreased in both group from baseline to mid-treatment ($p = .030$, respectively, $p = .010$), but no significant changes were observed from mid-treatment to end of the therapy.

For positive emotions we did not find any significant effects.

Effect of intervention on cognitive outcomes

When dysfunctional thinking was measured with ABS-II results indicated significant main effect of time, $F(1.23, 29.43) = 19.26$, $p < .001$, $\eta_p^2 = .45$, but no effect for group and time*group interaction. Time*group pairwise comparisons showed that level of irrational beliefs did not decrease in the CBT group from baseline to mid-treatment, $p = .136$, but had decreased from mid-treatment to post-intervention, $p = .035$. In the self-compassion enhanced CBT group, irrational beliefs decreased between baseline to mid-treatment, $p = .004$, but no significant changes were observed between mid-treatment to post-intervention, $p = .077$. Similar results were obtained when dysfunctional thinking was measured with S-GABS, results indicating only a significant main effect of time, $F(2, 62) = 10.40$, $p < .001$, $\eta_p^2 = .25$.

Effect of interventions on emotion regulation

We found significant main effect of time, $F(2, 48) = 40.78$, $p < .001$, $\eta_p^2 = .31$, but no effect for group and time*group interaction. (using the DERS measure). Time*group pairwise comparisons indicated significant decreases in emotion regulation difficulties only for the self-compassion enhanced CBT group from baseline to post-intervention, $p = .012$, and mid-treatment to post-intervention, $p = .016$. For cognitive reappraisal and suppression (using ERQ) we did not find any significant effects.

Clinical significance

In what concerns the treatment response, a total of 19 participants were considered responders based on the post-intervention SCID interview. 7 participants in the CBT group were considered responders, while 12 participants in the self-compassion enhanced CBT condition were considered responders. No significant difference between the two groups was obtained, $\chi^2 = .240$, df=1, $p = .624$. We found no significant difference between the two groups in what concerns the recovery rates as measured by a score below the SPIN clinical cut-off, $\chi^2 = .240$, df=1, $p = .624$ (4/25% participants in the CBT group and 7/41.2% participants in self-compassion enhanced CBT group). When we used the LSAS-SR clinical cut-off we found significant higher recovery rates in self-compassion enhanced CBT group compared with the CBT group, $\chi^2 = 4.571$, df=1, $p = .033$ (4/25% participants in the CBT group and 10/62.5% participants in self-compassion enhanced CBT group).

Discussion

The aim of this study was to investigate whether adding a self-compassion component to a standard group cognitive behavioral therapy protocol would increase its efficacy on reducing social anxiety symptoms. The results indicate that overall, self-compassion enhanced CBT group was equally effective as the standard CBT in reducing social anxiety symptoms. However, it seems that when social anxiety symptoms were measured with SPIN, participants in the self-compassion enhanced CBT achieve significant reductions in social anxiety more rapidly. Also, when social anxiety symptoms were assessed with SIAS, we found significant reductions only for the participants from the self-compassion enhanced CBT group. Although, we did not find significant group differences, the data trend favored self-compassion CBT group. Importantly, participants in the self-compassion group achieved significant higher recovery rates compared with the traditional CBT group (relative to the LSAS-SR clinical cut-off). Also, for all primary outcomes in both groups we obtained large effect sizes for pre to post-interventions, but with higher magnitudes in the self-compassion enhanced CBT group. The effect sizes are similar to those obtained in other studies which used cognitive behavioral group therapy (e.g., Hedman et al., 2011; Piet, Hougaard, Hecksher, & Rosenberg, 2010). In what concerns the secondary outcomes we found that only the self-compassion enhanced CBT group led to significant reductions in shame-proneness and difficulties in emotion regulation and increases in self-compassion. Both group significantly reduced negative emotions and dysfunctional thinking. While in the CBT group we found medium effect sizes for shame-proneness, depressive symptoms, negative emotions and difficulties in emotion regulation, in the self-compassion group we found large effect sizes for these outcomes.

CHAPTER IV. GENERAL CONCLUSIONS AND IMPLICATIONS

The present thesis aimed to investigate the associations between shame, guilt and anxiety disorders, with a special focus on social anxiety disorder, while exploring the regulation of shame as a potentially relevant factor. A growing body of studies has investigated the associations between these two negative self-conscious emotions and various psychological symptoms. However, excepting the case of depressive symptoms, the literature is inconsistent regarding the significance and magnitude of the associations between shame, guilt and psychopathology. As many theoretical models assume that shame and guilt are important correlates of different anxiety disorders, it seems particularly important to back up these assumptions with empirical evidence. But the evidence is rather sparse and less systematized. Many of these studies are cross-sectional and they only indirectly addressed these relationships and while some offer evidence for guilt as an important correlate of anxiety disorders, others indicate that these results can be explained by the shared variance with shame. The current research project first clarified the magnitude and nature of these associations in a meta-analysis examining the associations of shame-proneness and guilt-proneness with each category of anxiety symptoms and in a longitudinal study looking at shame-proneness as a potential predictor of these symptoms. As both the meta-analysis and longitudinal study indicated that shame is strongly associated with social anxiety disorder, next our efforts were concentrated on investigating shame and its regulation in relation with social anxiety disorder. Our goal was to investigate shame regulation using mainly experimental designs in order to understand how different emotion regulation strategies might function. We also explored possible mechanisms of the efficacy of these strategies. Below, we highlight several theoretical, clinical and methodological advances that have resulted from this thesis.

4.1. THEORETICAL, CONCEPTUAL AND METODOLOGICAL ADVANCES

At this theoretical and conceptual level, our thesis has two main contributions. First, it signals that there may be some conceptual overlap between the way shame is conceptualized and the concept of cognitive distortions/irrational beliefs. Clarifying whether shame has or does not have a unique contribution to psychopathology is an important step which could warrant shame more attention from both researchers and clinicians. Second, building on preliminary evidence (Katzir & Eyal, 2013), we suggest that we should not assume that the regulation of shame follows the same patterns as those observed in case of basic emotions. We propose that an important pathway in understating the role of shame in psychopathology is to investigate its regulation. While this assumption is not a new one, to our knowledge our project is the first systematical approach aiming to test this hypothesis empirically. In this endeavor, we integrated strategies known to be efficient in the case of basic emotions with strategies that seem to be particularly useful in case of shame.

The current thesis fills in several methodological gaps in the literature on self-conscious emotions. First, the use of the meta-analytical procedure allowed us to draw more firm conclusions regarding the associations between shame-proneness, guilt-proneness and anxiety symptoms, which could not be drawn from individual studies. Partial correlations allowed us to examine the unique contribution of guilt-proneness. The use of a longitudinal design is another important step forward in establishing the nature of the relationship between these constructs. While such designs are often employed in the literature, there are only a few studying shame-proneness and none of them controlled for the influence of difficulties with emotion regulation or irrationality.

As most of the literature looking at shame and shame-proneness is correlational in nature, the use of experimental designs is also an advancement, entailing important contributions.

In this research project we aimed to overcome some of the most important limitations of emotion regulation research. Numerous studies in this paradigm ask participants to employ a particular emotion regulation strategy without any previous practice, leading to some participants using it in a wrong way. Also, some clinicians argue that the effects observed in these studies might be in fact artifacts resulting from expectations that such techniques would reduce negative emotions. In order to overcome these problems, we included a short training in our study, meant to familiarize participants with the strategy, and we ensured that they know how to correctly use it. In addition, participants were told that while some strategies might make them feel better, others might have no such effect. We did this in order to control for the effect of experimenter demand. Furthermore, some authors argue that most reappraisal instructions used in the emotion regulation approach are not ecological (Cristea, Szengotai-Tatar, Nagy, & David, 2012). In our studies we adapted the reappraisal instructions to be more ecological by formulating them to more closely reflect the cognitive restructuring procedures used in cognitive-behavioral therapy (see Cristea et al., 2012 for a more detailed discussion).

4.2. GENERAL CONCLUSIONS

The main conclusions that can be drawn from the studies included in this thesis are the following:

1. Shame-proneness is significantly associated with most anxiety symptoms, while the associations of guilt-proneness with anxiety disorders seem to be mostly due to the shared variance with shame-proneness.
2. Shame-proneness seems to be particularly relevant in the case of social anxiety disorder, with shame-proneness being a predictor of symptoms even after controlling for the influence of other well-known etiological factors. Also, shame is a significant predictor of post-event rumination which is known to play an important role in the maintenance of social anxiety disorder.
3. Shame-proneness explains an additional significant percent of the variance of social anxiety symptoms, over and above the impact of other well-validated factors such as dysfunctional thinking or maladaptive emotion regulation.
4. Shame regulation seems to follow different patterns than that of basic emotions, with strategies that are consistently found to reduce basic emotions being not so efficient in case of shame.
5. Self-compassion might be an efficient shame regulation strategy, and adding it to a standard cognitive behavioral protocol seems to increase its efficacy in reducing both social anxiety symptoms and shame-proneness. More studies are needed to clarify these aspects.

4.3. LIMITATIONS AND FUTURE DIRECTIONS

Despite the fact that the studies included in this thesis have important theoretical and clinical implications, they also have some inherent limitations. In addition to the ones presented in the discussion section of each study in this section we address some general limits that can be applied to most of the studies included in this thesis. Starting from these limits, we also suggest important future directions.

First, on the subject of sample representativeness, our samples included mostly undergraduate students, which limits the generalizability of the findings to different age or social groups. To overcome this general limitation, future studies should focus on including individuals from the community. Second, as most of the participants were women, future studies should consider balancing gender. Next, four of our studies were conducted on healthy participants, not on a clinical population. Although, in some cases this was not a limit *per se* because the research was not focused on psychopathological processes (e.g., Study 5), this affects the generalization to clinical settings, where different patterns might emerge. Conducting similar studies on clinical patients could bring valuable information regarding the regulation of shame in anxious individuals.

Another general limitation derives from the correlational nature of the second and fourth study. Although they were not designated for an experimental format, their correlational nature limits conclusions, as we cannot draw firm conclusions regarding the directionality and temporality of the findings. Finally, we relied only on self-reported measures; future studies would benefit from the inclusion of other complementary assessments such as behavioral or clinician-rated measures.

In spite of its inherent limitations, we believe that the present research provides important answers regarding the clinical relevance of shame in anxiety disorders, as well as its regulation. Our results show that shame and shame-proneness are closely tied to social anxiety disorder, and while shame seems to be associated with dysfunctional emotion regulation strategies, individuals can be taught to use more adaptive strategies such as self-compassion which seems to reduce both shame-proneness and social anxiety symptoms.

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