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Sálfræðideild

Heilbrigðisvísindasvið

HÁSKÓLI ÍSLANDS

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Leiðbeinandi: Dr. Andri Steinþór Björnsson

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Abstract

Trauma has almost exclusively been researched in the context of post-traumatic stress disorder (PTSD). The key characteristic of a traumatic event as defined by current nosological systems such as the Diagnostic and Mental Manual of Mental Disorders seems to be an *imminent threat toward life*. There is, however, evidence to suggest that other types of traumatic experiences may lead to PTSD. One such example is *social trauma,* involving severe humiliation, embarrassment and/or rejection in social situations. However, there is little research on social trauma and its potency in contributing to PTSD and social anxiety disorder (SAD). In this study, we explored whether there were differences in the frequency, type, severity and appraisals of social trauma endured by outpatients with a primary diagnosis of SAD (n = 60; M age = 28,3, SD = 10.4; 63.3% were female) compared to individuals with a different anxiety disorder (in this case, obsessive compulsive disorder; n = 13; M age = 29.3, SD = 7.7; 76.9% were female) and individuals with no mental disorders (the comparison group; n = 57; M age = 31.7, SD = 10.4, 52.6% were female). The results showed that most participants in this study, with or without social anxiety disorder, had experienced a socially traumatic event. There were no clear differences in the types of experiences between the groups, although, participants in the SAD group rated their trauma on average as more severe, especially individuals who went on to developing PTSD in response to the experience. Of those who reported social trauma in the SAD group, 31,2% met criteria for PTSD or suffered from clinically significant PTSD symptoms. The results also showed that individuals with SAD appraise social trauma in a more negative fashion than individuals with no psychiatric diagnoses. Furthermore, it showed that individuals with SAD adopted beliefs previously thought to be specific to the development of PTSD in relation to their trauma, in addition to endorsing certain beliefs that may be specific to the development and maintenance

of SAD. This line of research could have important implications for theoretical models of both PTSD and SAD, and for the treatment of individuals with SAD suffering from PTSD after social trauma.

Keywords: Social trauma, social anxiety disorder, post-traumatic stress disorder, appraisal, obsessive-compulsive disorder

Post-traumatic disorder and traumatic events

The impact of trauma has mostly been researched in the context of post-traumatic stress disorder (PTSD). Trauma is described in the current version of the Diagnostic and Statistical Manual of Mental Disorders (DSM) as "exposure to actual or threatened death, serious injury, or sexual violence" (American Psychiatric Association [APA], 2013, pp. 271, *Criterion A*). According to DSM the exposure to trauma must take place in one of the following ways: Directly encountering traumatic event/s; observing, in person, the event/s as it befalls upon others; learning that the traumatic event/s (violent or accidental) happened to close a loved one or friend; and encountering repetitive or severe exposure to unpleasant details related to the traumatic event/s (APA, 2013, pp. 271, Criterion A). A diagnosis of PTSD is made if Criterion A is met in addition to a subjective, emotional response for at least one month involving intrusion symptoms, avoidance, negative alterations in cognitions and mood, and alterations in arousal and reactivity (APA, 2013, pp. 271–272, Criteria B, C, D and E). More specifically, repeated and unwanted re-experiencing of the event, emotional numbing, hyper arousal, and avoidance of stimuli (including thoughts) which could serve as reminders for the event are considered posttraumatic stress symptoms (PTSS).

There has been a considerable debate in the literature on what constitutes a traumatic stressor (Beidel, 1991; Boals and Schuettler, 2009; Gold, Marx, Soler-Baillo and Sloan, 2005; Long et al., 2008; McNally, 2003) and creating a general definition has proven remarkably difficult (Weathers and Keane, 2007). The key characteristic of a traumatic event in the context of PTSD seems to be an *imminent threat toward life* (Long et al., 2008; Weathers and Keane, 2007), although sexual violence does not necessarily fit this definition. Stressors vary along a number of dimensions, including magnitude, complexity, frequency, duration, predictability and controllability. The main problem with defining stressors is that

there are no clear boundaries between ordinary stressors and traumatic stressors. The perception of an event as stressful depends on subjective appraisal, making it difficult to define stressors objectively (Weathers & Keane, 2007).

There is no event that will always lead to PTSD, but there are some events or experiences that are more likely to do so than others (Friedman, Resick, Bryant & Brewin, 2011). Some aversive events are considered to be more traumatic or serious than others or at least more likely to contribute to the development of PTSD, for example rape victims are more likely to develop PTSD than individuals that experience natural disasters (Friedman et al., 2011). There are some trauma characteristics that are associated with the development of PTSD, such as intensity or duration (Golding, 1999), interpersonal context (Howgego et al., 2005), and direct versus indirect exposure (Kim et al., 2009; Pietrzak et al., 2011). However, there are other types of traumatic experiences that may lead to PTSD, which indicates that trauma may be too narrowly defned in the DSM-5.

Social anxiety disorder and social trauma

Social anxiety disorder (SAD) is characterized by a persistent fear of being humiliated or embarrassed in social situations (APA, 2013). As in many other psychiatric disorders, it has not been possible to come up with a unified theory about the origin of SAD (Scaini, Belotti & Ogliari 2014). Previous studies have indicated that genetic (Fyer et al., 1993), environmental (Lieb et al., 2000) and psychological factors (Biederman et al., 2001) could all contribute to the development and persistence of SAD. Most people with SAD report a single event or an ongoing social experience as having played a significant role in the onset of the disorder (Bandelow et al., 2004; Hackman, Clark, & McManus, 2000; Stemberger, Turner, Beidel & Calhoun, 1995; Öst, 1987). These events or experiences involve broad common themes of aversive social experiences such as divorce, illness, academic failure, changing

schools, bullying and familial violence (Bandelow et al., 2004; Brook and Schmidt, 2008), which commonly revolve around humiliation, rejection and criticism (Hackmann et al., 2000).

Negative social events are usually not considered to be traumatic. However, there is research to suggest that aversive social events are sometimes experienced as such. Erwin, Heimberg, Marx & Franklin (2006) examined the frequency of posttraumatic stress symptoms (PTSS) in response to an extremely stressful social event among individuals with SAD and non-anxious controls. The results showed that experiencing a socially stressful event was common, all participants in the SAD group and 70% of the non-anxious group reported having experienced a socially stressful event. Additionally, more than one-third of the participants with SAD met criteria for a PTSD-like symptom pattern in response to the negative social event. Even though 70% of the non-anxious control participants reported having experienced a socially stressful event, none of them reported a PTSD-like symptom pattern. These results indicate that individuals that are prone to developing SAD respond differently to negative social events than others and that these events seem to play a prominent role in the maintenance of the disorder. More importantly, it indicates that negative social events can be traumatic in some cases (Erwin et al., 2006).

Carleton, Peluso, Collimore and Asmundson (2011) continued this line of research by assessing endorsement rates of negative social events and comparing patterns of social anxiety symptoms and PTSS among individuals reporting negative social events relative to individuals reporting Criterion A events and evaluated the interrelationships between social anxiety and PTSS. They found that one in three people reported a negative social event as being the most distressing event that they had ever experienced, despite most also having experienced Criterion A events. Also, participants who had experienced negative social events had higher levels of PTSS and SAD symptoms. Those who reported that the negative

social event was the worst event they had ever experienced also endured the highest levels of social anxiety and fear of negative evaluation. These findings suggest that a significant negative social event may function as a key precipitating event for SAD and PTSD (Carleton et al., 2011).

Everyone experiences some sort of aversive social experiences during their lifetime (Brook and Schmidt, 2008). Nevertheless, it seems that individuals that go on to developing SAD have a stronger emotional response to events that are not commonly considered traumatic (Bandelow et al., 2004; Carleton et al., 2011; Erwin et al., 2006; Hackman, et al., 2000). Even though negative social experiences are neither necessary nor sufficient for the onset of SAD, their role in the developmental process of SAD is reminiscent of the role of trauma in the development of post-traumatic stress disorder (PTSD).

The debate on trauma and PTSD seems to center around which kinds of experiences can be considered traumatic, and to have the potential of leading to PTSD, which is usually determined through the use of self-report questionnaires. However, there are different types of experiences which can lead to PTSD but are also causally related to other clinical disorders. Accordingly, there may exist at least two types of trauma*; imminent threat to life* (Criterion A) and *social trauma*. The latter can be described as being severely humiliated, rejected or ridiculed. This distinction can only be understood from an evolutionary perspective (Bjornsson, 2016). Humans are social animals and being socially accepted has been throughout evolution a necessary factor to reproduce. With that in mind, it is possible that the need for social acceptance has evolutionary roots and that being rejected from one's group may have been just as life-threatening as were physical attacks aimed at killing the individual (Bjornsson, 2016). However, there are likely to be different processes involved, and not necessarily the same emotion dysregulation (e.g., social trauma may be more likely to be associated with shame than Criterion A "life-threatening" trauma). Much more research is

needed on whether certain experiences can be considered socially traumatic in this sense, and whether they have a unique relationship to the development of SAD.

Post-traumatic appraisals

The research available on the role of negative social events in the onset of SAD suggests that it is not just the event itself that increases the subsequent risk of the disorder but how people perceive or appraise the event (Levinson, Langer & Rodebaugh, 2013). Interestingly, these findings are in line with cognitive models of PTSD, which state that appraisals of traumatic experiences are more influential in the development of PTSD than the traumatic event itself (Brewin & Holmes, 2003; Ehlers & Clark, 2000; Foa, Ehlers, Clark, Tolin & Orsillo, 1999). According to Ehlers and Clark (2000), PTSD will only occur if individuals process the traumatic event and/or its sequelae in a way which produces a sense of serious current threat. Consequently, this sense of current threat leads people to avoid situations that remind them of the trauma and to make use of other dysfunctional coping strategies that have the paradoxical effect of enhancing PTSD symptoms (Ehlers & Clark, 2000).

Such appraisal processes only explain *how* the disorder develops, but it does not explain *why* some go on to developing PTSD and why others do not. Foa et al. (1999) have suggested that people with rigid beliefs about themselves and others are more vulnerable to developing PTSD than people with more flexible beliefs after experiencing a traumatic event. More specifically, overly negative views (such as "the world is unsafe") are confirmed by the event whereas overly positive views (such as "I am extremely competent") are contradicted by it, leading to the adoption of the following two basic dysfunctional beliefs that are considered to mediate the development of PTSD: (1) That the world is a dangerous place and (2) that the self is completely incompetent to achieve important goals (Foa et al., 1999).

Foa et al. (1999) developed the Posttraumatic Cognitions Inventory (PTCI), a comprehensive measure of the appraisal of trauma and its sequelae and found that three types of beliefs play a key role in the development of PTSD: Negative beliefs about the self (e.g., "I am inadequate"), negative beliefs about the world (e.g., "people can't be trusted") and self-blame for the trauma (e.g., "there is something about me that made the event happen"). One key finding was that the three factors were shown to discriminate between individuals who develop PTSD and those who cope effectively following a traumatic event, even when controlling for depression and state anxiety (Foa et al., 1999). These results indicate that the cognitions assessed on the PTCI are specifically associated with PTSD.

Is it possible that the same appraisal processes that apply to life-threatening trauma (as assessed, e.g., by the PTCI) apply to social trauma? If so, we would expect that the same beliefs that discriminate between individuals who develop PTSD and those who cope effectively following a traumatic event, would distinguish between how outpatients with SAD that go on to developing PTSD appraise social trauma compared to individuals with no mental disorders and individuals with a different anxiety disorder. There is also a possibility that there are certain beliefs that might be *specific* to the development and maintenance of SAD (as opposed to PTSD) and can be found in cognitive models of SAD (see Clark & Wells, 1995; Heimberg, Brozovich, & Rapee, 2012; Hofmann, 2007; Moscovitch, 2009). These models identify *early experience* that cause children and adolescents to develop a series of assumptions about themselves (negative self-perception) and their social world (overestimation of potential social cost). These are assumptions such as "I am flawed", "if I show signs of anxiety people will think I am stupid" and "people are critical". According to cognitive models, these fundamental assumptions or core beliefs are considered to be the key process in the maintenance of SAD by contributing to safety behaviors in social situations and avoidance of such situations to minimize the risk of being humiliated. It is important to

compare these appraisal processes to how individuals with another anxiety disorder and individuals with no mental disorders appraise social trauma in order to assess weather certain beliefs are specifically related to SAD or whether they are related to the experience of anxiety more generally.

The aims of the current study are fourfold. First, to examine the frequency of social trauma among individuals diagnosed with SAD as a primary diagnosis, individuals with OCD as a primary diagnosis and individuals not diagnosed with any mental disorder. Second, to examine if the events and experiences are different in the three groups with regard to type of event, the appraisal of it, and its severity. Third, to assess PTSD and clinically significant PTSS in response to social trauma and examine if different types of events or severity are differentially related to PTSD/PTSS. Fourth, to investigate whether certain types of appraisal can contribute to the development of SAD as well as to the development of PTSD in response to the social trauma. More specifically, to explore whether the same types of appraisals (i.e., Negative Cognitions about the Self, Negative Cognitions about the World, and Self-Blame on the PTCI) that have been implicated in the development of PTSD might play the same role in the development of social PTSD and SAD. Lastly, to explore whether there may be appraisals of social trauma *specific* to the development of SAD and of PTSD in response to social trauma.

The purpose of this study is to cast light on the construct of social trauma and its impact on important mental health outcomes, and the psychological mechanisms (especially appraisal) involved in the development and maintenance of PTSD and SAD. This line of research may have important therapeutic implications since treatment may have to be adapted to individuals with SAD suffering from PTSD after exposure to social trauma, possibly by making use of elements from the treatment of PTSD.

Method

Participants

Participants in this study consisted of three groups. The inclusion criteria for all three groups were to be 18 years of age or older and have the ability to understand the questions in the clinical interviews. The SAD group comprised 60 outpatients seeking treatment for social anxiety at the Icelandic Center for Treatment of Anxiety Disorders. The inclusion criterion for the SAD group was to be diagnosed with SAD as a primary disorder (defined as the disorder causing most impairment and distress). The comparison group consisted of 57 adults who were recruited using advertisements on social media and on bulletin boards. The inclusion criteria for the comparison group consisted of having no psychiatric diagnoses. Participants in the comparison group were screened via a brief phone interview in order to exclude those who suffered from one or more mental disorders. The OCD group consisted of 13 individuals with OCD as a primary disorder (defined as the disorder causing most impairment and distress) who were recruited using advertisements on social media. The National Bioethics Committee of Iceland approved the study, and all participants signed an informed consent. All participants received a 5000 ISK gift certificate for their participation in this study. There were no differences in age between the three groups and gender distribution did not differ significantly between groups (see Table 1). All participants were Icelandic. Fewer participants in the SAD group had completed junior college or more (46.7%) compared to the comparison group (78,9%) and the OCD group (76.9%), the difference was statistically significant ($p < .001$; See Table 1). Participants in the SAD group were also significantly more likely to be single (58.3%; $p < .05$) compared to the comparison group (63.2%) and the OCD group (69.2%; see Table 1). The patients with SAD and OCD met criteria for a number of other mental disorders, as can be seen in Table 1.

Table 1. Background variables and clinical characteristics of the groups (N = 130).

Variables[a]	SAD group n = 60	OCD group n = 13	Comparison group n = 57	Chi-Square- or F statistic
Demographic variables				
Age (M; SD)	28.3 (10.4)	29.3 (7.7)	31.7 (10.4)	F (2, 127) = 1.35
Gender (% female)	38 (63.3)	10 (76.9)	30 (52.6)	X^2 (2, 130) = 3.1
Nationality (% Icelandic)	60 (100)	13 (100)	57 (100)	-
Education (% Junior College or more)	28 (46.7)	10 (76.9)	45 (78.9)	X^2 (2,130) = 14.3**
Currently a student (%)[c]	24 (40.0)[e]	6 (46.2)	23 (40.4)[c]	X^2 (2, 125) = 0.9
Married or living with a partner (%)	25 (41.7)	9 (69.2)	37 (63.2)	X^2 (2, 130) = 6.8*
Comorbidity[b]				
Major depressive disorder	20 (33.3)	3 (23.1)	-	-
Dysthymia	2 (3.3)			
Bipolar I disorder	1 (1.7)	-	-	-
Bipolar II disorder	3 (5)	1 (7.7)	-	-
Panic disorder with agoraphobia	5 (8.3)	1 (7.7)	-	-
Agoraphobia without panic	1 (1.7)	3 (23.1)	-	-
Social anxiety disorder	60 (100)	-	-	-
Obsessive compulsive disorder	6 (10)	13 (100)	-	-
Posttraumatic stress disorder	3 (5)	2 (15.4)	-	-
Social posttraumatic stress disorder	12 (20)	-	-	-
Alcohol dependence	6 (10)	1 (7.7)	-	-
Alcohol abuse	2 (3.3)	2 (15.4)	-	-
Drug dependence	3 (5)	-	-	-
Drug abuse	1 (1.7)	-	-	-
Bulimia	-	1 (7.7)	-	-
Generalized anxiety disorder	7 (11.7)	3 (23.1)	-	-
Body dysmorphic disorder	5 (8.3)	-	-	-
Other clinical characteristics				
LSAS	81.90 (19.61)	42.08 (17.84)[c]	12.98 (10.53)	F (2, 126) = 270.8 ***
SPWSS	30.07 (7.22)[e]	18.08 (9.78)[c]	9.49 (5.03)	F (2, 122) = 137.0 ***
PHQ-9	10.95 (5.80)[d]	7.42 (5.14)[c]	1.95 (2.02)	F (2, 123) = 59.2***
QOLS	63.95 (12.48)[d]	79.83 (15.43)[c]	94.44 (9.66)	F (2, 123) = 98.5 ***
SDS	183.51 (57.91)[d]	128.08 (72.39)[c]	15.13 (31.68)[c]	F (2, 122) = 164.6 ***

Note. *p < .05 **p < .01 ***p < .001 [a] Results in the table are presented as n (%) or mean (standard deviation). [b] The Mini International Neuropsychiatric Interview was used to assess all disorders except that body dysmorphic disorder (BDD) was assessed with the Body Dysmorphic Disorder Module. [c] One missing value. [d] Three missing values. [e] Four missing values.

We compared social anxiety symptoms, depression symptoms, quality of life and functional impairment between the three groups (see Table 1). Post hoc comparisons using the Bonferroni correction indicated statistically significant differences between the groups with regard to social anxiety symptoms (as measured by the LSAS and SPWSS, see below), depression symptoms (as measured by PHQ-9, see below), quality of life (as measured by QOLS, see below) and functional impairment (as measured by SDS, see below), as can be seen in Table 1. The mean score on LSAS was significantly higher in the SAD group compared to the OCD group ($p < 0{,}001$) and the comparison group ($p < 0{,}001$). The mean score on the SPWSS was significantly higher in the SAD group than the OCD group ($p < 0{,}001$) and the comparison group ($p < 0{,}001$). The mean score on PHQ-9 was also significantly higher in the SAD than the OCD group ($p < 0{,}05$) and the comparison group ($p < 0{,}001$). The mean score on the QOLS was significantly lower in the SAD group than the OCD group ($p < 0{,}001$) and the comparison group ($p < 0{,}001$). The mean score on the SDS was significantly higher in the SAD group than the OCD group ($p < 0{,}01$) and the comparison group ($p < 0{,}001$).

Measures

Background information about the participant was collected with a demographics form that included questions about age, education, work and marital status.

The Imagery and Social Trauma Interview is a non-invasive semi-structured interview, based on earlier versions of imagery interviews (Hackmann, Clark, & McManus, 2000; Lipton, Brewin, Linke, & Halperin, 2010) translated by Dr. Bjornsson and adapted to focus more specifically on reactions to intrusive images and social trauma. The interview is divided into two parts. The first part of the interview assesses the presence of intrusive images and reactions to such images in the past six months and it takes approximately 30 minutes to administer. The second part assesses social trauma and the appraisal of such

events and takes approximately 15-20 minutes to administer. For the purposes of the current study, only the second part is described. To assess whether the participant has ever endured a socially traumatic experience, the interviewer asks the participant if he or she has ever been severely humiliated, ridiculed, or rejected by other people during their lifetime. If the participant endorses such an experience, the interviewer asks about the event/experience in detail, including what happened, what the situation was, who were involved, whether it happened repeatedly, and if so, how many times it happened and for how long, and at what age it happened. Participants are asked how strongly they remember the event (ranging from "very weak" to "very strong") and then are asked to rate the strength of current emotional responses (on a scale from zero to ten) to the event, first in an open-ended format, and then by asking about various other emotions that were not listed by free recall. Next, the interviewer asks how distressing the event was (ranging from "not at all distressing" to "extremely distressing"), how much it interfered with work, school, daily activities and social life at the time it happened (ranging from "no interference" to "extreme interference"). Finally, the interviewer asks how the event was appraised ("what was the meaning of the event?") and what the participant believes was most negative part about the event/experience. If people do not understand how to answer the question about the meaning of the event they are asked follow-up questions such as "does it say something about you, other people, the world or the future?"

The Mini International Neuropsychiatric Interview (MINI) is a structured diagnostic interview that assesses Axis I psychiatric disorders according to the DSM-IV. It is used in this study to characterize the SAD sample and to establish whether individuals in the SAD group had a primary diagnosis of SAD. Additionally, it was used to assess rates of SAD, PTSD and what we term social PTSD, i.e. PTSD in response to social trauma, which does not meet Criterion A in PTDS for a life-threatening event or experience. The MINI was also used

to ensure that individuals in the comparison group had no diagnosable disorders. The MINI has been shown to have good sensitivity and specificity for all diagnoses except for generalized anxiety disorder (GAD) (κ = 0.36), agoraphobia (κ = 0.59) and bulimia (κ = 0.53) (Lecrubier et. al., 1997). Inter-rater and test-retest reliability has been shown to be good, with kappas in the high to very high range. The MINI has strong reliability and validity in relation to the Structured Clinical Interview for the DSM-IV (SCID-IV). The majority of kappa values were .90 or higher, which indicates excellent inter-rater reliability (κs = 79–1.0; Sheehan et. al., 1997). An Icelandic version of the MINI was used in this study. The Icelandic version of the MINI has good convergent validity with self-report measures of depression and anxiety symptoms (Sigurðsson, 2008). Here, the inter-rater reliability was high: Percentage of agreement between raters in the comparison group was 100% for all disorders, and in the SAD group it ranged from 90.9% to 100%.

The Body Dysmorphic Disorder Diagnostic Module (BDD-DM; Phillips, 2005) is a brief semi-structured interview, designed to diagnose BDD and used in this study to characterize the SAD group and establish that no one in the comparison group suffered from BDD (the MINI does not assess BDD). BDD-DM has been found to have good psychometric properties, including high inter-rater reliability (κ = .96; Phillips, 2005). One question, concerning BDD behaviors (such as mirror checking), was added to this study, in collaboration with the author of BDD-DM (Dr. Katharine Phillips) in order to diagnose BDD according to the fifth edition of the DSM (APA, 2013). Two advanced graduate students in psychology translated the BDD-DM from English to Icelandic and the primary investigator and an expert in BDD (Dr. Andri S. Björnsson), combined the two translations into one final version. Inter-rater reliability for the Icelandic version of BDD-DM used here was high, with 87.5% percentage agreement between raters in the comparison group for lifetime BDD and 100% for current BDD, and 100% for lifetime BDD and 90.9% for current BDD for the SAD

group.

The Liebowitz Social Anxiety Scale **(**LSAS) is a brief semi-structured clinical interview that assesses anxiety and/or fear and avoidance in 24 social situations (Liebowitz, 2003). Participants are asked to rate their anxiety and/or fear and avoidance (on a four point Likert scale) during the last week. The LSAS total score was used to assess the severity of social anxiety symptoms. The scale has been found to be sensitive to change following treatment and to have excellent internal consistency on different subscales (Cronbach's alpha = .81–.92; Heimberg et al., 1999). The LSAS was translated from English to Icelandic by two advanced graduate students in psychology. Dr. Bjornsson, the primary investigator, combined the two translations into one final version. The Icelandic version used here had good internal consistency for the SAD (α = .90) and control groups (α = .91). Additionally, scores on the LSAS predicted a SAD diagnosis on the Icelandic version of the MINI. Inter-rater reliability for the Icelandic version of LSAS was high on both subscales (i.e., the intraclass correlation coefficient [ICC] = 1.00 and .90 for anxiety and ICC = .91 and .94 for avoidance) and for the total score (i.e., ICC = .98 and .92) for the control and SAD group, respectively.

The Social Phobia Weekly Summary scale (SPWSS) is a six-item weekly summary measure of social anxiety, social avoidance, self-focused versus external attention, anticipatory processing, and post event rumination. The SPWSS has been found to have good internal reliability (Cronbach's alpha = .81; Clark et al., 2006). The SPWSS was translated from English to Icelandic by two advanced graduate students in psychology. Andri S. Björnsson combined the two translations into one final version, which had poor internal consistency in the comparison group (α = .57) but fair in the SAD group (α = .74). Scores on the SPWSS predicted a SAD diagnosis on the Icelandic version of the MINI. However, the SPWSS scores also predicted a diagnosis of MDD on the Icelandic version of the MINI.

The Patient Health Questionnaire-9 (PHQ-9) is a 9-item self-report measure of depression symptoms and the severity of those symptoms. Each item can be scored from 0 (i.e., not at all) to 3 (i.e., nearly every day). The PHQ-9 has excellent internal reliability (Cronbach´s alphas from .86–.89) and good test-retest reliability (r = .84; Kroenke, Spitzer, & Williams, 2001). The PHQ-9 was translated from English to Icelandic by a group of psychologists and then a graduate student in psychology**.** Andri S. Björnsson combined the two translations into one final version that has excellent internal consistency in the SAD group (α = .87) but fair in the comparison group (α = .66). Higher scores on the PHQ-9 predicted a diagnosis of MDD on the Icelandic version of the MINI.

The Quality of Life Scale (QOLS) is a self-report measure (of 16 items) of quality of life on a seven point Likert scale ranging from 7 (delighted) to 1 (terrible). The domains that are assessed are the following: Social and community activities, material and physical wellbeing, relationships with other people, personal development and fulfilment, and recreation. The QOLS has good reliability and validity (Liedberg, Burckhardt, & Henriksson, 2005). An Icelandic translation (by a licensed psychologist) of the QOLS was used in this study. It has been shown to have good internal reliability (α= .89) and good test-retest reliability (r = .72; Hrafnsson & Guðmundsson, 2007). A graduate student in psychology created an independent translation and Andri S. Björnsson combined the two translations into one final version that has fair internal consistency in the SAD group (α = .76) but good in the comparison group (α = .86). Lower scores on the QOLS predicted a diagnosis of SAD on the Icelandic version of the MINI.

The Sheehan Disability Scale (SDS) is a brief self-report measure of functional impairment in three domains: Work/school, social and family life. The three domains are assessed on an 11-point Likert type scale ranging from 0 (not at all) to 10 (extremely). Scores on the SDS have been found to be highly correlated with both symptoms of SAD and MDD,

in addition to high internal and test-retest reliability, and good construct validity (Leon, Olfson, Portera, Farber, & Sheehan, 1997). The SDS was translated from English to Icelandic by two advanced graduate students in psychology. Andri S. Björnsson combined the two translations into one final version that had good internal consistency in the SAD group (α = .7) and also good internal consistency in the comparison group (α = .81). Higher scores on the SDS predicted a diagnosis of SAD on the Icelandic version of the MINI.

The Posttraumatic Cognitions Inventory (PTCI; Foa et al., 1999) is a self-report questionnaire consisting of 33 items that assesses trauma-related thoughts and beliefs. Participants were asked to complete the measure keeping in mind the socially traumatic event/experience that had already been assessed as part of the Imagery and Social Trauma Interview. The measure has three factors: Negative Cognitions about Self, Negative Cognitions about the World and Self-blame. Each item on the PTCI is rated on a seven point Likert scale ranging from one (i.e., totally disagree) to seven (i.e., totally agree). Higher scores on the scale indicate stronger endorsement of negative cognitions. The psychometric properties of the PTCI appear to be adequate. In one study, the Cronbach's alpha for the three PTCI subscales and the total score ranged from .86 (Self-blame) to .97 (Negative Cognitions about Self; Foa et al., 1999). The test-retest reliabilities were as follows: .74 for the total score, .75 for Negative Cognitions about Self, .89 for Negative Cognitions about the World, and .89 for Self-blame. The PTCI discriminates well between traumatized individuals with and without a diagnosis of PTSD (Foa et al., 1999).

Procedure

Trained assessor conducted the interviews (i.e., the Imagery interview and Social Trauma Interview, MINI, BDD-DM and LSAS) and gave participants instructions on how to complete the PTCI and other self-report measures. Every assessment was documented on a laptop computer using the RedCap database, an encrypted, electronic software and stored on

secure servers (Harris et al., 2009). The assessors were experienced psychologists or advanced graduate students in clinical psychology. The assessors received thorough training from Dr. Andri S. Björnsson in conducting the interviews. The training included sitting in on an assessment session (conducted by Dr. Björnsson), reviewing records of assessment sessions, reviewing administration manuals and completing mock interviews. All assessors received weekly group supervision with Dr. Björnsson in which each interview was discussed (often by listening to segments of tape from assessments) with regard to issues like differential diagnoses on the MINI and appraisal on the Imagery and Social Trauma Interview until consensus was reached.

Content analyses

Content analyses were conducted on the answers in *The Imagery and Social Trauma Interview* to the open-ended question if participants had ever been severely humiliated, ridiculed, or rejected by other people during their lifetime and on the answers to the open-ended question about the meaning of the event/experience, with the aim of identifying the main themes of the social trauma and the themes in how participants appraised it. These analyses were managed by the primary investigator (Dr. Björnsson) and two graduate students. All three assessors were blind to group assignment when conducting the content analyses. Adopting a methodology based on Joffe and Yardley (2004, see also Lipton et al., 2010; Purdon & Holdaway, 2006), we created separate themes for the content and appraisal of the negative social events, prior to examining the data, by reviewing the existing literature on negative social events (with reference to, e.g., Brook and Smith, 2008; Carleton et al., 2011; Farrington, 1993; Gold et al., 2005; Olweus, 1993; Rigby, 2002; Smith & Sharp, 1994; Van Hooff et al., 2009) and appraisal processes in both SAD and PTSD (Clark & Wells, 1995; Ehlers & Clark, 2000; Foa et al., 1999; Heimberg et al., 2012; Hofmann, 2007; Moscovitch, 2009). The coders subsequently attempted to categorize the data, and some

themes were modified when they were deemed not appropriate for this data set. If coders did not agree on the categorization of a single event or appraisal, further discussion was made until majority consensus was reached. If the event did not clearly fall into any category due to ambiguity or insufficient information, the event was rated as “uncodeable”.

Final categories for the social trauma were the following: 1. Bullying (e.g. someone intentionally and repeatedly hurting the participant; The definition of bullying in this study included the three characteristics presented by Olweus (1993): intentional aggression; a power imbalance between the aggressor and victim; and repetition of the aggressive behaviour); 2. Teasing (e.g. making a joke about the appearance of the participant); 3. Mental/physical and sexual violence/harassment (e.g. someone hitting and/or raping the participant with the intention of humiliating him/her); 4. Perceived traumatic remark (e.g. someone saying that the participant is red in the face); 5. Being rejected by someone/not included (e.g. ending a relationship, excluding the participant from a group); 6. Social mishap (e.g. feeling like you messed up in a social situation); 7. Being an outsider (e.g. the experience of not belonging even if there is no clear evidence of exclusion).

Severity of the negative social events was also coded. Each rater categorized each event or experience with regard to severity of rejection, humiliation and/or ridicule, taking into account whether it was an isolated event or repeated, and if the experience took place over a long period of time. Each member rated the severity of the negative social event on a five point Likert scale: 0 = No humiliation and rejection (e.g. innocent comment); 1 = Mild humiliation and rejection (e.g. teasing over a short period of time, mild traumatic remark, mild social mishap); 2 = Considerable humiliation and rejection (e.g. a negative comment such as “You are stupid”, moderate social mishap); 3 = Severe humiliation and rejection (e.g. repeated bullying over a long period but not of the most severe kind); 4 = Extreme humiliation and rejection (e.g. physical assault, total exclusion from a peer group over a long

period of time, severe bullying, or rape). In addition, the team rated whether the negative social experience involved one, two or a number of people.

Content analyses were conducted on the answers to the open-ended question about the meaning of the event/experience, with the aim of identifying appraisal of the negative social events. First, before reviewing the data, researchers agreed upon categories drawn from theoretical models of how both SAD and PTSD develop and are maintained. The categories drawn from cognitive models of SAD were 1. Flawed and/or weak self (e.g. "I can't do anything right"), 2. Others are critical and/or cruel (e.g. "People will belittle me"), 3. Social perfectionism (e.g."People will react badly if I don't behave flawlessly") and 4. I will end up alone (e.g. "I will be alone the next 30 years of my life"); Clark & Wells, 1995; Heimberg et al., 2012; Hofmann, 2007; Moscovitch, 2009. The categories drawn from cognitive models of PTSD were 5. Self-blame (e.g. "The event happened because of how I behaved"), 6. The world is dangerous (e.g. "People can't be trusted" - this was often a more impersonal sense of danger in the world than is implied by "others are critical and cruel" although these categories are similar) and 7. I am not capable (e.g. "I can't do simple things"); e.g. Foa et al., 1999; Ehlers & Clark, 2000. Three categories for positive appraisal of the event were chosen: 8. Strong self (e.g. "It was a difficult experience but it made me stronger"), 9. Positive about people in general (e.g. "It was a unique event. It has to do with the people involved but not people in general") and 10. Optimism about the future (e.g. "I have put this behind me and learned from it, and the future is bright"). Some participants said that the event had no meaning (neutral appraisal) and some appraisals were unclassifiable because of insufficient information.

After reviewing the data, it was determined that the eleventh category needed to be added. This category was 11. I am different from others (e.g. "I do not fit in"). Also, none of the appraisals were categorized in Social perfectionism, I will end up alone and Positive

about people in general. We, therefore, chose to eliminate those categories. It should be noted that some participants had more than one appraisal.

Statistical Analyses

Deviations from normality and univariate outliers were screened for all variables of interest. Descriptive statistics were used to characterize the three groups in terms of background variables and clinical characteristics, in addition to social trauma and appraisal categories (based on the content analyses described above). Background characteristics and clinical variables of the three groups were compared with chi-square tests of independence and one-way between-subject ANOVAs along with post-hoc comparisons using the Bonferroni correction. We were also interested in assessing whether the severity of the trauma could contribute to the development of SAD. Therefore, we conducted a logistic regression analysis to examine the relationship between trauma severity and a diagnosis of SAD. To assess appraisals, we initially used logistic regression analyses to determine if the three types of cognitions on the PTCI (i.e., Negative cognitions about Self, Negative cognitions about the World and Self-blame) following a socially traumatic event could predict a diagnosis of SAD. An appropriate model was selected by comparing the model fit criteria (i.e., Akaike Information Criterion) between models but also by comparing significance tests results for main and interaction effects. In general, a model with a lower AIC is believed to be a better fit, and a two point difference in AIC is considered meaningful. In addition, we conducted a multiple regression analysis to explore whether scores on different subscales of the PTCI are related to the severity of social anxiety symptoms (as measured by the LSAS).

Results

Frequency and characteristics of social trauma

Members of the SAD and OCD groups reported similar rates of social trauma; 48 of the 60 (80%) participants in the SAD group and 11 out of 13 (84.6%) in the OCD group. However, rates of trauma were lower in the comparison group, 35 of the 57 participants (61.4%; X^2 (2, N =130) = 6.14, $p < .05$).

The great majority (70.7%) of those who had experienced social trauma in the SAD group reported that the event happened before the age of onset of SAD (the age at which the social anxiety was starting to have a significant effect on the participant´s life). When participants were asked if the trauma had led to them being socially anxious (or more anxious in social situations), most of the participants in the SAD group (85.1%) and the OCD group (72.7%) said yes, however, most of the participants in the comparison group said no (77.1%) (see Table 2).

Table 2. The age when the social trauma was experienced, age of SAD onset and increase in social anxiety after trauma (n = 94).

	SAD group n = 48[a]	**OCD group** n = 11	**Comparison group** n = 35
Age		**M (SD)**	
Trauma	12.3 (6.5)	15.0 (7.1)	14.5 (9.8)
SAD Onset	14.1 (6.5)	-	-
Did the experience cause you to become socially anxious?		**Frequency (%)**	
Yes	40 (85.1)	8 (72.7)	7 (20.0)
Possibly	5 (10.6)	3 (27.3)	1 (2.9)
No	2 (4.3)	0 (0)	27 (77.1)

Note. [a]One missing value.

Type and severity of social trauma

Results of the content analyses of the social trauma reveal some differences between the groups (see Table 3). There were similar rates of *bullying* in the groups, but *teasing* was more common in the comparison group (28.6%) than the SAD group (8.3%; z = 2.4, $p <$

0,05). Additionally, *being rejected by other people/not included* was also reported more frequently among the comparison group (20.0%) compared to the SAD group (10.4%), although this difference was not significant (z = 1.2, $p = 0.22$). Conversely, *mental abuse* was more common in the SAD group (18.8%) than in the comparison group (2.9%; z = 2.2, $p <$ 0,05; see Table 3).

The groups differed with regard to severity of the social trauma (F (2.90) = 3.35 $p <$ 0.05). However, post hoc comparison indicated that the only significant difference was trauma in the SAD group ($M = 2.8$, $SD = 0.9$) being rated higher in severity compared to trauma in the comparison group ($M = 2.2$, $SD = 0.9$; $p < 0.05$).

Table 3. Information about the social trauma in the three groups (n = 94).

Type of social trauma[a]	**SAD group n = 48**	**OCD group n = 11**	**Comparison group n = 35**
		Frequency (%)	
I. Bullying	17 (35.4)	3 (27.3)	11 (31.4)
II. Teasing	4 (8.3)	2 (18.2)	10 (28.6)
III. Mental abuse	9 (18.8)	2 (18.2)	1 (2.9)
IV. Physical abuse	1 (2.1)	2 (18.2)	-
V. Sexual abuse	4 (8.3)	1 (9.1)	-
VI. Perceived traumatic remark/event	2 (4.2)	-	2 (5.7)
VII. Rejected by other people/not included	5 (10.4)	1 (9.1)	7 (20)
VIII. Social mishap	4 (8.3)	-	4 (11.4)
IX. Being an outsider	1 (2.1)	-	-
X. Uncodable	1 (2.1)	-	-
Severity of humiliation or rejection	**n = 47**	**n = 11**	**n = 35**
Mild	5 (10.6)	2 (18.2)	9 (25.7)
Considerable	11 (23.4)	2 (18.2)	12 (34.3)
Severe	21 (44.7)	5 (45.5)	11 (31.4)
Extreme	10 (21.3)	2 (18.2)	3 (8.6)
Individuals directly or indirectly involved in the social trauma	**n = 47**	**n = 11**	**n = 35**
One or two	15 (31.9)	5 (45.5)	12 (34.3)
Three or more	32 (68.1)	6 (54.5)	23 (65.7)

Note. [a]Categories are mutually exclusive.

A logistic regression analysis was conducted to predict SAD diagnosis using severity as predictor. A test of the full model against a constant only model was statistically significant, indicating that the predictors as a set reliably distinguished between the SAD group, the comparison group and the OCD group (chi square = 5.01, $p < 0.05$, $df = 1$). The coefficient on the severity variable has a Wald statistic equal to 4.73, $p < 0.05$. The odds ratio for severity is 1.65 with a confidence interval of [1.05; 2.59] which suggest that a unit increase on the severity scale increased the odds of receiving a primary diagnosis of social anxiety disorder by 65%.

Frequency and characteristics of social PTSD

There were 15 (25%) individuals in the SAD group that met criteria for PTSD or clinically significant PTSS in response to the social trauma. Of those 15 individuals, 12 (80%) met criteria for *social PTSD* (meeting criteria for DSM-IV PTSD in response to social trauma) and three (20%) reported clinically significant PTSS; i.e., meeting Criteria B1 (having intrusive memories) at least two symptoms in Criterion C (persistent avoidance of stimuli associated with the event and numbing) and D (symptoms of increased arousal), meeting Criterion E (duration more than one month); and meeting Criterion F (symptoms causing clinically significant distress and/or impairment) for PTSD.

There were no clear differences in types of events between individuals with SAD and PTSD/PTSS and individuals with SAD but no clinically significant PTSS associated with the experience (see Table 4), although it may be noted that certain experiences were not associated with post-traumatic symptoms, such as teasing, physical abuse, a perceived traumatic remark and being an outsider. The social trauma of individuals with social PTSD/PTSS was rated more severe ($M = 3.20$, $SD = 0.862$), on average, than social trauma of individuals without post-traumatic stress symptoms ($M = 2.56$, $SD = 0.88$), and this difference was statistically significant (t (27.9) = 2.35, $p < 0{,}05$). However, the social

PTSD/PTSS group did not score significantly higher on severity than the OCD group (M = 2.64, SD = 1.03; t (19) = 1.48, p = 0,16).

Table 4. Individuals with SAD and with/without social PTSD/PTSS (n = 48[a]).

Type of event	**Social PTSD/PTSS**	
	Yes (n =15)	**No (n =32)**
	Frequency (%)	
I. Bullying	5 (33.3)	12 (37.5)
II. Teasing	-	3 (9.4)
III. Mental abuse	4 (26.7)	5 (15.6)
IV. Physical abuse	-	1 (3.1)
V. Sexual violence/harassment	3 (20.0)	1 (3.1)
VI. Perceived traumatic remark	-	2 (6.3)
VII. Rejected by other people/not included	2 (13.3)	3 (9.4)
VIII. Social mishap	1 (6.7)	3 (9.4)
IX. Being an outsider	-	1 (3.1)
X. Uncodeable	-	1 (3.1)
Severity of humiliation or rejection	**n = 15**	**n = 31[a]**
Mild	1 (6.7)	4 (12.9)
Considerable	1 (6.7)	10 (32.2)
Severe	7 (46.7)	13 (41.9)
Extreme	6 (40.0)	4 (12.9)
Individuals directly or indirectly involved in the negative social events	**n = 15**	**n = 31[a]**
One or two	5 (33.3)	10 (32.3)
Three or more	10 (66.7)	21 (67.7)

Note. [a]One missing value.

Individuals in the SAD group with social PTSD/PTSS scored significantly higher on all clinical variables compared to individuals in the SAD group without post-traumatic symptoms, which indicates more depression and SAD symptoms in the social PTSD/PTSS

group, although statistically significant differences were only found on the PHQ-9 ($p < 0.01$) and SPWSS ($p < 0.05$; see Table 5).

Table 5. Individuals with SAD and with or without social PTSD/PTSS ($n = 48$ [a]).

	Social PTSD/PTSS		
	Yes (*n*=15)	**No (*n* =32)**	
Instrument	**M (*SD*)**		**Independent two-tailed *t*-test**
LSAS	88.13 (19.26)	79.06 (19.17)	t (27) = 1.4, p = 0,18
PHQ-9	14.86 (5.83)[b]	9.19 (4.79)[b]	t (22) = 2.9, p < 0,01
QOLS	65.21 (12.85)[b]	62.13 (12.29)[b]	t (24) = 0.9, p = 0,39
SDS	203.14 (46.40)[b]	184.23 (54.75)[b]	t (29) = 1.2, p = 0,25
SPWSS	33.64 (6.90)[b]	28.65 (6.40)[b]	t (23) = 2.4, p < 0,05

Note. [a] One missing value. [b]Two missing values.

Types of appraisals in relation to a socially traumatic event

There were 60 appraisals in the SAD group, 13 in the OCD group, 37 in the comparsion group and 20 in the Social-PTSD group (see Table 6). The majority of appraisals in the SAD group were negative (81.7%) and the most common appraisal was classified as *Flawed and/or Weak self* (n = 23, 47.9%), which had been categorized as a SAD-specific appraisal. However, no participant in the comparison group appraised their event in such a way and only three participants (27.3%) in the OCD group. The second most common classification in the SAD group were *Others are critical and/or cruel* (n = 11 , 22.9%) a SAD-specific appraisal, and *The world is dangerous* (n = 10, 20.8%) which denotes more of an impersonal sense of danger, and was considered a PTSD-specific appraisal. A much less common classification in the SAD group were positive appraisals such as *Optimism about the future* (n = 1, 2.0%) and *Positive belief about other people* (n = 1, 2.0%). Most of the participants in the comparision group appraised the socially traumatic event postitively or neutrally in terms of a *Strong self* (17, 48.6%) and *No meaning* (n = 12, 34.3%). Most of the

participants in the OCD group appraised the event that was classified as *The world is dangerous* (n = 4, 36.4%) and *Strong self* (n = 4, 36.4%) (see Table 6). The most common appraisal among the SAD group were appraisals drawn from theoretical models of SAD, or 36 of 60 appraisals (60%). In the SAD group 22% of the appraisals were drawn from theoretical models of PTSD, however only three of the participants (20.0%) who met criteria for PTSD in relation to the socially traumatic event appraised the event in a PTSD-specific way. In the Social-PTSD group the most common appraisal were appraisals drawn from theoretical models of SAD, or 16 of 20 appraisals (80%) (see Table 6).

Table 6. Categories of appraisals of social trauma between the SAD group, OCD group, the comparison group and the social-PTSD group.

Appraisal theme	**SAD group (n = 48)**	**OCD group (n = 11)**	**Comparison group (n = 35)**	**Social–PTSD (or PTSS; n = 15)**
Flawed and/or weak self	23 (47.9%)	3 (27.3%)	-	10 (66.7%)
Others are critical and/or cruel	11 (22.9%)	1 (0.9%)	2 (5.7%)	6 (40.0%)
I am different from others	2 (4.2%)	1 (0.9%)	-	-
Self-blame	1 (2.0%)	-	-	-
The world is dangerous	10 (20.8%)	4 (36.4%)	4 (11.4%)	3 (20.0%)
I am not capable	2 (4.2%)	-	-	-
Strong self	-	4 (36.4%)	17 (48.6%)	-
Optimism about the future	1 (2.0%)	-	-	1 (6.7%)
Postitive beliefs about other people	1 (2.0%)	-	2 (5.7%)	-
No meaning	7 (14.6%)	-	12 (34.3%)	-
Unclassifiable	2 (4.2%)	-	-	-

Note. Some participants (SAD: n = 12, 25%; OCD: n = 2, %; Control: n = 2, 5,7%; SPTSD: n = 5, 33%) reported two appraisals of their socially traumatic event/experience); the percentages reveal the percentage of individuals who reported a given appraisal category.

"PTSD specific" beliefs and appraisals in relation to a socially traumatic event

The median for the three subscales of PTCI for people with SAD and social PTSD are similar to previously reported medians on the subscales for people with PTSD following a traumatic event as it is defined in the DSM, i.e. a Criterion A event (Foa et al., 1999), see Table 7. Additionally, the medians of subscales and total score on the PTCI for people with SAD (without PTDS) are also similar to medians in the PTSD group from Foa et al. (1999) (see Table 7). The medians of subscales and total scores on the PTCI for people with no mental disorder and for people with OCD as a primary disorder were also compared to the scores of the other groups. The medians on the subscales and total score are similar between the SAD and OCD groups. The scores are lower on all the scales in the comparison group compared to the other groups (see Table 7).

Table 7. Medians on the PTCI subscales and on the total score for the SAD groups with or without PTSD, the OCD group, the comparison group, and PTSD-group from Foa et al. (1999).

	SAD group with PTSD (n =15)	**SAD group without PTSD (n = 33)**	**OCD-group (n = 11)**	**Comparison group (n = 35)[a]**	**PTSD-group from Foa et al, (1999)**
PTCI subscales	*Mdn* (*SD*)	*Mdn* (SD)	*Mdn* (*SD*)	*Mdn* (*SD*)	*Mdn* (*SD*)
Negative cognitions about self	3.57 (1.09)	3.48 (0.79)	3.05 (1.22)	1.38 (0.40)	3.60 (1.48)
Negative cognitions about the world	5.85 (0.91)	4.86 (1.20)	4.29 (1.82)	2.57 (1.23)	5.00 (1.25)
Self-blame	3.4 (1.08)	3.80 (1.23)	4.00 (1.51)	2.20 (0.86)	3.20 (1.74)
Total score	13.20 (2.59)	12.02 (2.54)	11.36 (4.22)	6.21 (2.02)	11.80 (4.47)

Note. PTCI = Posttraumatic Cognitions Inventory.*Mdn* = median, *SD* = standard deviation. [a]Two missing values

There were significant differences in total score and on all subscales of the PTCI between the SAD group with social PTSD (n = 15) and the comparison group, with the Social PTSD group appraising the social trauma in a more negative manner than people with no mental disorders (p < 0,001: see Table 8). Participants in the SAD group who did not meet the criteria for social PTSD (n =33) also appraised their social trauma more negatively than those in the comparison group (p < 0,001). However, when participants in the SAD group with or without social PTSD were compared on the PTCI scales (see Table 8), those with social PTSD had higher scores on the Negative Cognitions about Self and Negative Cognitions about World subscales, although they only scored significantly higher on the World subscale (see table 8; p < 0,05). Additionally, only the social PTSD group, but not the SAD group without PTSD, had a higher total score on the PTCI compared to the OCD group (p < 0,05), along with having significantly higher scores on the Self and World subscales (p < 0,05; see table 8). Finally, the PTCI scores of the OCD group were higher than those in the comparison group, with there being a significant difference in total score (p < 0,01), on the Self subscale (p < 0,01), the World subscale (p < 0,05), but not the Self-blame subscale (p = 0,55).

Table 8. Means and standard deviations on the PTCI subscales and on the total score for the SAD groups with and without PTSD, the OCD group and the comparison group.

	SAD group with PTSD (n =15)	**SAD goup without PTSD (n = 33)**	**OCD group (n = 11)**	**Comparison group (n = 33)**	***F* statistic**
PTCI subscales	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	
Negative cognitions about self	3,94 (1,09)	3,46 (0,79)	2,72 (1,21)	1,49 (0,40)	$F(3, 88) = 47,0^{***}$
Negative cognitions about the world	5,61 (0,91)	4,55 (1,20)	4,10 (1,81)	2,78 (1,23)	$F(3, 88) = 20,6^{***}$
Self-blame	3,80 (1,08)	3,79 (1,23)	3,25 (1,50)	2,21 (0,86)	$F(3, 88) = 12,9^{***}$
Total score	13,35 (2,59)	11,80 (2,54)	10,08 (4,22)	6,48 (2,02)	$F(3,88) = 32,8^{***}$

Note. PTCI = Posttraumatic Cognitions Inventory. *M* = mean, *SD* = standard deviation. ***p < .001.

Different logistic regression models were compared in predicting a SAD diagnosis. The final model included the main effects of Negative Cognitions about Self and Self-Blame. The AIC value for the final model (AIC=15.80) was at least two points lower than for models including the main effect for Negative Cognitions about the World (see Table 9). Also, the slope for Negative Cognitions about the World was insignificant and the point estimation of it indicated that it could be small.

Table 9. Logistic regression analyses using the subscales of the PTCI to predict a diagnosis of SAD.

	β	*SE*	*z*
Model 1			
Negative cognitions about self	2.46	0.62	15,78***
Negative cognitions about the world	-0.81	0.28	0.09
Self-blame	-0.37	0.36	1.04
Model 2			
Negative cognitions about self	2.37	0.53	19.95***
Self-blame	-0.36	0.36	-1.0

Note. β = slope, *SE* = standard error, *z* = z-value, Model 1 = Original model, Model 2 = Best fit model, ***p< .001

The logistic regression analysis indicates that higher scores on the subscale assessing Negative Cognitions about Self (Z = 19.95, p < .001; OR = 10.65; 95% CI: [3.78 – 30.06]) increase the likelihood of being diagnosed with SAD, and that higher scores on the subscale assessing self-blame (Z = -0.36, p = .32; OR = .70; 95%) decrease the likelihood of being diagnosed with SAD. The results are significant for the main effect of Negative Cognitions about Self but not for the main effect of Self-Blame at α = .05. However, the AIC value indicated that the model that includes Self-Blame provided the best fit. This model indicates that certain appraisals thought to be specific to the development of PTSD may predict the development of SAD as well.

To explore the association of the PTCI scale to severity of social anxiety, a multiple regression analysis was conducted for scores on the LSAS and subscale scores on the PTCI for all participants (see Table 10). A significant regression equation was found ($F(3, 87) = 52.87$, $p < 0.001$, $R^2 = .65$). The subscale Negative Cognitions about Self was the only scale found to be statistically significant ($p < 0.001$). With an increase of one unit on the subscale of Negative Cognitions about Self there is a predicted increase on the LSAS total score of around 20 points.

Table 10. Multiple regression analysis with subscale scores on the PTCI predicting the LSAS total score.

	β	*SE*	*t*	95% confidence interval for *β*
Negative Cognitions about Self	20.39	3.44	5.93***	13.55 – 27.23
Negative Cognitions about the World	4.04	2.30	1.75	- 0.54 – 8.61
Self-Blame	-1.61	2.58	-0.62	-6.73 – 3.52

Note. *β*= slope, *SE* = standard error, *t* = t-test, *** < 0.001

Discussion

We explored the frequency, characteristics and severity of social trauma, reported by outpatients with a primary diagnosis of SAD, a comparison group with no mental diagnoses and individuals with a different anxiety disorder (in this case, OCD). Our aim was also to assess PTSD and clinically significant PTSS in response to social trauma in these three groups. Furthermore, we wanted to know whether certain types of trauma appraisal could have contributed to the development of SAD as well as to the development of PTSD in response to the social trauma. More specifically, we determined, first, whether the same type of appraisals (i.e., Negative Cognitions about the Self, Negative Cognitions about the World, and Self-Blame) that have been implicated in the development of PTSD might play the same role in the development of social PTSD and SAD. Additionally, we explored whether there

may be appraisals of social trauma *specific* to the development of SAD and of social PTSD, with reference to cognitive theories of the disorder.

Social trauma

Most participants in this study, with or without social anxiety disorder, had experienced a socially traumatic event (in which they experienced being humiliated, ridiculed or rejected). In other words, experiencing social trauma (as we defined it) is very common in the general population. These results are in line with Erwin et al.´s study (2006) where outpatients with SAD were compared to non-anxious controls, except in that study all individuals in the SAD group reported experiencing a socially stressful event compared to 70% of the non-anxious controls. This discrepancy may, however, be explained by differences in how the participants were questioned about these experiences. Erwin et al. (2006) assessed social events (taken from the LSAS) that were stressful, but not necessarily experiences in which individuals experienced being humiliated or rejected (as in our study), which we deem necessary for being considered socially traumatic. The important question, with potential theoretical and therapeutic implications, is how to explain that one group in this study went on to develop social anxiety disorder, and that 31% of that group went on to develop post-traumatic stress disorder or clinically significant stress symptoms in response to the socially traumatic event while the other groups did not.

Previous studies of negative social events (see e.g., Boals and Schuettler, 2009; Carleton et al., 2011; Long et al., 2008) have mainly used self-report measures in which individuals disclose the events that they have experienced. To our knowledge, the present study is the first in which individuals are asked an open-ended question about a socially traumatic experience. Raters blind to group assignment conducted content analyses of the answers and we then sought to determine if there were certain types of social trauma that were more common among those in the SAD group compared to individuals with OCD and

no mental disorders in response to the social trauma. The descriptives showed that *bullying* was common in all groups but the comparison group had more reports of *teasing* than the other groups. The OCD group had more reports of mental/physical and/or sexual violence/harassment compared to the other groups, however the SAD group had more reports of these events compared to individuals with no mental disorders. To summarize, there were more reports of severe types of social trauma in the clinical groups, such as mental and physical violence (from e.g., family members) and sexual violence, in comparison to milder forms of rejection (such as teasing and not being included) in the comparison group.

When we analysed independent ratings of severity of the events (taking into account the amount of rejection or humiliation, and the repetitiveness of the events or over how long a time period the experience took place) there was a significant difference in severity between the groups, with the SAD group experiencing more severe social trauma on average, especially those individuals who went on to developing PTSD in response to the traumatic experience. However, we did not find statistically significant differences between the clinical groups, which could be the result of a small sample size in the OCD group and the SAD group with social PTSD. It is, therefore, important to replicate this study with larger samples. Additionally, severity of the social trauma also predicted whether the individual was likely to be diagnosed with SAD in a logistic regression analysis. The findings in this study clearly show that social trauma may be a major factor in the onset of SAD. The majority of participants in the SAD group reported that the social trauma happened before age of SAD onset, and almost all participants in the SAD group believed that the social trauma caused the onset of their social anxiety or at least contributed to it. These results are in line with other studies that have found negative social events to be a likely causal factor in the development of SAD (Bandelow et al., 2004; Carleton et al., 2011; Chartier et al., 2001; Erwin et al., 2006; McCabe Miller, Laugesen, Antony, & Young 2010, Magee, 1999; Stein et al., 1996), in line

with diatheses-stress (Rapee & Spence, 2004) and maintenance (e.g., Rapee & Heimberg, 1997) models for SAD.

Frequency and characteristics of social PTSD

There were three individuals in the SAD group that were diagnosed with PTSD (that was not in response to social trauma) in this study. However, 15 individuals (25% of all SAD-participants but 31,2% of all those who reported social trauma) met criteria for PTSD or had clinically significant PTSS in response to social trauma. These rates of PTSD are similar to the only other study in which PTSD in response to social trauma was assessed with a clinical interview, where more than one-third of the participants with SAD met criteria for a PTSD-like symptom pattern in response to a negative social event (Erwin et al., 2006).

The results in this study showed that there were no clear differences in the types of experiences that would lead to PTSD/PTSS in response to social trauma. *Bullying* was common among individuals with SAD with or without PTSD or PTSS (33,3% vs. 37,5%), and *mental/physical and/or sexual violence/harassment* was also common in both groups (26,7% vs. 21,8%, respectively). It is worth noting that there were certain experiences (such as teasing, perceived traumatic remarks and feeling like an outsider) that were not reported by the Social PTSD group and therefore are not likely to lead to a clinically significant traumatic reaction and/or social PTSD. Even though there were no clear differences in the types of events between the groups, the severity of the social trauma seems to have some impact with regard to who is likely to go on to develop social PTSD/PTSS. The social trauma of individuals with social PTSD/PTSS was rated as more severe, on average, than individuals without post-traumatic stress symptoms. In addition, symptoms of social anxiety (on the SPWSS but not the LSAS) and depression were more severe in the social PTSD/PTSS group. These results are partially in line with Carleton et al. (2011), where participants reporting a significantly negative social event also reported higher levels of PTSS and SAD symptoms

along with higher levels of fear of negative evaluation and anxiety sensitivity. These results indicate that symptoms of social anxiety are more severe among those who also develop social PTSD. We cannot be certain about causality, but it is at least a plausible conjecture that the experience of severe social trauma, along with certain reactions to it, make it more likely for an individual to develop SAD, which is likely to be more severe than for individuals who develop SAD in other ways.

Appraisal of social trauma

Severity of the social trauma is likely a part of the explanation for why some individuals go on to developing social anxiety disorder and PTSD in relation to the experience. But severity cannot be the whole explanation since many individuals endure severe or extreme social trauma but do not go on to develop such symptoms. According to theoretical models of PTSD, a key process in the development and maintenance of the disorder is the appraisal of traumatic experiences (see e.g., Ehlers & Clark, 2000). It states that individuals with PTSD process the traumatic event in a way that produces a state of current threat. About one third of the individuals with SAD who have experienced social trauma went on to developing PTSD or clinically significant PTSD symptoms in response to the socially traumatic event. With that in mind, it could be that some individuals that are prone to developing SAD process social trauma in a way that produces a sense of current threat. In other words, appraisals of the events might have a similar role in the development of SAD and/or social PTSD as appraisals of trauma in PTSD, at least for some individuals. We found some evidence for this notion, as the SAD group and the social PTSD group had similar median scores on the subscales of the PTCI compared to samples of PTSD patients in Foa et al. (1999), indicating that similar beliefs may be at play in the development of the disorders. Additionally, the means on the total score and scores on all subscales were higher for the SAD group with social PTSD than the comparison group and also higher than the

OCD group on the total score and the subscales "Negative cognitions about self" and „Negative cognitions about world". Participants in the SAD group with social PTSD also had higher scores on the „Negative cognitions about world" subscale than those in the SAD group who suffered a social trauma but did not go on to develop social PTSD. This indicates that the same cognitions that have been found to discriminate between individuals with PTSD and individuals who cope effectively following trauma, may also differentiate between people with SAD and social PTSD from people with a different anxiety disorder and from people with no mental disorders in relation to social trauma.

Higher scores on the PTCI subscales of "Negative Cognitions about Self" and lower scores on the subscale of "Self-Blame" increased the likelihood of having a diagnosis of SAD. It appears that the subscale assessing "Negative Cognitions about the World" does not increase the likelihood of a SAD diagnosis despite its relationship with social PTSD. These results suggest that feeling incompetent may be more important for the development of SAD than believing that the world is a dangerous place. Furthermore, people with SAD do not feel in control in social situations, and may, therefore believe that there is nothing that they could have done differently to avoid the humiliation or embarrassment (assessed by the Self-Blame subscale of the PTCI). This could explain the negative association between a SAD diagnosis and scores on the "Self-Blame" subscale. We found a similar pattern when predicting SAD severity scores (using the LSAS total score as a dependent variable).

The results of the content analyses of appraisals following the social trauma show that individuals with SAD appraise social trauma in a more negative way than people with no psychiatric diagnoses. However, the majority individuals with OCD also appraised the social trauma in a negative way, but it should be noted that the sample size was small so these findings should be interpreted with caution. Among individuals with SAD, 60% of the appraisals were classified in the appraisal categories drawn from cognitive models of how

SAD is maintained (e.g. Clark & Wells, 1995; Heimberg et al., 2012; Hofmann, 2007; Moscovitch, 2009) whereas 22% of their appraisals were categorized as PTSD-specific appraisals (Foa et al., 1999). Only two participants in the SAD group appraised the social trauma in a positive way (*Optimism about the future* and *Positive beliefs about other people*) whereas only six appraisals in the comparison group could be labeled as negative. The remainders of appraisals in the comparison group were either neutral (n = 12, 34.3%) or positive (n = 19, 40%). Nine appraisals were negative among the OCD group (65.5%) and four were positive (36.4%).

Interestingly, most of the appraisals in the social PTSD group (n = 16, 80%) could be classified in a SAD-specific way (e.g. Flawed and/or weak self and Others are critical and/or cruel) except for three participants that appraised the event in a PTSD specific way (e.g. The World is dangerous) and one participant who appraised the event in a positive way (e.g. Optimism about the future). This could be an indication that individuals who are likely to develop social PTSD may appraise social trauma differently than individuals who are likely to develop PTSD after experiencing Criterion A trauma. It is worth pointing out that the content analyses in this study involved categorizing the main appraisal of each participant (assessed with an open-ended question), whereas the instructions on the PTCI consist of asking people to endorse different types of appraisals of the trauma. Therefore, the methods of assessment are different in these analyses, and it is difficult to compare relative strengths of the PTSD (as assessed by the PTCI) and SAD (as assessed by the open-ended question) appraisals.

Conclusion

Our findings indicate that appraisals of social trauma seem to be a key determinant of who is likely to develop either SAD or PTSD in response to the social trauma. This is not to say that the individuals in the other groups were not negatively affected by the trauma, but

rather that they did not process the experience in the same way. In fact, many in the comparison group and the OCD group took something positive away from the experience, so that instead of concluding that the traumatic experience had implications for how flawed or weak they were, they concluded instead that it said nothing about themselves or other people or even indicated their own strength and that the future was bright. Well-known appraisal processes from cognitive theories of the development of PTSD seem to play a role in the development of SAD after having experienced a socially traumatic event, although negative cognitions about the self seem to be the most important appraisal process, and that self-blame and especially negative cognitions about the world may not play the same role in the etiology. Nevertheless, appraisals taken from theoretical models of SAD (see e.g., Moscovitch, 2009) seem to play an even greater role in its development, especially the notion of a fundamentally flawed or a weak self, which is not captured by the Negative Cognitions about Self subscale in the PTCI since the latter is more focused on ability in certain situations.

The current study is the first, to our knowledge, to asses, describe and evaluate the impact and appraisal of social trauma. Our results suggest that one third of individuals with SAD may suffer from PTSD or clinically significant PTSS in response to social trauma and moreover, this social PTSD group reports higher anxiety- and depression symptoms than individuals with SAD without social PTSD. This difference raises the queston of wheter this social PTSD group should be accounted for in current theoretical models of SAD. If replicated, theoretical models of SAD will need to be reevaluated. There may be therapeutic implications as well. There are already interesting developments in treating intrusive images, that are, in many cases, based on social trauma, with imagery rescripting (see e.g., Wild & Clark, 2011). It will be interesting to explore if other interventions from the treatment of PTSD may be effective for individuals that suffer from social trauma. Nonetheless, further

research is needed on this construct and on the mechanisms that are involved when an individual gets stuck in such an experience to the point of being constantly vigilant of danger in social situations and relationships that are similar to the trauma and that get generalized to more and more situations. It is likely that many individuals with SAD live life as if under constant threat in just the same sense as individuals with PTSD with respect to Criterion A events. We need to find out more about how individuals get stuck in order for us to discover how we can get them unstuck again, so that we may be able to prevent the development of PTSD in response to social trauma and indeed, SAD for many individuals.

Study limitations and strengths

There are several limitations to the current study. The sample size in the OCD group was small, thereby affecting statistical power. It is important to replicate this study with a larger anxiety-control sample. Furthermore, it will be important to compare the groups in this study to a sample of individuals with PTSD in response to Criterion A trauma to get a better sense of the extent to which appraisals in these groups are similar to each other and to what extent they are different. Also, the validity of assessing events that happened in the (sometimes distant) past can be affected by several well-known biases in memory (see e.g. Hardt & Rutter, 2004). The strengths of the study include the use of clinical interviews (instead of relying solely on self-report questionnaires) and the careful training and supervision of the assessment team.

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