



## Original Article

# Not intended, still embarrassed: Social anxiety is related to increased levels of embarrassment in response to unintentional social norm violations

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## ABSTRACT

**Background:** Social anxiety disorder (SAD) is associated with altered social norm (SN) processing: SAD-patients rate stories on SN violations as more inappropriate and more embarrassing than healthy participants, with the most prominent effect for stories on *unintentional* SN violations (i.e. committing a blunder). Until now it's unknown how levels of social anxiety (SA) are related to ratings of SN violations in the general population, in which SA-symptoms are present at a continuum. More insight in this relationship could improve our understanding of the symptom profile of SAD. Therefore, we investigated the relation between ratings of SN violations and SA-levels in the general population.

**Methods:** Adults and adolescents ( $n = 87$ ) performed the revised Social Norm Processing Task (SNPT-R) and completed self-report questionnaires on social anxiety. Repeated-measures ANCOVAs were used to investigate the effect of SA on the ratings of inappropriateness and embarrassment.

**Results:** As hypothesized, participants with higher SA-levels rated SN violations as more inappropriate and more embarrassing. Whereas participants with low-to-intermediate SA-levels rated unintentional SN violations as less embarrassing than intentional SN violations, participants with high SA-levels ( $z$ -score  $SA \geq 1.6$ ) rated unintentional SN violations as equally embarrassing as intentional SN violations.

**Conclusions:** These findings indicate that increased embarrassment for unintentional SN violations is an important characteristic of social anxiety. These high levels of embarrassment are likely related to the debilitating concern of socially-anxious people that their skills and behavior do not meet expectations of others, and to their fear of blundering. This concern might be an important target for future therapeutic interventions.

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## 1. Introduction

Social anxiety (SA) is an emotion that is experienced by most people with some regularity. Typically, people want to make a good impression when they are in a social situation, and when committing a blunder in the presence of others, people tend to feel embarrassed or ashamed. However, the experience of social anxiety varies between people, ranging from discomfort in specific social situations

for some individuals to an intense fear in almost all social situations for others [1]. At the upper end of 'this continuum of social anxiety' [2] lies social anxiety disorder (SAD), a psychiatric condition which is, according to the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*, characterized by an intense fear of being negatively evaluated in social situations [3]. This fear of social-evaluative stimuli [4], which is out of proportion to the actual threat and to the sociocultural context [5,6] leads to the avoidance of social situations and results in significant disturbances in a person's everyday life [3,7]. The typical onset of SAD is during childhood or adolescence and several environmental as well as intrinsic factors like genetic influences, biological factors as well as cognitive biases interact in the development of the disorder [8].

Previous studies have indicated that SAD-patients experience disturbances in self-referential processing and have biases

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concerning the opinion of others about them: they have increased self-portrayal concerns [9], for example when it concerns their social rank [10,11] or their own social performance [12,13], they overestimate the negative consequences of their own social blunders [14] and are characterized by negatively biased learning about themselves from social feedback [15]. Furthermore, clinical SAD is associated with an increased belief in negative interpretations of social situations [16] and SAD-patients focus predominantly on potentially embarrassing events when they evaluate themselves in a social context [17]. Such negative self-beliefs, which are already present in adolescents with SAD [18,19], are related to increased negative emotions like fear and anxiety, and induce maladaptive behavioral responses like safety behaviors, which, consecutively, lead to the maintenance of social anxiety [20,21]. It has been argued that SAD-patients are ‘uniquely and primarily concerned about characteristics of self that they perceive as being deficient or contrary to perceived societal expectations or norms’ [22]. According to this view, one of the main concerns of SAD-patients is the fear that they will unintentionally commit an embarrassing behavioral blunder in a social situation [22], which let us to hypothesize that social anxiety is specifically related to the experience of increased embarrassment in reaction to *unintentional* social norm violations.

This idea was previously examined by investigating the behavioral data of a functional Magnetic Resonance Imaging (fMRI) study using the social norm processing task (SNPT) [23]. In this task, participants read three types of short stories: stories describing neutral social situations, stories on unintentional social norm (SN) transgressions (i.e. committing a blunder) and stories describing intentional SN transgressions (i.e. breaking conventional rules) and they are asked to imagine themselves in the situation described. Subsequently, participants rate the stories on inappropriateness and embarrassment. Thereby, the SNPT enables investigating the effect of intention on these ratings. Blair and colleagues [23] showed that, while SAD-patients had higher self-reported levels of inappropriateness and embarrassment across all conditions, the effect of SAD was most pronounced for unintentional SN violations: adult patients with generalized SAD ( $n = 16$ ) rated these unintentional transgressions as significantly more embarrassing when compared to healthy participants ( $n = 16$ ). Furthermore, the fMRI analyses revealed that reading the unintentional stories evoked increased activation in the ventromedial prefrontal cortex in SAD. This activation was considered to represent increased self-referential processing and was taken to indicate that SAD-patients judge unintentional SN violations as more self-relevant than healthy participants [23].

The results of this study [23], which was the first, and, to the best of our knowledge, the only study to date investigating the difference between processing intentional and unintentional SN violations in SAD, provide important initial evidence that the intention underlying a SN violation is a determining factor in the experience of embarrassment in social anxiety: although SAD-patients reported higher embarrassment for all social situations, they differed most from control participants when they considered unintentional transgressions [23]. However, the sample size of the study was relatively small. In addition, participants performed an ‘impersonal’ version of the SNPT, in which the stories described behavior of an unknown character like ‘Joanna’ (cf. [24]), as a result of which it could be questioned whether the ratings reflect the participants’ opinion about their own SN violations. Furthermore, it is unknown if the effect of intention on the level of embarrassment also holds for participants with higher SA-levels in the general population.

Here, we investigated the relation between self-reported SA and behavioral ratings of SN violations in a sample of adults and adolescents from the general population ( $n = 87$ ), using the revised

Social Norm Processing Task (SNPT-R) [25]. In the SNPT-R, the three types of stories were written in second-person, in order to let the ratings reflect how participants think about their own SN violations. Data of this sample on the SNPT-R have been published previously [25].

Based on previous work [23], we hypothesized that higher SA-levels within the general population would be predictive of a *general* effect of SA, reflected by higher ratings of inappropriateness and embarrassment for all stories and of an *intention-specific* effect of SA, namely an even more pronounced increase in embarrassment ratings for stories on unintentional SN violations. More insight in this relationship could help further unravel mechanisms involved in the etiology and maintenance of social anxiety and may identify potential novel targets for prevention and intervention.

## 2. Methods

### 2.1. Participants

Participants were adults and adolescents from the general population ( $n = 87$ ; age range 12.5–32.6 y), the same as those described previously [25]; details of the inclusion procedure are described in the Supplemental Methods. They had Dutch as their first language and were free of past and present psychopathology as assessed by a self-report questionnaire. After explanation of the procedure, all participants (and in case of minors below 18 years of age, both parents) signed informed consent according to the Declaration of Helsinki. The Psychology Research Ethics Committee of Leiden University approved the experiment.

### 2.2. Social norm processing task

Participants performed the revised Social Norm Processing Task (SNPT-R), described in detail previously [25]. The SNPT-R consists of two phases.

In the *first* phase, participants read three types of short stories: stories on situations in which no social norm (SN) was violated (neutral condition; for example: ‘*You are baking an apple pie with your friends. You use the amount of sugar the recipe calls for*’), stories describing unintentional SN violations (unintentional condition; ‘*You are baking an apple pie with your friends. You use salt instead of sugar without realizing*’) and stories outlining intentional SN violations (intentional condition; ‘*You are baking an apple pie with your friends. You use salt instead of sugar as a joke*’). Stories in the unintentional and intentional condition described relatively innocent violations of conventional social norms, in situations where at least one other person was present. The intentional and unintentional stories differed only in the intention of the actor, while the actual result of the violation (for example: a distasteful cake) was kept as much as possible the same. Stories were written in second-person and participants were instructed to imagine themselves in the situations, in order to maximize their personal involvement (cf. [26]). Therefore, four age- and genderspecific versions of the task were used: for boys <18 years, girls <18 years, men  $\geq 18$  years and women  $\geq 18$  years. The task consisted of 78 stories and a full list of stories is provided in Bas-Hoogendam et al. [25]. We refer the reader to this work and to the Open Science Framework (OSF)-project [dataset] [27] for more details on task parameters and scripts for task presentation.

*Secondly*, there was an unannounced rating-phase, in which participants were asked to rate all stories on a 5-point Likert scale on embarrassment (from 1, not embarrassing at all, to 5, extremely embarrassing) and inappropriateness (from 1, not inappropriate at all, to 5, extremely inappropriate). These ratings were the output-measures used in this study.

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