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Safety behaviors, self-focused attention and negative thinking in children with social anxiety disorder, socially anxious and non-anxious children

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ABSTRACT

Background and objectives: Cognitive behavioral models of social anxiety disorder (SAD) in adults suggest several mechanisms that maintain social anxiety. So far, little is known about the role of these processes in childhood social anxiety.

Methods: In this study, 21 children with SAD, 21 children with high social anxiety and 21 non-anxious controls (age between 8 and 13 years) were asked about their use of safety behavior in anxiety producing situations. Furthermore, children were asked to indicate their levels of anxiety, self-focused attention and frequency of positive and negative cognitions while engaging in a performance task in front of two adults.

Results: As expected, a significant group effect was found for all dependent variables, with children suffering from SAD reporting the most frequent use of safety behavior and highest levels of anxiety, self-focused attention and negative cognitions during the task, followed by socially anxious children and controls. Unexpectedly, only self-focused attention mediated the relationship between general social anxiety and state anxiety in response to the task.

Limitations: We assessed only the general use of safety behavior in social threatening situations and not with respect to the performance task.

Conclusions: The results provide important preliminary evidence for differences between clinical and non-clinical groups in childhood anxiety in maintaining variables as proposed from cognitive models in adults. In particular, self-focused attention seems to be relevant. Targeting the change of inappropriate attentional focus could be promising for treatment improvement in childhood social anxiety.

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1. Introduction

Cognitive models of social anxiety disorder in adulthood (Clark & Wells, 1995; Rapee & Heimberg, 1997) propose several maintaining mechanisms which prevent socially anxious individuals from benefiting from exposure to “objectively” non-threatening everyday social situations. Among others, safety behaviors and self-focused attention are assigned a central role in the maintenance of the disorder (McManus, Sacadura, & Clark, 2008; Spurr & Stopa, 2002; Wells et al., 1995).

Safety behaviors involve behavioral and cognitive strategies individuals with social anxiety disorder (SAD) engage in to reduce the risk of being negatively evaluated by others (Clark & McManus,

2002). For example, safety behaviors such as rehearsing sentences in one's mind are intended to prevent feared catastrophes such as stuttering. However, it is suggested that an excessive use of safety behaviors has several problematic consequences, as it increases anxiety and self-focused attention, maintains negative beliefs and may even contaminate social situations by making individuals come across as distant or uninterested (Clark & Wells, 1995; Rapee & Heimberg, 1997). Results from McManus et al. (2008) suggest that high socially anxious adults use safety behaviors more frequently and also display a greater variety of safety behaviors than low anxious individuals.

Self-focused attention has been defined as “an awareness of self-referent, internally generated information that stands in contrast to an awareness of externally generated information derived through sensory receptors” (Ingram, 1990, p. 156). It is assumed that each time SAD or socially anxious individuals enter a social situation they tend to shift their attention toward internal aspects of themselves such as arousal, behavior, thoughts, emotions or appearance

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(Bögels & Mansell, 2004). Self-focused attention then enhances the awareness of a negative mental representation of the self as well as of feelings, thoughts, and physiological symptoms related to anxiety. Among others, Clark and Wells (1995) suggest that high internally focused attention reduces the capacity to process external positive feedback or information that might disconfirm dysfunctional beliefs. Thus, self-focused attention is assumed to trigger or increase anxiety and make individuals rely on their negative evaluations about themselves and their performance due to the absence of corrective experience. Additionally, high self-focused attention can have detrimental effects on social performance because the capacity of attentional resources for successful task handling is reduced.

A range of studies with adult populations generally supports the assumption of cognitive models regarding the maintaining role of safety behaviors and self-focused attention (Bögels & Mansell, 2004; Cuming et al., 2009; McManus et al., 2008; Schultz & Heimberg, 2008; Spurr & Stopa, 2002). There is evidence that cognitive behavioral treatment for adults with SAD leads to a significant decrease in self-focused attention and self-focused thoughts, which is correlated with the reduction of social anxiety at post-treatment (Hofmann, 2000; Woody, Chambless, & Glass, 1997). Studies examining the incremental value of techniques aimed at reducing safety behavior and/or self-focused attention during exposure found an additional beneficial effect in comparison to exposure alone (Kim, 2005; McManus et al., 2009; Taylor & Alden, 2010; Wells et al., 1995). Thus, in adult populations cognitive models and related treatment packages have been widely investigated with generally positive outcomes. However, cognitive models have been less well studied in children, although it has clearly been shown that treatments based on cognitive models are also effective in the treatment of anxiety disorders in both children and adolescents (for reviews see Cartwright-Hatton, Roberts, Chitsabesan, Fothergill, & Harrington, 2004; Chu & Harrison, 2007; In-Albon & Schneider, 2007; Silverman, Pina, & Viswesvaran, 2008).

In contrast to the evidence in adults, little is known about safety behavior and self-focused attention in childhood SAD. Nevertheless, results from a small number of studies indicate that a better understanding of these factors could be a promising starting point to further improve treatments for children. For example, in their study with children with various anxiety disorders Hedtke, Kendall, and Tiwari (2009) investigated the effect of using safety and coping behavior during exposure tasks on treatment outcome. Consistent with findings in adults, they found that children classified as non-responders used more safety behaviors during exposure task compared to children who responded well to treatment. In a correlational study, Hodson, McManus, Clark, and Doll (2008) investigated several of the assumed maintaining variables of the Clark and Wells' (1995) model in a sample of 171 participants aged 11–14 years. They found that high socially anxious children reported a higher degree of safety behaviors use and higher levels of self-focused attention than low anxious children. In separate regression analyses, both variables were significant predictors for social anxiety. Furthermore, two studies with non-clinical children samples provided preliminary evidence for a link between self-consciousness and self-focused attention with youth self-reported social anxiety and negative affect (Higa & Daleiden, 2008; Higa, Phillips, Chorpita, & Daleiden, 2008). While these preliminary results are promising, due to the lack of clinical samples it is currently unknown if using safety behaviors and heightened internally focused attention during anxiety provoking situations are limited to childhood SAD or are only epiphenomena of social anxiety in general.

Related to the content of cognitions in children, the high presence of negative cognitions and low performance expectations

have also been supported in childhood SAD (e.g., Alfano, Beidel, & Turner, 2006; Miers, Blöte, & Westenberg, 2010a; Spence, Donovan, & Brechman-Toussaint, 1999; Vassilopoulos & Banerjee, 2008), even though empirical evidence is less robust compared to adulthood (Alfano, Beidel, & Turner, 2002). In addition to investigating content and frequency of negative cognitions, some research focused on analyzing the balance between positive and negative self-talk with determining state of mind ratios (SOM; ratio of positive to negative thoughts). It is supposed that high SOM ratios reflect more positive compared to negative self-statements and are associated with better emotional adjustment. A shift of this proportion toward the negative indicate maladaptive functioning (e.g., Schwartz, 1997). Following the SOM model, there are seven qualitative different categories of ratios, which reflect different forms of adaptive and maladaptive functioning (Schwartz, 1997). The categories *positive dialogue* (SOM ratio = .67–.90) and *successful coping dialogue* (SOM ratio = .59–.66) are associated with functional adjustment. A relative balance between positive and negative cognitions in the *conflicted dialogue* category (SOM ratio = .42–.58) is attended by uncertainty or mild anxiety. Predomination of negative cognitions in the *failed coping dialogue* (SOM ratio = .34–.41) and *negative dialogue* (SOM ratio = .10–.33) are linked to moderate and severe anxiety or depression. Ratios from greater than .91 and lower .09 called the *positive and negative monologue* respectively, both usually indicate severe psychopathology. Results for applying the SOM Model to anxious children to date are mixed and missing for SAD in children. On the one hand studies found that more “dysfunctional” SOM ratios were associated with more anxiety (e.g., Calvete & Cardenoso, 2002; Treadwell & Kendall, 1996), but on the other hand the supposed categories were not fully supported (Treadwell & Kendall, 1996).

The aims of the present study were to investigate the use of safety behaviors in children with SAD, socially anxious (SA) children and non-anxious (NA) controls as well as to determine the attentional focus, frequency of negative and positive cognitions during an anxiety provoking social situation. Based on cognitive models of social anxiety, it was hypothesized that SAD children would use safety behaviors more frequently and also display a greater range of these behaviors than both other groups. Furthermore, they were expected to have higher levels of self-focused attention and experience more negative and less positive cognitions compared to the two other non-clinical groups. Finally, it was assumed that the relation between general social anxiety and state anxiety experienced in a social situation would be at least partially mediated through general use of safety behaviors, inappropriate self-focused attention and negative cognitions, as reported in adults (e.g., Rapee & Abbott, 2007; Schulz, Alpers, & Hofmann, 2008).

2. Method

2.1. Participants

Sixty-three children (31 girls and 32 boys) between 8 and 13 years old ($M = 10.33$; $SD = 1.37$) participated in this study. Twenty-one children met full DSM-IV criteria for SAD, 21 high socially anxious children only partially met the criteria, and 21 NA children did not report increased levels of social anxiety. Children with psychopharmacological treatment and with any comorbidity other than a simple phobia or enuresis were excluded from the study. One boy in the SAD group and one boy in the SA group were diagnosed with a simple phobia. One girl in the high SA group was additionally diagnosed with enuresis. Nine children were excluded from the study due to comorbidity. Two children with SAD had an additional attention deficit disorder and two a major depression.

Three SA children were excluded because one suffered from post-traumatic stress disorder, one from an attention deficit disorder and one from a tic disorder. Moreover, two NA children were excluded due to an eating disorder and an Asperger Syndrome. Table 1 shows participants' characteristics and results of group comparisons. Mean scores of the social phobia questionnaires are similar to those reported in the literature for the three groups (e.g., Alfano et al., 2006; Alfano, Beidel, & Turner, 2008; Kristensen & Torgersen, 2006).

2.2. Measures

2.2.1. Diagnostic assessment

Diagnostic Interview for Mental Disorders in Children and Adolescents (Kinder-DIPS). To assess the diagnosis of social phobia according to DSM-IV, we used the Kinder-DIPS (Unnewehr, Schneider, & Margraf, 1998). This structured interview consists of a child interview and a parent interview, respectively and assesses most anxiety disorders, as well as depression, attention-deficit hyperactivity disorder, opposition defiant disorders, eating disorders, and elimination disorders. The parent interview was conducted either with the mother, the father or both parents together but was conducted separately from the child. SAD diagnosis was then based on the composite information from the two separate interviews. The validity and reliability of the Kinder-DIPS for the assessment of anxiety disorders and other axis I disorders ranges from satisfying to good. Kappa coefficients for inter-rater reliability of diagnosis categories vary from .55 to .81 (Unnewehr et al., 1998). Trained Master-level clinical psychologists conducted the Kinder-DIPS. Additional assessments to validate group assignment included self-report instruments of children on social anxiety and a parent-report for child psychopathology.

Social Phobia and Anxiety Inventory for Children (SPAI-C). To assess the severity of SAD symptoms, we administered the German version of the Social Phobia and Anxiety Inventory for Children (SPAI-C; Beidel, Turner, & Morris, 1995; German version: Melfsen, Florin, & Warnke, 2001). The SPAI-C is a 26-item self-report

measure that assesses a range of potentially anxiety producing situations (e.g. reading aloud or performing in a play) and physiological, cognitive and behavioral symptoms of social phobia. Each of the items rated on a 3-point Likert scale represents the frequency with which each symptom is experienced (0 = never, 1 = sometimes, 2 = most of the time or always). Scores may range from 0 to 52. Normative data for the German population aged 8–16 years are available. In the German version, a cutoff score of 21 is recommended to identify clinically relevant SAD symptoms (Melfsen et al., 2001). Internal consistency in the present study was high (Cronbach's alpha = .91).

Social Anxiety Scale for Children – Revised (SASC-R). The SASC-R (La Greca & Stone, 1993; German version: Melfsen & Florin, 1997) is an 18-item measure of social anxiety in children and consist of the two 9 item subscales "Fear of Negative Evaluation" (FNE) and "Social Avoidance and Distress" (SAD). Children were asked to respond to various statements on a 5-point scale (1 = not at all to 5 = always). Total SASC-R scores range from 18 to 90. Internal consistency of the total SASC-R scale was .91.

Child Behavior Checklist (CBCL). The 113-item German version of the Child Behavior Checklist (Achenbach, 1991; Arbeitsgruppe Deutsche Child Behavior Checklist, 1998) was completed by parents for the assessment of their child's behavioral problems and social competencies. Each item is scored on a 3-point Likert scale ranging from 0 = not true to 2 = often true. The CBCL contains eight problem syndrome scales as well as global scales for internalizing, externalizing and overall problems. Normative data for a German population are available. We used the global scales "internalizing" (range from 0 to 62, Cronbach's alpha = .85) and "externalizing" (range from 0 to 66, Cronbach's alpha = .88).

Modified Social Behavior Questionnaire for Children (M-SBQ-C). Based on items of the Social Behavior Questionnaire (SBQ; Clark et al., 1995; German version: Stangier, Heidenreich, Ehlers, & Clark, 1996) children were asked for the frequency with which they employed a range of safety behaviors in social anxiety provoking situations. For the purpose of our study, we modified the German version of the SBQ to tailor it for children, such as

Table 1
Participants' characteristics, means and standard deviations (in parenthesis) of child and parent measures and group differences.

	SAD	SA	NA	Statistic	p	Comparisons
<i>Child characteristics</i>						
Age	10.81 (1.21)	10.05 (1.50)	10.14 (1.32)	$F(2, 60) = 2.01$	.15	–
Gender	11 girls 10 boys	9 girls 12 boys	11 girls 10 boys	$\chi^2(2, N = 63) = .51$	.78	–
SPAI-C	23.75 (6.16)	17.95 (3.97)	9.51 (7.02)	$F(2, 60) = 31.34$	<.001	SAD > SA > NA
SASC-R	54.44 (10.28)	43.21 (8.51)	34.74 (10.29)	$F(2, 60) = 21.66$	<.001	SAD > SA > NA
CBCL internalizing	21.30 (9.21)	16.50 (7.46)	14.61 (7.45)	$F(2, 60) = 3.82$	.03	SAD > NA
CBCL externalizing	10.45 (6.52)	9.58 (7.00)	11.75 (9.12)	$F(2, 60) = .43$	.65	–
<i>Family characteristics</i>						
Number of siblings						
0	4.76%	7.94%	3.17%	$\chi^2(6, N = 63) = 5.82$	.44	–
1–2	28.57%	23.81%	30.16%			
3	–	1.59%	–			
Age of mother	43.57 (5.30)	40.67 (3.88)	39.48 (4.36)	$F(2, 60) = 4.61$	.02	SAD > NA
Age of father	44.80 (6.21)	41.76 (3.99)	40.86 (5.36)	$F(2, 59) = 3.15$	.05	–
Education of mothers						
No school degree/8–9 years of schooling	4.76%	9.52%	3.17%	$\chi^2(4, N = 63) = 2.98$	.56	–
10 years of schooling	20.63%	17.46%	20.63%			
Higher education	7.94%	6.35%	9.52%			
Education of fathers						
no school degree/8–9 years of schooling	–	4.84%	8.06%	$\chi^2(4, N = 62) = 5.93$	.21	–
10 years of schooling	17.74%	17.74%	17.74%			
higher education	14.52%	11.29%	8.06%			
Parent with a past/present mental disorder	3.2%	4%	7.2%	$\chi^2(2, N = 63) = 3.27$	.20	–

Note. SAD = social anxiety disorder group; SA = socially anxious group; NA = non-anxious group; SPAI-C = Social Phobia and Anxiety Inventory for Children, SASC-R = Social Anxiety Scale for Children – Revised; CBCL internalizing and externalizing = subscales from Child Behavior Checklist; Scheffé tests for post hoc comparisons were conducted. > = significant greater than.

Table 2

Means, standard deviations (in parenthesis) of the use safety behavior, task-related measures and differences between SAD, SA and NA children.

Variable	Range of scores	SAD	SA	NA	F(2, 60)	p	Comparisons
M-SBQ-C	0–69	19.70 (8.61)	11.90 (6.00)	9.74 (5.53)	12.31	<.001	SAD > SA, NA
Number of safety behavior	0–23	12.67 (4.56)	8.62 (2.87)	7.24 (3.91)	11.30	<.001	SAD > SA, NA
Anxiety during task	0–10	7.81 (2.16)	5.86 (2.39)	3.00 (2.85)	19.94	<.001	SAD > SA > NA
SISST-PS – positive cognitions	0–24	6.29 (4.26)	10.95 (5.71)	9.98 (5.84)	4.50	.01	SAD < SA
SISST-PS – negative cognitions	0–24	14.57 (3.67)	7.58 (3.40)	4.33 (5.34)	32.22	<.001	SAD > SA > NA
SOM	0–1	.29 (.19)	.57 (.18)	.75 (.27)	24.29 ^a	<.001	SAD < SA < NA
FAQ intern	5–25	16.62 (3.11)	12.65 (4.56)	11.14 (4.66)	9.67	<.001	SAD > SA, NA
FAQ extern	5–25	12.76 (3.22)	10.48 (3.34)	9.71 (3.39)	4.79	.01	SAD > NA

Note. SAD = social anxiety disorder group; SA = socially anxious group; NA = non-anxious group; M-SBQ-C = Modified social Behavior Questionnaire for Children; SISST-PS = Social Interaction Self-Statement Test – Public Speaking; SOM = State of mind ratio; FAQ = Focus of Attention Questionnaire; ANOVAs and follow-up Scheffé tests for post hoc comparisons were conducted. Post hoc power analyses conducted with G*Power 3.1.3 (Faul, Erdfelder, Lang, & Buchner, 2007) revealed a power of .77 and .81 with an $\alpha = .05$ for positive cognitions and external focused attention, respectively. The power of all other analyses ranged from .98 to 1.00.

^a F(2, 59); > = significant greater than, < = significant lower than.

facilitating the language or removing items referring to using alcohol to reduce anxiety, censoring what to say or try to control one's behavior. Moreover we added items including crying, hiding and running away before or in an anxiety producing situation. These modifications resulted in a final child version with 26 items (Modified Social Behavior Questionnaire for Children, M-SBQ-C). Children had to rate the frequency of potential safety behaviors on a 4-point Likert scale ranging from 0 = "never" to 3 = "always". Three items (grip glasses and cups tightly; wear clothes which cover sweating and wear make-up or clothes to hide blushing) yielded a mean lower than .15 and were therefore excluded. Twenty-three items remained with a total sum score ranging from 0 to 69. Cronbach's alpha was .82.

2.2.2. Assessment related to the social performance task

Anxiety thermometer. To measure anxiety during role-play task (introducing themselves in front of an audience of strangers, see below), children were afterward asked to rate their level of anxiety experienced during the task on an anxiety "thermometer" (scaled with 0 indicating "not fearful at all" to 10 "very fearful").

Social Interaction Self-Statement Test-Public Speaking (SISST-PS; Diaz, Glass, Arnkoff, & Tanofsky-Kraff, 2001). We used the SISST-PS to assess the frequency of positive and negative cognitions during the role-play task. The original SISST-PS, a modified version of the Social Interaction Self-Statement Test (SISST; Glass, Merluzzi, Biever, & Larsen, 1982), was designed to assess positive and negative thoughts during a public speaking situation and consists of 15 negative and 15 positive self-statements. Participants have to rate the frequency with which they experienced each item relative to a prior social situation on a 5-point Likert scale. We translated relevant items into German, including backtranslation, following Brislin's (1970) guidelines. Due to content and economic factors, we only adopted 8 positive (e.g., "I feel pretty good about my performance") and 8 negative (e.g., "What I say will probably sound stupid") self-statements. We used a 4-point Likert scale (0 = never to 3 = very often) to assess frequency. Scores of the subscales may range from 0 to 24. In the current study, Cronbach's alpha was .87 for the positive cognitions subscale and .92 for the negative cognitions subscale. To compare the balance of positive and negative thoughts we calculated the State of Mind ratio [positive cognitions/(positive + negative cognitions)]. For one SA child who did not report any positive or negative cognition no ratio was computed.

Focus of Attention Questionnaire (FAQ; Woody, 1996). The FAQ was used to assess the direction of attention. The FAQ is a self-report measure and consists of two 5-item subscales designed to assess the extent of self-focused attention (FAQ_{self}) and other-focused attention to the environment or an interaction partner (FAQ_{extern}) following a social situation. Children were instructed to indicate on

a 5-point Likert scale (1 = not at all to 5 = the whole time) to what extent they attended to certain aspects of the situation during the role-play task (e.g. "I was focusing on what I would say or do next" or "I was focusing on the other person's appearance or dress"). The FAQ has not yet been fully validated for use with children, but there is evidence showing acceptable internal consistency (Higa & Daleiden, 2008; Hodson et al., 2008). In the present study, Cronbach's alpha was .78 for FAQ_{self} and .58 for FAQ_{extern}.

2.3. Procedure

Participants were recruited through child health professionals (child psychologists, psychiatrists and child mental health centers), family information centers and announcements on the Internet, in local newspapers or magazines and in schools, offering participation in a larger project about social anxiety. SAD and SA children were mainly referred by professionals. NA children all responded to the advertisement. Eighty-two potential participants for the study were screened using a brief telephone interview with the parent. Families of children who met inclusion criteria for the study were sent a questionnaire package containing SPAI-C, SASC-R, CBCL and an informed consent sheet and invited for further assessment in a face-to-face session. Seventy-two families accepted the invitation. During this session, lasting 1–2 h, parents and children were separately interviewed with the Kinder-DIPS. Children were also questioned with the M-SBQ-C regarding their use of potential safety behavior in anxiety provoking social situations. After a short break, children were instructed for a role-play task. They were asked to imagine that they come into a new class, where they had to introduce themselves in front of their new classmates. Two female adults played classmates and the investigator played the teacher. Following the instruction and before entering the "classroom", participants were asked to rate their current anxiety. The classroom was a neighboring room with several chairs and a blackboard. The investigator then went with the child into this "classroom" and indicated the position where the participants should stand in front of the two sitting strangers. The "teacher" welcomed the class, asked the child to introduce him- or herself. If the child did not say anything for more than 15 s, the "teacher" asked standardized questions. The task ended after the child had introduced him- or herself for 3 min or were finished after 5 min. After task completion, the child and the investigator returned to the first room. The child was then asked to complete the anxiety thermometer, SISST-PS and FAQ with respect to the role-play task. At the end of the session, participants were debriefed and invited for another appointment (which was still part of the overall project but related to a different experiment; see Kley, Tuschen-Caffier, & Heinrichs, in press). Before leaving, each child was allowed to select a present from a treasure box. A local ethic committee approved the study.

Table 3
Correlations among study variables.

	1) M-SBQ-C	2) anxiety during task	3) FAQ _{intern}	4) FAQ _{extern}	5) SISST-PS negative cognitions	6) SISST-PS positive cognitions	7) State of mind ratio	8) SPAL-C
1) M-SBQ-C	–							
2) Anxiety during task	.34**	–						
3) FAQ _{intern}	.57***	.60***	–					
4) FAQ _{extern}	.39**	.44***	.61***	–				
5) SISST-PS					–			
– Negative cognitions	.65***	.58***	.69***	.47***				
6) SISST-PS						–		
– Positive cognitions	–.31**	–.13	–.10	.21	–.31*			
7) State of mind ratio	–.60***	–.56***	–.63***	–.32**	–.88***	.61***	–	
8) SPAL-C	.45***	.42***	.43***	.26*	–.25*	.54***	–.50***	–
9) SASC-R	.39**	.48***	.61***	.51***	–.21	.64***	–.62***	.70***

Note. M-SBQ-C = Modified Social Behavior Questionnaire for Children; FAQ = Focus of Attention Questionnaire; SISST-PS = Social Interaction Self-Statement Test – Public Speaking; SPAL-C = Social Phobia and Anxiety Inventory for Children; SASC-R = Social Anxiety Scale for Children – Revised. * $p < .05$; ** $p < .01$; *** $p < .001$.

3. Results

3.1. Use of safety behaviors in anxiety provoking social situations

Means and standard deviations of the three groups' use of safety behavior as well as *F* statistic from ANOVA are shown in Table 2. SAD children reported a significantly more frequent use of safety behaviors compared to SA and NA children, which did not differ from each other. To investigate whether SAD children also report using a greater range of different safety behaviors than the SA and NA group, the total number of items endorsed by children in the interview was examined. Results of a one-way ANOVA for the number of safety behaviors showed that SAD children also endorsed a greater number of different safety behaviors than the SA and NA children (see Table 2). The five most common safety behaviors reported by SAD children were: "I avoid eye contact." (85.7%), "I try to act in a way that others do not look at me or turn their attention to me" (81%), "I talk less." (81%), "I try to find the right words." (81%) and "I avoid to talk about myself." (76.2%). In contrast SAD children reported the following five safety behaviors the least: "I hide my face (e.g. behind my hair or a cap) so that others cannot see when I am blushing." (9.5%), "I talk more." (14.3%), "I run away." (14.3%), "I ask a lot of questions." (23.8%), "I avoid speech pauses." (28.6%).

3.2. Social performance task related measures

Table 2 presents means, standard deviations, results from separate one-way ANOVAs and follow-up Scheffé tests for all task-related measures.

3.2.1. Anxiety

Results indicate that SAD children experienced significantly more anxiety during the social performance task compared to SA and NA children. Post hoc tests also revealed that SA children scored significantly higher on anxiety thermometer compared to NA children.

3.2.2. Positive and negative cognitions

Groups also differed regarding the frequency of positive and negative cognitions during the social performance task. SAD children reported less positive cognitions compared to SA children, which in turn did not differ from NA controls. SAD children reported that they experienced a larger number of negative cognitions, followed by SA and NA children. In the same way SOM-ratios, which were highly correlated with frequency of negative cognition (see Table 2), differed significantly between the three groups. In line with assumptions from the SOM model, the SAD group' ratio reflects a "negative dialogue", ratio of SA children a "conflicted dialogue" and ratio of NA-group a "positive dialogue".

3.2.3. Focus of attention

SAD children reported significantly greater self-focus as well as a greater external focus of attention during the social performance task compared to NA children. Moreover, SAD children experienced significantly greater self-focused attention than SA children.

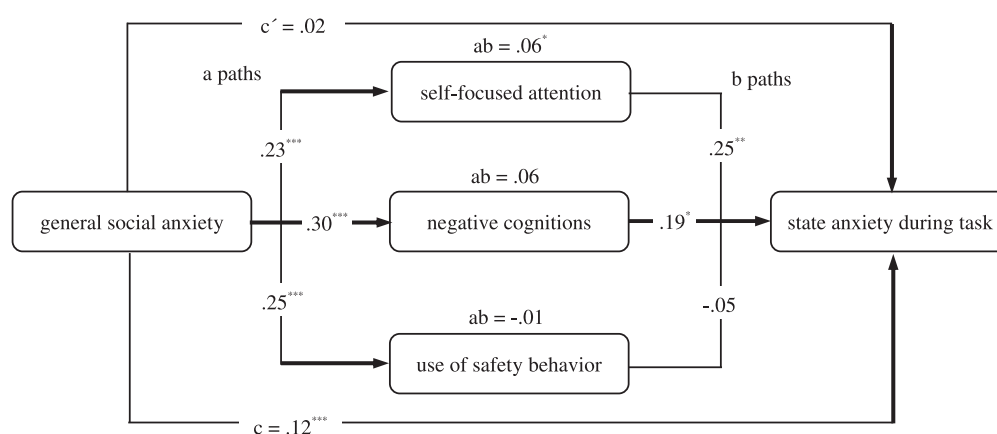
Table 3 presents correlations among study variables and shows that state anxiety correlated significant with use of safety behavior, self-focused attention and negative cognitions.

3.3. Mediators for the link between general social anxiety (SASC-R) and level of state anxiety during the performance task

In a further step, we investigated whether the relation between social anxiety (SASC-R) and state (social) anxiety was mediated by variables suggested as maintaining factors in cognitive models of social anxiety. We used SASC-R instead of SPAL-C as independent variable because the latter contains several items to assess cognitions associated with social phobia and may therefore lead to a biased result.

Given our small sample size, we followed Mackinnon, Lockwood, and Williams' (2004) recommendations and used a nonparametric resampling approach to test a single-step multiple mediator model in which general use of safety behavior, self-focused attention and negative cognitions during the social performance task were hypothesized to mediate the relation between general social anxiety and state anxiety. We employed Preacher and Hayes's (2008) SPSS Macro using bootstrapping to obtain estimates of path-coefficients and test the significance of indirect effects.

We used 5000 bootstrap samples to derive the 95% bias-corrected confidence intervals (CI) for the indirect effects. CI (95%) not including zero indicate significant indirect effects and thus, that the effect of the independent variable on the dependent variable is (partially) mediated by the mediators. Fig. 1 displays the proposed multiple mediator model. It illustrates the effects (represented as unstandardized coefficients) of the independent variable *social anxiety* on the proposed mediator variables (a paths), the effects of the mediator variables on the dependent variable *state anxiety experienced during task* taking the other mediators into account (b paths), the total effect (c path), the direct effect (c' path) and the specific indirect effects (a × b paths). The total indirect effect of general social anxiety on state anxiety during task through self-focused attention, use of safety behavior and negative cognitions, was estimated to lie between .023 and .163 (95% CI). The specific indirect effect of general social anxiety on state social anxiety during task through self-focused attention was estimated to lie between .013 and .110, whereas the specific indirect effect through negative cognitions was estimated to lie between –.017 and .123 and through safety behavior between –.044 and .008.



Note. $^*p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Fig. 1. Mediation model. Note. $^*p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Only the specific indirect effect through self-focused attention was significantly different from zero at $p < .05$.

4. Discussion

One aim of this study was to examine whether SAD, SA and NA children differ in several proposed maintaining variables of cognitive models in adult SAD. If cognitive models can be transferred to younger populations, we hypothesized that SAD children should use more safety behaviors in anxiety producing situations and should report higher levels of self-focused attention and a higher frequency of negative cognitions during the social performance task compared to SA and NA children. The results supported these predictions: SAD children differ in all dependent variables significant from the two other groups, except for frequency of positive cognitions and external focused attention with respect to the social performance task. In line with empirical findings from adulthood (e.g., McManus et al., 2008) SAD children reported that they engage more often in safety behaviors and use a higher number of different safety behaviors compared to SA and NA children. As SA and NA children did not differ, it can be assumed that the use of safety behavior may be rather a clinical characteristic than an epiphenomenon of social anxiety. It is assumed that using safety behavior can have unintended effects like appearing uninterested or distant whereby it provokes unfriendly or critical responses from interaction partners (Clark & McManus, 2002). In line with this view, several studies have shown that high socially anxious children are more disliked by their peers than non-anxious children (Blöte, Kint, & Westenberg, 2007; Spence et al., 1999; Verduin & Kendall, 2008). Why children and adolescents dislike socially anxious peers remained unclear in the earlier studies. Results could not be explained by anxious appearance of children, therefore a lack of social skills was supposed as possible candidate (Miers, Blöte, & Westenberg, 2010b). The results of the current study suggest the use of interfering safety behaviors in SAD children as a further explanation for negative peer evaluations. However, it is difficult to disentangle for example whether avoiding eye contact is a social skill deficit or an engaged safety behavior in order to prevent speaking to somebody. Therefore, it is important to carefully distinguish between social skill deficits and performance deficits through safety behavior in future research.

Similar possible detrimental effects can be assumed for heightened self-focused attention due to reduction of attentional resources to the task at hand. In line with previous findings (Hodson et al.,

2008), SAD children reported significant higher self-focused attention and more frequent negative cognitions during the social performance task than SA and NA children. The missing difference between SA and NA children regarding self-focused attention may suggest that heightened self-focused attention constitutes a qualitative distinction between clinical and non-clinical groups. On the other hand, significant differences in negative cognitions between all three groups may reflect more an epiphenomenon of levels of social anxiety in terms of a dimensional feature.

The SOM of the current samples matched the expected categories with children suffering from social anxiety disorder falling into the dysfunctional category “*negative dialogue*”, children with high social anxiety falling into the “*conflicted dialogue*” category and, finally, the SOM ratio of the sample of children without psychological problems reflected the “*positive dialogue*” category. Therefore, the SOM model clearly mirrors the quantitative nuances of social anxiety at different intensities in younger school children. In contrast to previous findings in children with various anxiety disorders where anxious children fell into the functional categories (e.g., Kendall & Treadwell, 2007; Treadwell & Kendall, 1996), mean SOM ratios of the current groups were mirroring decreasing levels of functional categories with increasing anxiety (Schwartz, 1997). In the context of the SOM Model, however, it is also assumed that for adaptive functioning the relative balance of negative and positive cognitions is decisive and not the number of negative or positive cognitions alone. Means of negative cognitions and SOM ratios were highly correlated in the present sample. The mediation analysis was also conducted with SOM ratio instead of the frequency of negative cognitions as mediator variable. In the proposed mediation model, SOM ratio did not explain more variance than frequency of negative cognitions alone. This is in line with the results from Treadwell and Kendall (1996) indicating that SOM ratios could not explain more than negative cognitions alone. Therefore, the consideration of positive cognitions to build a SOM ratio had no additional beneficial effect in the explanation of state anxiety or for deriving implications for treatment in the present sample of children with social anxiety disorder.

Self-focused attention, safety behaviors and negative cognitions were all significantly correlated with state social anxiety during the social performance task. This is in line with results from Hodson et al. (2008) who also found that self-focused attention and negative cognitions were predictive for social anxiety measured by SPAI-C. However, general use of safety behavior did not mediate the link between level of social anxiety assessed with the SASC-R and

anxiety during the task. This can be explained in different ways. First, we assessed the general use of safety behavior in social anxiety producing situations instead of determining the use of safety behavior during the social performance task. Therefore, it remains unclear whether and in which way children used safety behavior during the social performance task. Furthermore, it can be assumed that the use of safety behavior leads to effective short-term reduction in state social anxiety. According to this, the use of safety behavior would play mainly a long-term role in the maintenance of social anxiety due to the persistence of negative beliefs (e.g., Taylor & Alden, 2010). Safety behavior hinders the individual to make corrective experiences and change biased negative cognitions because the nonoccurrence of feared catastrophes is attributed to successful use of safety behavior. Finally, our results failed to replicate findings from the adult literature indicating that negative cognitions and negative interpretation bias mediated the effect of general social anxiety on state anxiety (Beard & Amir, 2010; Schulz et al., 2008).

Unexpectedly, we found that SAD children also report a higher externally focused attention than NA children. In contrast to studies with adults (e.g., Woody & Rodriguez, 2000), FAQ subscales were not independent but significantly correlated. However, externally focused attention did not contribute to the mediation model. Previous research considered externally focused attention mostly in the context of selective attention to external threat stimuli such as angry faces (Schultz & Heimberg, 2008). We can only speculate about possible developmental aspects. Socially anxious children not only fear that others negatively evaluate them but it is also often the truth (Miers et al., 2010a). In addition, in contrast to adults, it could be assumed that children often did not hide their dislike to others. Thus, it can be important for socially anxious children to watch out for real potential threatening stimuli. Later in adolescence or adulthood, when dislike is communicated more subtle, it is more difficult to conclude from interactions how one is coming across. Self-monitoring becomes the main source of information such as physiological symptoms, negative self-imagery or a felt sense. A study by Higa et al. (2008) showed an increase of self-consciousness during adolescence. To investigate these hypotheses of potential changes in attentional focus during development future studies should use an age span into adulthood. Nevertheless, it is plausible that the attempt to monitor both the self and the others/environment can interfere with the task at hand and therefore leads to performance deficits.

A number of limitations must be noted. First, the sample size is small and did not allow analyses of subgroups or of potential differences associated with age or gender, although studies have already provided preliminary evidence that females may show more self-focused attention than males (Higa & Daleiden, 2008; Higa et al., 2008; Mor et al., 2010).

Second, some of the instruments we used, such as FAQ, M-SBQ-C, SISST-PS are not well established for the use in young people. However, all measures showed acceptable to high internal consistency. Third, we assess the general use of safety behavior in social threatening situations and not with respect to the performance task. This could be also a reason why the use of safety behavior had no mediating effect in the relationship between general social anxiety and state anxiety. Moreover future studies should explore child specific safety behavior and take into account idiosyncratic characteristics of this behavior. Our results supported the expected group differences, indicating that SAD children reported the highest level of safety behaviors but it was not that much. One explanation could be that we asked children for safety behavior derived mainly from behaviors found in adults. Forth, due to our design we cannot draw conclusions whether the investigated variables play a causal role in maintenance of social anxiety in children. However,

first support of a causal effect of self-focused attention on anxiety and frequency of negative cognitions was found in a related study (Kley et al., in press).

In sum, our results replicate prior findings from Hodson et al. (2008), who tested a non-clinical sample of children, and are similar to those found in adults with respect to group differences. The findings suggest that assumptions from cognitive models of social anxiety in adults are at least in part applicable to social anxiety in children and adolescents. These findings may have important implications for the improvement of treatment approaches for SAD in children. In line with theoretical assumptions of cognitive models and results from adults (e.g., Kim, 2005), Hedtke et al. (2009) have shown that the use of safety behavior during exposure tasks predicted poorer treatment outcome in children with anxiety disorders. Based on the current findings of self-focused attention mediating the relationship between general social anxiety and state anxiety, attention retraining techniques could be considered as additional treatment components for children suffering from social anxiety disorder that may reduce social anxiety levels. A distinction can be made between techniques that target changing attentional bias via training with direct instruction and computer-based techniques aiming at changing early, automatic attention processes typically through implicit learning (Bar-Haim, 2010). For SAD children it seems to be useful if attention retraining includes both a direct training in order to focus the attention away from the self to the task at hand as well as the modification of attention bias toward threat (e.g., toward threat faces; Roy et al., 2008). Promising results come from a study of Rozenman, Weersing, and Amir (2011), which provides initial support for the applicability of computer-based attention bias modification in clinically anxious youth. However, our findings need replication in a larger sample to investigate subgroups and consider potential differential developmental pathways.

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