Cognitive-evaluative features of childhood social anxiety in a performance task

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ABSTRACT

Using an experimental design, we analysed differences in the occurrence of cognitive-evaluative distortions and performance deficits across children with social anxiety disorder, with subclinical anxiety and without any anxiety symptoms.

Twenty-one children with full syndrome social phobia, 18 children with partial syndrome social phobia and 20 children without any symptoms of social phobia were compared with respect to their degree of anxiety, negative thinking and task performance during two social-evaluative tasks. In addition, self-ratings of task performance, performance estimations for other children and objective behavioural ratings by two independent observers were obtained.

Children with social anxiety disorder and subclinical social anxiety showed higher degrees of experienced anxiety and negative thinking than healthy control children. There was no group difference in respect to actual task performance. Findings are discussed with regard to the continuum assumption of childhood social anxiety disorder and the need of well-adapted early interventions.

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1. Introduction

The core feature of adult social phobia, also referred to as social anxiety disorder (e.g. Liebowitz, Heimberg, Fresco, Travers, & Stein, 2000), is the fear of negative evaluation, which is often associated with distortions and biases in the processing of social information (e.g. Clark & Wells, 1995; Rapee & Heimberg, 1997). Despite some specific aspects concerning childhood social anxiety disorder in the DSM-IV (e.g. anxiety may be expressed by crying, tantrums or freezing), childhood and adult social anxiety disorder are assumed to be similar (American Psychiatric Association, 1994). Thus, recent models of childhood social anxiety disorder have mainly been adopted from adult models (e.g. Alfano, Beidel, & Turner, 2002).

In cognitive models of adult social anxiety disorder, cognitive biases and distortions in social-information processing as well as fundamental attitudes and beliefs concerning social situations are assumed to elicit negative thinking and thus trigger and maintain social phobic affect and behaviours (e.g. Clark & McManus, 2002; Clark & Wells, 1995; Heinrichs & Hofmann, 2001; Hirsch, Clark, Mathews, & Williams, 2003; Rapee & Heimberg, 1997; Schlenker & Leary, 1982). There is indeed some evidence that negative thinking may also be relevant in childhood social anxiety disorder (Barrett, Rapee, Dadds, & Ryan, 1996; Bögels & Zigterman, 2000; Muris, Merckelbach, & Damsma, 2000; Rapee & Spence, 2004; Rheingold, Herbert, & Franklin, 2003; Spence, Donovan, & Brechman-Toussaint, 1999). Children with social anxiety disorder have been found to report more negative cognitions during a social-evaluative task than children without social anxiety disorder (Spence, Donovan, & Brechman-Toussant, 1999). Similarly, Cartwright-Hatton and colleagues (Cartwright-Hatton, Hodges, & Porter, 2003; Cartwright-Hatton, Tschernitz, & Gomersall, 2005) found that children with subclinical social anxiety disorder rate themselves as appearing less skilled and more nervous in behavioural-evaluative tasks, such as holding a speech in front of a camera or talking to an unfamiliar adult. Muris et al. (2000) instructed children to interpret stories of social situations and asked them how they would feel in such situations. Here, children with subclinical social anxiety disorders perceived threat more frequently and reported a higher degree of negative cognitions while listening to the stories than non-anxious children (concerning threat perception bias for social anxiety see also Barrett et al., 1996; Rheingold et al., 2003). Interpreting ambiguous situations, children with anxiety symptoms reported more negative cognitions and lower self-efficacy beliefs in coping with danger (Bögels & Zigterman, 2000). These studies clearly support the relevance of cognitive aspects, such as negative thoughts, increased threat perceptions and poor performance

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expectations and perceptions, in childhood social anxiety disorder. However, it remains unclear whether such negative thinking increases with levels of anxiety, reflecting more a continuum of social phobic symptoms rather than distinct categories (e.g. Rapee & Spence, 2004).

Furthermore, results are ambiguous with respect to whether social anxiety is associated with poorer social performance. Social performance may be affected by impaired social skills, skill deficits and/or increased levels of visible fear responses (e.g. trembling, restlessness, physical tension). Social skill deficits usually appear not to be associated with adult social anxiety disorder (e.g. Rapee & Lim, 1992; Stravynski & Amato, 2001). Adults, in contrast to children, might have learned a range of compensating skills that allow them to cope with challenging social situations (e.g. Rapee & Spence, 2004). Children, however, might not yet have learned such compensating skills, resulting in poorer performance. There is indeed some evidence that children with full or subclinical social anxiety disorder show performance deficits in social situations. Spence et al. (1999) found that these children have a shorter response length in response to prompts and initiated social interactions less frequently than children without social anxiety disorder during social-evaluative tasks, as indicated by behavioural observations. In contrast, Cartwright-Hatton et al. (2003, 2005) found that independent observers were unable to distinguish between children with high and low levels of social phobia based on their actual social skills, even though children with high levels estimated their own performance to be poorer. Besides differences in the applied experimental tasks, conflicting outcomes of the mentioned studies might be due to different levels of psychopathology (full syndrome vs. partial syndrome/subclinical social anxiety disorder). Based on the continuum assumption of social fears (e.g. Rapee & Spence, 2004), one could assume that cognitive distortions would already be present with subclinical levels of social anxiety disorder whereas an impaired task performance and increased visible fear response would be associated only with high levels or full syndrome social anxiety disorder. Besides the continuum assumption, however, there are distinct criteria for the diagnosis of social phobia in the DSM-IV. Therefore, a combined strategy assessing group differences was applied, comparing children meeting all criteria of social anxiety disorder (full syndrome social anxiety disorder, SAD), children meeting some, but not all criteria of social phobia (subclinical partial syndrome social anxiety disorder, SSA) and children meeting no criteria of any anxiety disorder (healthy control group, CG).

It is hypothesized that during different social-evaluative tasks SAD report higher levels of experienced anxiety and negative thinking than SSA, who report higher levels than CG. Further, SAD is assumed to show more visible fear responses and a more impaired performance than SSA and CG.

2. Method

2.1. Participants

Participants were recruited by letters to parents of children between grade three and six in primary and secondary schools in Germany, by advertisements in local newspapers and by leaflets in medical and social institutions. Sixty-seven children and their parents responded and were informed about the general aim and the procedure of the study. After receiving written informed consent, children were invited individually to participate in one diagnostic and one experimental session, taking place in a lab of the psychology department. During the diagnostic session, one of two trained advanced students of clinical psychology conducted a semi-structured diagnostic interview with the child after he or she had filled two questionnaires. Seven children were excluded because of a reading disorder (DSM-IV, American Psychiatric Association, 1994) and one child because of an unclear diagnosis. The final sample therefore consisted of 59 children with 36% boys and 64% girls, all born and raised in Germany. Age ranged between eight and twelve years (mean age: 10.7 years).

Based on the diagnostic interview, children were divided into three groups. The full syndrome social anxiety disorder group (SAD) consisted of 21 children with the diagnosis of social phobia according to DSM-IV criteria (American Psychiatric Association, 1994). The partial syndrome social anxiety disorder group (SSA) contained 18 children, who reported some symptoms of social anxiety disorder, but did not meet the full criteria. SSA included children who reported fear in at least one social or performance situation, but either (a) only in interactions with adults, (b) only with mild fear responses or avoidance tendencies or (c) with fear lasting considerably less than six months. The healthy control group (CG) consisted of 20 children without any diagnosis of a psychological disorder. Groups did not differ regarding age or gender distribution (age: $F(2,58) = .004$; $p = .996$; gender: $\chi^2(2, N = 59) = 1.07$; $p = .586$). 71% of SAD had at least one comorbid disorder, which were obsessive-compulsive disorder (5%), separation anxiety (5%), oppositional defiant disorder (5%), depression (11%), attention deficit hyperactivity disorder (16%) and specific phobia (58%). 28% of SSA met criteria for a specific phobia.

2.2. Diagnostic instruments

2.2.1. Semi-structured clinical interview

A semi-structured clinical interview (Kinder-DIPS; Unnewehr, Schneider, & Margraf, 1995) was used to determine the diagnostic status of each child, as it is less susceptible to reporting biases than self-report measures. The clinical interview is a modified and extended German version of the Anxiety Disorders Interview Schedule for children (ADIS-C; Silverman & Nelles, 1988). The interview allows to assess frequent psychological disorders (according to the DSM-IV, American Psychiatric Association, 1994) of children and adolescents (age 6–18). Reliability and validity of the diagnostic interview are satisfactory (Unnewehr et al., 1995).

2.2.2. The social anxiety scale for children − revised (SASC-R; La Greca & Stone, 1993)

For the assessment of symptoms of social anxiety in children, the SASC-R self-report measure (La Greca & Stone, 1993; German version: Melfsen, 1998) was used. The instrument consists of two subscales, assessing fear of negative evaluation (SASC-FNE) and social avoidance and distress (SASC-SAD). The test-retest reliability and the internal consistency of the SASC-R are satisfactory (La Greca, Kraslow Dandes, Wick, Shaw, & Stone, 1988; Melfsen, 1998). In the present study, Cronbach's alphas were .83 (FNE) and .74 (SAD).

2.2.3. Social phobia and anxiety inventory for children (SPAI-C-D, Beidel, Turner, & Morris, 1995)

The SPAI-C-D (Beidel et al., 1995; German version Melfsen, Florin, & Walter, 1999) is a valid and reliable self-report inventory to assess social anxiety and social phobia in children. Internal consistency (.92−.95) and retest reliability (.84 after 4 weeks) are high, substantial correlations with other self-report measures and discriminative validity have been established, while no correlations were found with teacher ratings of social anxiety (Melfsen et al., 1999). In the present study, Cronbach's Alpha was high with $\alpha = .94$.

2.2.4. Parent evaluation of the child's interactions in social situations

Parents were asked to answer five questions concerning their child's behaviour in social situations (1. "plays willingly with an unfamiliar child", 2. "waits for other children to approach in interactions", 3. "actively seeks social interaction with others", 4. "approaches unfamiliar children of his/her age", 5. "talks willingly with an unfamiliar adult") on a five-point rating scale (1 = never, 5 = always). Cronbachs' Alpha was reasonably high (α = .82), allowing to calculate a mean score across the five items. The correlation with the SPAI-C-D sum score was moderate with r = .52 ($p < .001$).

2.3. Measures during the experimental tasks

2.3.1. Anxiety

Children rated their level of anxiety at the beginning of the experiment before they were informed about the up-coming proceedings (anticipatory period) as well as before and after each experimental trial on a visual analogue scale (line of 9 cm length with anchored endpoints) which was afterwards transformed into values ranging from 0 (no anxiety) to 90 (extreme anxiety). We chose values ranging from 0 to 90 in order to directly compare with the negative thoughts ratings. The SPAIK sum score correlated highly ($.57 \leq rs \leq .63$, $ps < .001$) with the subjective anxiety ratings across tasks. Internal consistency was high across groups with Cronbach's Alpha = .89.

2.3.2. Negative thoughts

The same scale format was used to assess the actual occurrence of four negative thoughts ("I can't manage it", "I'm excited", "I feel insecure", "I wonder what others watching me would think"), which were provided to the child and rated concerning their occurrence during the task. No other thoughts were provided. Cronbach's Alpha was higher than .84 across assessment points and Pearson correlations ranged between r = .49 and r = .86 ($p < .01$), thus allowing to compute a mean score across the four cognitions. A mean score of "0" indicated no occurrence of negative thinking, whereas "90" indicated pronounced negative thinking. Further, children estimated the expected performance concerning the experimental tasks (before the tasks) as well as the perceived task performance (after the task) on a 0 to 9 rating scale (0 = very good, 9 = very bad). Accordingly, they were asked to rate the probable performance of other, "imaginary" children concerning each experimental task before and after each experimental task. To make them more comparable to other self-ratings, these values were multiplied by factor 10 for the following analyses. Child ratings of performance expectations and evaluations (own and others) and negative cognitions were obtained before and after reading as well as before and after retelling.

2.3.3. Behavioural performance

The video recordings were analysed according to loudness, comprehensibility, physical restlessness and physical tension on a three-point rating scale (0 = normal, relaxed or appropriate, 2 = nervous, restless or inappropriate) by two independent observers (trained master-degree students). Interrater reliability for the ordinal rating scales (computed by Spearman's Rho) was satisfactory, ranging between ρ = .69 and ρ = .98.

2.4. Experimental tasks

Social anxiety may elicit according thoughts and behaviours both in social interactions as well as social performance tasks. However, social interactions are highly variable due to interactional processes. In order to ensure that tasks are comparable, we focused on a performance tasks in which interactional influences are easy to control for. Two different tasks were applied. In the first task, the child was asked to imagine that he/she had moved to a new city, and that now is the first day in a new school. The teacher asks her/him to stand in front of the class and *to introduce herself/himself* to the class by telling something (e.g. the name, hobbies) about herself/himself for about 3 min. In the second task the children were asked *to read aloud a story* (duration: about 3 min) and *to retell it in his/her own words*. Comparable to the first task, children were asked to assume that they were standing in front of their class. In order to facilitate imagination, the lab room was arranged like a classroom. Children were told that their introduction, reading and retelling would be taped by video camera and rated in terms of the quality of task performance. During the task, only the task administrator was in the room with the child. The order of task presentation (to introduce oneself in front of a imaginary class vs. reading and retelling a story) was counterbalanced within study groups. Children received compensation for participation (e.g. a cinema voucher).

2.5. Data analysis

Statistical analyses were carried out using the statistic software package SPSS (Version 15.0.1). Group was the only between-subject factor, whereas task, time and rating perspective were analysed as within-subject factors. Group differences in the *clinical questionnaires* on social anxiety were analysed by a one-way MANOVA. For *parent ratings* of child reactions to social situations, the mean score indicating the extent of the child's socially anxious reaction, was analysed using a one-way ANOVA. Group differences in respect to *anxiety ratings* were investigated by 2 (time: before vs. after the task) × 3 (task: introduction, reading, retelling) × 3 (group: SAD, SSA, CG) mixed ANCOVA with baseline anxiety level as covariate. Child ratings of *negative cognitions* was analysed by a 2 (time: before vs. after task) × 2 (task: reading, retelling) × 3 (group: SAD, SSA, CG) mixed ANOVA. To analyze the children's ratings of their own *performance* and that of others, we conducted a 2 × 2 × 2 × 3-ANOVA with the same factors as above, but with the rating perspective (self vs. others) as additional within-subject factor. Further, Pearson correlations between both rating perspectives were calculated. The *behavioural performance* ratings (loudness, comprehensibility, restlessness and tension) were analysed by a 3 (task: introduction, reading, retelling) × 3 (group: SAD, SSA, CG) MANOVA. Post-hoc Bonferroni *t*-tests were used for further exploration of significant effects.

3. Results

3.1. Ratings of social anxiety and social phobia (child and parent)

The MANOVA of child self-assessments displayed a significant main effect for group ($F(6,110)$ = 10.56, $p < .001$), which remained significant in subsequent univariate analyses for SASC-R and SPAIC scores respectively, as can be seen in Table 1. Post-hoc Bonferroni tests showed that SAD scored higher than CG ($p < .001$) or SSA on all scales (SASC-FNE: $p < .01$, SASC-SAD and SPAIC: $p < .001$). The SSA scored higher than CG on SPAIC and SASC-SAD ($p < .001$, resp. $p = .05$), but not on SASC-FNE ($p = .08$). The ANOVA with the mean sum score of the parents' ratings revealed a significant main effect for group as well ($F(2, 56)$ = 14.43, $p < .001$). Post-hoc test of parent ratings revealed that SAD showed more anxiety than SSA ($p = .05$) and CG ($p < .001$), with SSA scoring higher than the CG ($p = .03$). Taken together, these results support group classification based on the clinical interview.

Table 1
Difference between the social anxiety disorder group (SAD), the subclinical social anxiety group (SSA) and the control group (CG) in self-report measures and parent ratings.

	SAD ($n = 21$)	SSA ($n = 18$)	CG ($n = 20$)	$F_{(2, 56)}$	p
SASC-R[a]					
SASC-FNE	25.95 (5.19)	21.00 (4.65)	17.50 (4.16)	16.78	<.001
SASC-SAD	24.48 (4.70)	18.67 (3.24)	15.55 (3.52)	27.62	<.001
SPAI-C[b]	24.31 (6.61)	12.90 (2.59)	6.31 (4.32)	71.16	<.001
Parent ratings[c]	15.86 (3.04)	13.39 (2.30)	10.60 (3.80)	14.43	<.001

[a] Social anxiety scale for children − revised; SASC-FNE: fear of negative evaluation, SASC-SAD: social avoidance and distress.
[b] Social phobia and anxiety inventory for children.
[c] Parent ratings of anxious reactions of their children in social situations.

3.2. Subjective anxiety ratings

Fig. 1 and Table 2 depict the mean anxiety ratings during anticipatory period and experimental tasks for each group. In the anticipatory period, SAD reported higher anxiety than SSA and CG ($F(2,56) = 11.87$, $p < .001$). ANCOVA results only indicated differences between groups ($F(2, 55) = 15.09$, $p < .001$); as expected, the highest level of anxiety was reported by SAD, who differed significantly from CG ($p < .001$) and SSA ($p < .05$). SSA itself reported higher levels of anxiety than CG ($p < .01$). Effect sizes for group differences for different trials, calculated by the difference between means of two groups divided by the pooled standard deviation, were moderate to strong (d: .60 to 2.15). No other main or interaction effects were significant. Comparable pattern were found in correlational analyses. The SPAIK sum score correlated highly (.57 ≤ rs ≤ .63, $ps < .001$) with the subjective anxiety ratings across tasks.

3.3. Negative thoughts and subjective performance ratings

The analysis of the composite measure of negative cognitions showed comparable results as are displayed in Fig. 2 and Table 3. Results indicated a significant main effect of group ($F(2, 56) = 19.37$, $p < .001$), with a higher degree of negative thinking in SAD than CG ($p < .001$) and SSA ($p < .01$; see Table 3), with the latter indicating higher degrees of negative thinking than CG ($p < .05$). Effect sizes for group differences reflected moderate to strong effects (d: .51 to

Table 2
Descriptives of the anxiety ratings across groups and the experimental tasks.

	SAD	SSA	CG
Anticipatory period[a]	34.52 (22.58)	14.17 (16.20)	10.00 (10.13)
Introducing			
Before	50.48 (23.29)	35.00 (23.07)	11.75 (12.80)
After	39.29 (21.41)	27.22 (16.56)	15.00 (14.78)
Reading			
Before	55.95 (22.17)	31.39 (20.28)	23.25 (17.87)
After	51.90 (28.83)	27.78 (19.42)	11.75 (12.59)
Retelling			
Before	45.48 (24.44)	29.72 (21.59)	16.50 (12.15)
After	51.67 (28.74)	36.94 (20.01)	19.00 (17.06)

[a] Anticipatory difference between groups: $F(2,56) = 11.87$, $p < .001$.

1.92). In addition, there was an interaction effect of time and task (F (1, 56) = 3.98, $p = .05$), resulting from higher levels of negative thinking before retelling than before reading ($t(58) = -2.67$, $p = .01$), while levels of negative thinking after both tasks were comparable ($p > .60$). No other main or interaction effects were significant. Further, the occurrence of negative cognitions increased with higher SPAIK sum scores (.58 ≤ rs ≤ .68, $ps < .001$).

The ANOVA on performance ratings yielded main effects for group ($F(2,56) = 8.41, p = .001$), perspective ($F(1,56) = 49.5, p < .001$), task (F (1, 56) = 11.52, $p = .001$) and time ($F(1, 56) = 7.75, p = .007$) as well as group × perspective ($F(2, 56) = 6.75, p = .002$), group × time ($F(2, 56) = 3.98, p = .024$), perspective × task ($F(1, 56) = 4.28, p = .043$) and perspective × time interaction effects ($F(1, 56) = 11.91, p = .001$). As can be seen in Table 3, group differences occurred only for self-ratings of performance ($F(2, 56) = 11.70, p < .001$) with CG expecting better performance than SAD and SSA before reading ($ps < .037$) and with CG and SSA expecting better performance than SAD before retelling ($ps < .003$). Further, CG indicated better self-performance ratings than SAD after reading ($p = .05$) and better self-performance ratings than SSA and SAD after retelling ($ps < .023$). Effect sizes for self-ratings between SAD and CG at both trials indicated strong effects (d: .77 to 1.34). Moderate to strong effects resulted for the comparison between SSA and CG (d: .74 to 1.03) with one exception (before retelling: $d = .32$). Self-performance ratings after reading were worse than expected self-performance ratings in CG ($p < .001$) and SSA ($p = .010$), but not in SAD ($p = .075$). Though all children judged their own performance being worse than that of other children, this effect was
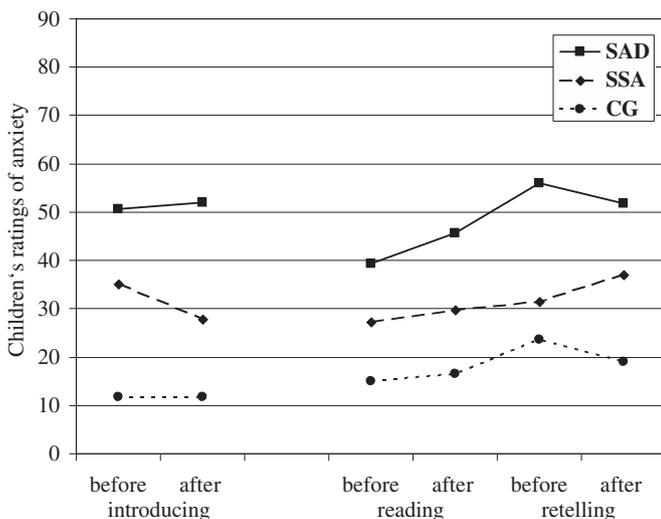

Fig. 1. Mean ratings of anxiety across experimental trials with baseline anxiety rating as covariate in social anxiety disorder (SAD), partial syndrome social anxiety disorder (SSA) and control group (CG).
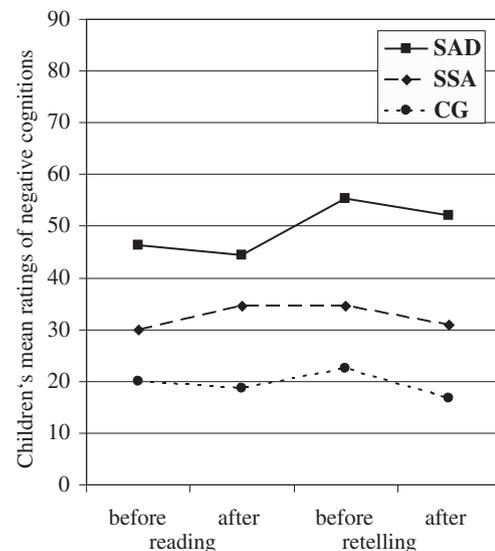

Fig. 2. Mean ratings of negative cognitions across different experimental trials in social anxiety disorder (SAD), partial syndrome social anxiety disorder (SSA) and control group (CG).

Table 3
Descriptives of the self-reported negative cognitions, self-evaluation of task performance and expected task performance across groups and experimental tasks.

Negative cognitions[a]	SAD	SSA	CG
Reading			
Before	46.19 (22.27)	30.00 (15.21)	19.94 (11.76)
After	44.35 (21.92)	34.51 (16.47)	18.63 (12.41)
Retelling			
Before	55.36 (20.97)	34.58 (18.86)	22.44 (13.42)
After	52.02 (24.10)	30.83 (17.07)	16.75 (14.59)
Perceived own task performance[b]			
Reading			
Before	44.29 (19.51)	39.44 (13.05)	26.50 (12.04)
After	51.90 (21.94)	48.89 (17.03)	38.25 (11.62)
Retelling			
Before	56.43 (20.87)	37.50 (14.48)	33.00 (13.99)
After	57.86 (19.47)	51.67 (21.90)	34.50 (15.55)
Perceived task performance of other children[c]			
Reading			
Before	30.95 (16.78)	28.61 (13.37)	23.25(13.11)
After	27.14 (12.71)	33.33 (13.61)	26.00 (14.83)
Retelling			
Before	41.19 (14.05)	33.06 (13.30)	32.00 (13.61)
After	32.86 (16.78)	41.39 (19.31)	30.25 (13.62)

[a] Group difference: $F(2,56) = 19.37$, $p < .001$.
[b] Group difference: $F(2,56) = 11.70$, $p < .001$.
[c] Group difference: $F(2,56) = 2.01$, $p = .14$.

high in SAD and SSA ($\eta^2 = .57$ and $\eta^2 = .55$, resp.) and lower in CG ($\eta^2 = .37$). The difference between the self and other perspective before and after retelling was higher in SAD than in SSA and CG ($ps < .05$), but not before and after reading ($ps > .08$).

As can be seen in Table 4, there was a low to moderate positive and significant relationship between children's evaluations of their own task performance and the estimated task performance of other children ($r = .34$ to $r = .67$). That means, the better the self-evaluation the better the expected task performance of other children and vice versa. However, while these correlations were moderate to strong in CG and SSA (CG: $r = .42$ to $r = .98$; SSA: $r = .53$ to $r = .61$), they were low in SAD and did not reach significance except for one assessment point (SAD: $r = .03$ to $r = .44$). Correlations were lower in SAD than SSA and CG before reading (Fisher $Z > 1.73$) and lower in SAD and SSA than CG before and after retelling (Fisher $Z > 2.51$). Correlational analyses revealed that performance ratings for other children were not significantly associated with social anxiety ($rs < .23$, $ps > .08$), while self-performance ratings were worse when SPAIK sum scores were higher ($.37 \leq rs \leq .52$, $ps \leq .004$).

3.4. Behavioural observations

There was no significant multivariate difference between groups concerning the four included variables loudness, clearness, restlessness and tension ($F(8, 100) = 1.86$, $p = .075$). A significant multivariate main effect for task emerged ($F(8, 45) = 9.49$, $p < .001$) and remained significant in the following univariate analyses for

Table 4
Pearson correlations between self-evaluation of task performance and expected task performance of other children across groups and tasks.

	SAD	SSA	CG	Total
Reading				
Before	.025	.568*	.543*	.342**
After	.227	.537*	.423	.358**
Retelling				
Before	.442	.607**	.976**	.665**
After	.066	.530*	.901**	.435**

*$p < .05$, **$p < .01$.

each variable. No interaction effects were significant. As can be seen in Table 5, children showed more inadequate behavioural reactions on loudness, clearness, restlessness and tension during introduction than during the other tasks. Thus, more behavioural signs of anxiety were found in the unstructured performance task. Correlational analyses further reveal that appropriateness of loudness during the reading task ($r = .301$) and tension during the introducing ($r = .299$) and retelling task ($r = .267$) is associated moderately with SPAIK sum score.

4. Discussion

The present study examined cognitive-evaluative aspects of childhood social anxiety disorder and subclinical social anxiety in comparison to non-anxious children. According to the continuum hypothesis, all three groups differed in terms of general tendencies for negative thinking as indicated by the SASC-R subscale "fear of negative evaluation FNE" (La Greca & Stone, 1993; German version Melfsen, 1998): the subclinical socially anxious children showed more fear of negative evaluation than the controls but were less affected than the children with social anxiety disorder. This is in line with earlier studies (e.g. Cartwright-Hatton et al., 2003, 2005; Spence et al., 1999). Comparably, the children with social anxiety disorder reported the highest degree of negative thinking (i.e. "I can't manage it" or "I wonder what others watching me would think") and highest anxiety levels throughout all experimental tasks. Children with subclinical social anxiety showed lower level of negative thinking and anxiety than children with full syndrome social anxiety disorder, but higher level than children without any anxiety disorder.

Another aspect of the study was the examination of the children's self-evaluation of their task performance. According to our hypothesis, the self-evaluation of children with full and partial syndrome social anxiety disorder turned out worse than that of non-anxious children. This is consistent with the finding of Spence et al. (1999), demonstrating a lower expectancy of success in social anxiety when compared to control persons during experimental tasks.

Concerning the course of the self-rated anxiety level across task, we did not find an interaction effect, which may be due to the fact that children with a social anxiety disorder indicated higher levels of anxiety already during the anticipatory period. This can be explained by the novelty of the task as well as general aspects of the lab situation (e.g. the fact that the staff was unknown for the

Table 5
Descriptives (means and standard deviations) of the behavioural ratings across groups and experimental tasks.

	SAD	SSA	CG
Loudness			
Introducing	1.26 (.56)	.88 (.50)	1.00 (.32)
Reading	1.26 (.56)	.81 (.66)	.65 (.49)
Retelling	.95 (.52)	.81 (.66)	.75 (.44)
Comprehensibility			
Introducing	1.16 (.50)	1.06 (.44)	1.00 (.00)
Reading	1.00 (.58)	.69 (.70)	.75 (.44)
Retelling	.95 (.52)	.81 (.54)	.85 (.49)
Restlessness			
Introducing	.79 (.71)	.75 (.77)	.50 (.69)
Reading	.21 (.63)	.44 (.73)	.15 (.49)
Retelling	.84 (.60)	.94 (.85)	.75 (.72)
Tension			
Introducing	1.21 (.79)	.88 (.81)	.45 (.61)
Reading	.79 (.54)	.63 (.72)	.40 (.60)
Retelling	.89 (.74)	.69 (.70)	.35 (.49)

children) which may thus lead to increased anxiety in subjects with a diagnosis of social anxiety disorder.

Taken together, these results represent further evidence for the assumption that cognitive aspects may play an important role in the manifestation of childhood social anxiety disorder. Results are in line with a recent study of our group (Schmitz, Krämer, Blechert & Tuschen-Caffier, 2010) that has shown that children with a diagnosis of social anxiety disorder report more negative and less positive cognitions in the aftermath of an experimental social stressor (Trier Social Stress Test for Children (TSST-C; Buske-Kirschbaum et al., 1997)). Several models of adult social phobia suggest that cognitive factors are of relevance for the development and maintenance of this anxiety disorder (Clark & Wells, 1995; Foa, Franklin, & Kozak, 2001; Rapee & Heimberg, 1997). Further investigation is needed concerning the similarity of cognitive aspects between children and adults with social anxiety disorder.

The comparison between the children's self-evaluation and their beliefs about how other children may perform during the task produced surprising results. In contradiction to our expectation, all children believed that their performance would be worse than that of other children. This might reflect awareness of socially encouraged values such as humble self-evaluations. Another explanation is that all children experienced at least a low degree of anxiety, which could have made them feel insecure about their ability to accomplish the tasks, and therefore affect their self-assessment. However, the discrepancy between self-related and other-related ratings of performance was highest in children with social anxiety disorder and lowest in the non-anxious group, pointing to a possibly dysfunctional association between performance estimations and social anxiety.

Besides the contrast between both perspectives of evaluation (self/other), there was a positive relationship between the children's self-evaluation and their evaluation of other children. This might indicate that the children evaluated their behaviour in relation to social standards and that the evaluation of others was influenced by their self-evaluation. However, this was true only for children with few or no symptoms of social anxiety, whereas no significant correlation between both perspectives of evaluation emerged in the social anxiety disorder group. It seems that children with social anxiety disorder made the evaluations of their task accomplishment without considering the standard of others. This could be in line with findings from the adult literature about cognitive processes in social anxiety disorder, especially in social-evaluative situations. For example, there is some evidence for an increased self-attention with reduced processing of external cues (Mansell, Clark, Ehlers, & Chen, 1999; Saboonchi, Lundh, & Ost, 1999) or the exaggerated use of internal information for the conclusion about one's own impression (Mellings & Alden, 2000; Mulkens, de Jong, Dobbelaar, & Bögels, 1999).

Additionally to children's self-ratings of their task performance the present study also examined their social performance during the experimental tasks by independent observers. We hypothesized that the children with social anxiety disorder show a more impaired performance than the other two groups, but groups could not be distinguished from each other by their level of performance according to the behavioural observation. That is interesting insofar as groups did differ in the experienced level of anxiety during the tasks. As was expected, the social anxiety disorder group reported the highest level of anxiety before and during the tasks followed by the subclinical group, and both groups differed significantly from the control group. That means that although the children with social anxiety disorder experienced higher levels of anxiety during tasks, they did not perform significantly worse. Rather than their actual behaviour it seems to be the anxious state and the negative view of themselves, which characterize children with social anxiety disorder.

Of course, the latter finding must be interpreted cautiously because of the limited number of behavioural measures and the small group sizes. The fact that we examined basic behavioural components such as loudness, comprehensibility, physical restlessness and tension could explain the discrepancy to the finding of Spence et al. (1999) who did find social skills deficits in children with social anxiety disorder. In their study, more complex aspects of social behaviour were assessed like the number of initiated interactions with peers by school observations. It is possible that the children with social anxiety disorder were less likely to engage in social interaction because they experienced too much stress in the situation although they were provided with the necessary basic skills. This assumption is confirmed by the additional result of Spence et al. (1999) who also examined basic components like eye contact, number of spoken words or latency of response in role-play task. They did not find differences between children with and without social anxiety disorder except for the length of the children's responses to given prompts, supporting the notion that it was rather approach behaviour that was affected than actual performance when being in the situation. In this regard, it is further important to bear in mind that performance tasks may differ considerably from social interaction tasks. Social interactions are generally less structured and require more flexible behaviour pattern. Thus, requirements in interactive tasks are higher than in structured performance tasks. Even across the performance tasks, we found that performance was worse in the more unstructured task (introducing) than in the more structured tasks (reading and retelling), which require less flexible behavioural adjustments to the situation. However, anxiety ratings did not reflect this effect.

Several shortcomings of the present investigation have to be mentioned. Children were grouped based on semi-structured clinical interviews which were conducted by one member of the study staff. No interrater reliability on this classification strategy was obtained. Further, task administrators may not always have been blind to the diagnostic status of a child because the social anxiety symptoms might have become obvious in interpersonal interactions. The exposure to the experimental tasks induced only a low to moderate level of anxiety and of negative thinking. Therefore, the question remains unanswered how children feel and think in more severely anxiety-provoking situations, such as an interactional task. Second, as mentioned above our assessment of performance concentrated on basic behavioural components. Further investigation should analyze different and more complex components of social behaviour as well. Third, we did not control differences in the extent of comorbidity between groups. The fact that comorbid diagnoses of depression were made only in the social anxiety disorder group could especially have influenced the results concerning the level of negative cognitions and self-evaluation. However, a reanalysis excluding the two children with depression did not change results in respect to these variables. Finally, it is important to note that group sizes were small, thus leading to non-significant effects, e.g. regarding the behaviour ratings.

Overall, these findings demonstrate that the severity of the manifestation of childhood social anxiety disorder is associated with the extent of negative thinking and of experienced anxiety in social-evaluative tasks. However, several issues remain unclear: Which factors contribute to the development from mild symptoms of social anxiety to clinical manifestations? Which factors lead to an increase of negative thinking and how does this influence the way how social situations are experienced? The direction of the association between anxiety and negative cognitions also needs to be clarified in further studies. For example, a higher extent of negative cognition could lead to an enhancement of experienced anxiety, or vice versa. Apart from this, the present study underlines the necessity of interventions addressing already mild symptoms of social anxiety in

children to prevent an aggravation of their experienced stress and negative thinking in social situations, which might be the starting point for more severe conditions, such as social anxiety disorder, in the long term. Furthermore, it strongly supports the necessity of therapeutic strategies targeting dysfunctional cognitions in children meeting symptoms of social anxiety.

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