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Predictive effects of social anxiety on increases in future peer victimization for a community sample of middle-school youth

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Abstract

This longitudinal study focused on clarifying the direction of effects between social anxiety and victimization in a community-based sample. In addition, we studied the moderating effect of gender on this association. A total of 1,649 children (45% boys, approximately 12 years old) of 65 secondary-school classes participated in the study. Self-reports and peer nomination data of victimization as well as self-reports of social anxiety were gathered in the fall of Grade 1 (T1, wave one) and in the spring of Grade 1 (T2, wave 2). Latent multiple-group cross-lagged analyses were conducted. Results showed that higher social anxiety scores predicted incremental change in future peer- and self-reported victimization in boys, but not in girls, over and above the stability of victimization. Reverse cross-lagged effects of victimization predicting incremental change in future social anxiety, were not found. Although gender differences were significant, they were small.

Keywords

moderation, social anxiety, victimization

A long history of research has found consistent evidence for a relation between social anxiety and victimization (e.g., Flanagan, Erath, & Bierman, 2008; Mulder & van Aken, 2013). However, most of this research was correlational and cross-sectional in nature, leaving the direction of longitudinal associations unknown. The aim of the present study was to fill this gap in the literature by examining the direction of effects between social anxiety and victimization. In addition, the study also examined whether these longitudinal relations differ for boys and girls.

In this study, victimization is explained as a regularly repeating situation in which one child is being called names, being hit or kicked, being threatened or being shut out by one other child or by a group of children, and in which the victim has trouble defending him or herself (Olweus, 1986). Social anxiety can be defined as being scared to be evaluated as a person who fails, specifically in situations concerning social, physical or intellectual skills, or in situations where a child is excluded because of their physical appearance or position in the group (Dekking, 1983).

Both social anxiety and victimization are known to have severe and long-lasting consequences (e.g., Olweus 1992; Wittchen, Essau, Von Zerssen, Krieg, & Zaudig, 1992). Longitudinal studies on developmental trajectories of the association between social anxiety and victimization are largely lacking. Knowledge about the direction of effects can provide opportunities to intervene in these problematic phenomena in a more specific way. Clarity about the antecedents and the consequences is necessary to decide what the starting point of interventions should be.

The ideal situation to examine the longitudinal direction of the association between social anxiety and victimization is to study these phenomena in a new social situation. In the Netherlands, this situation occurs when children make the transition from primary school to secondary school and enter a new class with almost exclusively new peers. This situation is ideal for the aim of our study, as the transition to secondary school brings with it a relatively new peer group in which social status has not yet been established to influence the longitudinal relation. In addition, social anxiety disorder emerges in young adolescents (e.g., Khalid-Khan, Santibanez, McMicken, & Rynn, 2007), making this moment most interesting for research on the antecedents and consequences of social anxiety.

Different theoretical perspectives suggest different possible directions for the longitudinal relationship between social anxiety and victimization. There are several theoretical perspectives suggesting that social anxiety leads to incremental change in victimization. First, low levels of prosocial behavior combined with high levels of social withdrawal prevent proper development of social skills. Social-skill problems increase the risk of victimization (Ollendick & Hirshfeld-Becker, 2002). Secondly, socially anxious people have greater emotional reactivity to ambiguous situations that contain potentially threatening intentions (Carthy, Horesh, Apter, Edge, & Gross, 2010). Greater emotional reactivity (e.g., crying, getting angry) could increase the risk of victimization, because these behaviors make them easy targets for bullies (e.g., Hodges & Perry, 1999). These two theoretical perspectives are supported by the finding that socially anxious children have indeed been found to objectively experience higher rates of victimization (Gazelle, 2013).

In contrast, there are two theoretical perspectives suggesting that victimization could lead to incremental change in social anxiety. First, children who are objectively victimized experience

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multiple incidences of exposure to harmful situations. These multiple negative experiences may reinforce negative self-evaluations, leading to avoidance of social interactions and in turn elevating levels of social anxiety (Storch, Masia-Warner, Crisp, & Klein, 2005). Secondly, when children internalize negative feedback from peers, this can also increase social anxiety (e.g., Crick & Bigbee, 1998).

Moreover, there is also a theoretical perspective suggesting a bi-directional relation between social anxiety and victimization. It is known that socially anxious adults interpret social information in a more negative manner than non-anxious individuals (e.g., Miers, Blöte, Bögels, & Westenberg, 2008), which could lead to fewer positive interactions, unassertiveness, or visible anxiousness, thereby heightening the risk of victimization (e.g., Siegel, La Greca, & Harrison, 2009). In addition, victimized children are prone to interpret social situations containing an unpleasant incident with a peer as more hostile, compared to their non-victimized peers (Camodeca & Goossens, 2005). This social information processing bias could lead to social anxiety symptoms such as the fear of being evaluated negatively by peers and the avoidance of social interactions with peers. Although they are objectively victimized, the increase in social anxiety symptoms can heighten the risk of victimization even more, leading to a vicious circle.

From an empirical perspective, studies examining the prospective relation between social anxiety and victimization have yielded inconsistent results. Two studies found bi-directional relations (Hodges & Perry, 1999; Siegel et al., 2009), one study found no incremental relations (Storch et al., 2005), and one study found a prospective relation in which a form of relational victimization lead to incremental change in future social anxiety (Vernberg, Abwender, Ewell, & Beery, 1992).

The present study

Although a history of research on the relation between social anxiety and victimization exists, results remain inconsistent. The current study aims to shed light on the direction of effects between social anxiety and victimization in a community-based sample. In the present study, both self- and peer-reports of victimization were collected, which is important for two reasons: First, although children themselves are in the best position to report on the incidence of perceived victimization, peer-reports can provide a useful judgment on victimization from a different perspective. It is known that peer-reported and self-reported victimization are typically only moderately related to each other, suggesting that these constructs are not identical, but complementary (Juvonen, Nishina, & Graham, 2000). Including both informants thus allows for a more comprehensive view of victimization, as opposed to using only one informant source. Secondly, the use of peer-reports reduces the chances of finding results that are based on shared method variance (e.g., Storch et al., 2005).

In examining the direction of effect between social anxiety and victimization, we also want to consider possible gender differences. Social anxiety contrasts significantly with male gender roles, while it is more accepted in girls (e.g., Weinstock, 1998), possibly leading to a higher risk of victimization in boys. Moreover, prior research has shown differences in the longitudinal relationship between social anxiety and victimization. One study found that relational victimization prospectively predicted increases in social anxiety over time for adolescent girls, but not for adolescent boys (Siegel et al., 2009). Another study found that exclusion predicted incremental change in future social anxiety for girls, but not for boys, in the first two months of the school year (Vernberg et al., 1992).

Prior research and theories do not provide a clear hypothesis with regards to the direction of the relation between social anxiety and victimization, nor for possible gender differences. The aim of this study, therefore, was to examine the direction of effects between social anxiety and victimization, thereby taking the moderating effect of gender into account.

Method

Participants

In total, 1,649 children of 65 school classes participated in this study. All children were in the first year of secondary school (mean age approximately 12 years). The sample consisted of 748 (45%) boys and 755 (46%) girls. Gender was unknown for 146 children (9%). Gender was derived by the name of the child, considering that most names in the Netherlands are typical for boys or girls

Schools were highly diverse. Data concerning information of the schools were retrieved from the Central Bureau of Statistics (2010). Children were in classes of different educational levels: 33% of the children were enrolled in vocational education, 48% in general secondary education, and 14% in pre-university education. Information was missing for 5% of the schools. Schools were located in neighborhoods with different SES, as represented by different annual income levels: 42% were in neighborhoods with an income per person between €17,000 and €21,000, 49% with income between €21,000 and €25,000, and 1% with income between €25,000 and 30,000. Data was missing for 8% of the schools. The average income in the Netherlands in 2010 was €22,000 per person (Central Bureau of Statistics, 2010). In addition, schools were also diverse in ethnicity: 73% of the schools were in neighborhoods with more than 75% of the population being native Dutch, and 19% of the school were in neighborhoods with less than 75% of the population being native Dutch. Data was missing for 8% of the schools. On average,79% of the population in the Netherlands is of native Dutch origin (Central Bureau of Statistics, 2013).

Procedure

In November 2010 (T1), we contacted 137 secondary school classes (of 73 different schools) as part of a larger intervention study on the effectiveness of an intervention for children making the transition from primary school to secondary school. Of the contacted school classes, 65 classes (47%) from 42 schools agreed to participate in the study.

Consistent with school guidelines, passive informed consent of parents was obtained when the school agreed to participate in the study. Parents were informed about the study by letter and had the opportunity to withdraw their children from the study, if they or their children were not willing to participate in the study.

Students filled out questionnaires on social anxiety and victimization (self- and peer-reports). Teachers were responsible for the administration of the questionnaires and were instructed thoroughly prior to the assessment. The entire procedure, including the passive informed consent, was repeated in June 2011 for the second measurement wave.

Measures

Victimization. Victimization was assessed using self-reports and peer-reports. Self-reported victimization was measured with the victimization subscale of the Olweus Bully/Victim Questionnaire (Olweus, 1986, Dutch adaptation: KLRV-J; Liebrand, van IJzendoorn, & van Lieshout, 1991). In the instructions, it was emphasized that victimization has a repetitive and intentional nature, and that it entails a power imbalance. Examples of what victimization is (e.g., saying mean things, kicking or hitting) and what it is not (e.g., when two kids of equal strength are fighting) were given. The subscale consisted of four items (*How often did other children victimize you this school year? How often have you been victimized at school in the last 5 days? How often are you being hit, kicked, locked up or something like that? How often do children say mean things to you?*). Children were asked to respond to the items on a five-point scale (1 = *never*; 5 = *several times a week*). Cronbach's alpha of self-reported victimization in this study was .74 at T1 and .75 at T2. Victimization was included as a latent factor in our model. The four items were used as indicators for the latent variable of self-reported victimization.

Peer-reported victimization was assessed using the peer nominations of victimization as proposed by Coie, Dodge, and Coppotelli (1982). In the instructions, the same definition of victimization was used as in the Olweus Bully/Victim Questionnaire. Children were asked to answer the following question: ''Which three classmates are often victimized by other children?'' Children were instructed that nominating themselves was not allowed. Cross-sex nominations were allowed. Proportion scores were calculated to correct for the varying number of students in a class (received nominations divided by the number of classmates that participated in the study −1, because self-nomination was not allowed). The measure of peer-reported victimization was a one-item manifest variable.

Social anxiety. Social anxiety was assessed using the Dutch Social Anxiety Scale (SAS-k, Dekking, 1983). Participants responded to 46 statements about social anxiety, distributed over four scales (1. anxiety concerning social skills and situations in which a child is being noticed, 2. anxiety concerning intellectual capabilities, 3. anxiety concerning physical capabilities, and 4. anxiety concerning physical appearance). The questionnaire mainly captures affective as well as some somatic dimensions, and does not specify whether the child should answer the questions regarding familiar or unfamiliar peers, though it does specify that it concerns social anxiety relative to peers and not adults. Participants were asked to respond to statements by choosing ''yes'' or ''no,'' corresponding to their (dis)agreement with the statement. Examples of items according to the scales would be: for social anxiety concerning social skills, ''When a couple of kids stand around me, I am afraid that they will tease me;'' for social anxiety concerning intellectual capabilities, ''I get an uncomfortable feeling when I have to tell something in class;'' for social anxiety concerning physical capabilities, ''When teams are chosen in sports, I get nervous;'' and for social anxiety concerning physical appearance, ''When I look different than the other kids, I get an uncomfortable feeling.'' In the current study, Cronbach's alpha was .95 at T1 and .94 at T2. The four subscales were used as indicators for a latent variable of social anxiety. Cronbach's alpha's for the subscales were .84 for social anxiety concerning social skills at T1 and T2, .87 for social skills concerning intellectual capabilities at T1 and T2, .80 for social anxiety concerning physical capabilities at T1 and .79 at T2, and .87 for social anxiety concerning physical appearance at T1 and .86 at T2.

Analyses

Missing data. Missing data were handled using full information maximum likelihood (FIML) in which all available data are used. The range and average of missing items per participant were calculated (self-reported victimization T1: $M = .11$, range: 0–4; self-reported victimization T2: $M = .12$, range: 0-4; peer-reported victimization T1: $M = .02$, range: 0–1; peer-reported victimization T2: $M = .01$, range: 0–1; social anxiety T1: $M = .11$, range: 0–47; social anxiety T1: $M = .12$, range: 0–47). Data were not missing completely at random. Independent sample t tests were done to examine different patterns of data between children with missing data (coded as 1) and children with complete data (coded as 0). Results showed that children with missing data received significantly fewer victimization nominations (T1: $t = 2.50$, $p < .05$; T2: $t = 2.27$, $p < .05$). There were no differences between children with complete or missing data for social anxiety (T1: $t = -.12$, $p = .91$; T2: $t = 1.02$, $p = .31$) and self-reported victimization (T1: $t = -.50$, $p = .62$; T2: $t = -.73$, $p = .46$). In addition, it was examined whether data were missing due to problems concerning the attrition of participants. In total, 181 children dropped out of the study during the second wave. These children received significantly fewer victimization nominations at T1 ($t = -2.03$, $p < .05$), but did not score differently on social anxiety ($t = 1.33$, $p = .18$) and self-reported victimization (T1: $t = 1.55$, $p = .12$) at T1.

Main analyses. The longitudinal associations between social anxiety and victimization were investigated using latent cross-lagged models in Mplus version 7 (L. K. Muthén & Muthén, 2013), using robust estimation (MLR). Model fit was indicated as acceptable when the Comparative Fit Index (CFI) and the Tucker–Lewis Index (TLI) had values of .95 or above, and the Root-Mean-Square Error of Approximation (RMSEA) and the Standardized Root Mean Residual (SRMR) had values of .06 or .08, respectively, or below (Hu & Bentler, 1998). Children were nested in classes, which were nested in schools. This violates the assumption of non-independence of data. To examine the magnitude of this violation, design effects of both the school level and the class level were examined. The design effect is the ratio of the actual variance, under the cluster sampling method, to the variance computed under the assumption of simple random sampling. The design effect was calculated as recommended by B. O. Muthén (2000), and is expressed as $d = 1 + \rho\ (c - 1)$, where ρ is the average intraclass correlation and c is the average number of children per class for the class level (25.68), or classes per school for the school level (1.55). A design effect smaller than 2 means that the design effect can be ignored and that controlling for this level is unnecessary (L. K. Muthén, 1999). The average design effect of the school level was .68, with the largest design effect being 1.03. The average design effect of the class level was 1.27, with the largest design effect being 2.21. Consequently, only Class ID was included as a cluster variable to control for this non-independence of observations (B. O. Muthén & Satorra, 1995), as some design effects were greater than two. This was not the case for the school level.

To test the direction of effects between social anxiety and victimization, we examined the cross-lagged effects from social anxiety

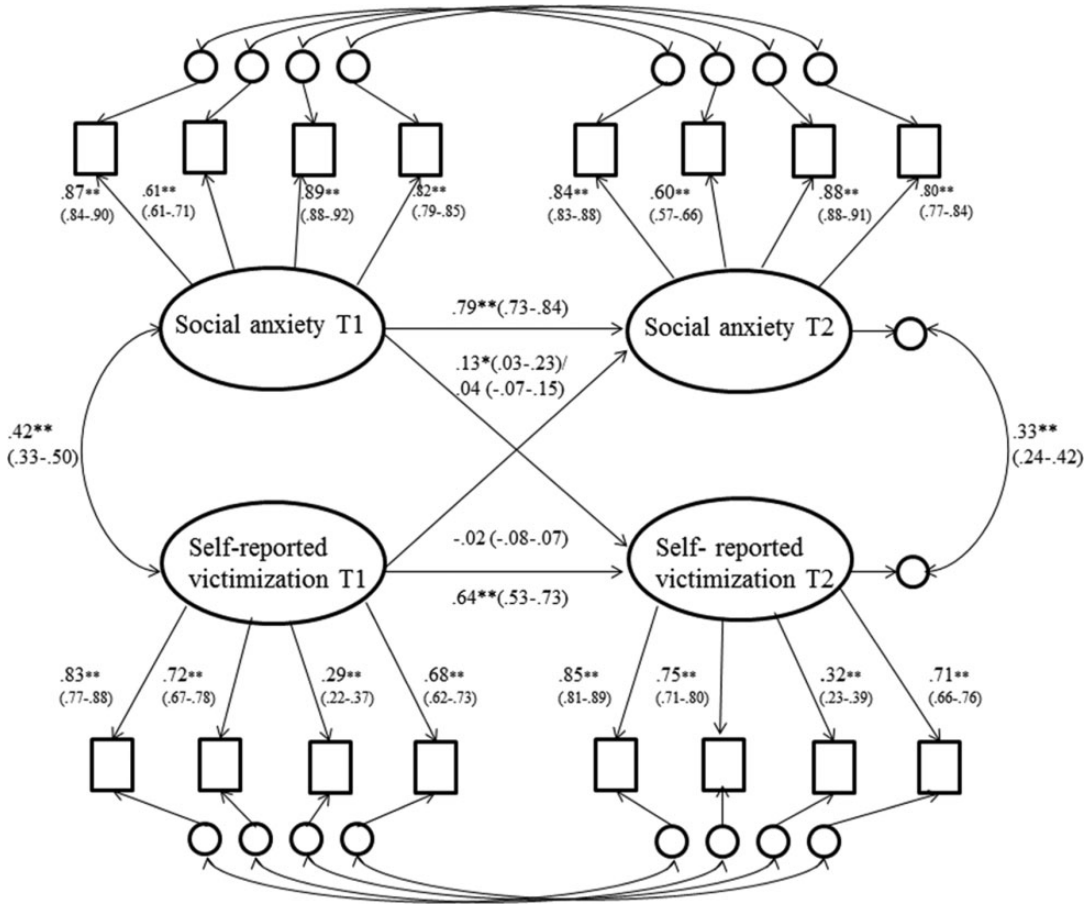

Figure 1. Latent cross-lagged model of the associations between social anxiety and self-reported victimization.
Note. Factor loadings, measurement intercepts, and residual variances were constrained to be equal across waves, and indicator residuals were allowed to correlate over time. 95% CIs are displayed between brackets. Estimates of standardized beta coefficients are displayed in the figure for boys/girls when these differ significantly. T1 = wave 1, fall of Grade 1, T2 = wave 2, spring of Grade 1. $N = 1{,}649$. *$p < .01$; **$p < .001$.

in the fall to victimization in the spring and vice versa. By estimating the stability of both constructs over time, as well as their concurrent associations and the degree to which both constructs mutually influenced each other over time, we were able to investigate to what degree social anxiety predicted changes in victimization over time, and vice versa. The model was estimated twice, once with self-reported victimization and once with peer-reported victimization. Effect sizes are given in R^2.

In addition, gender differences were investigated by conducting multiple-group analyses. The model was simultaneously specified for both male and female subsamples. Gender differences were tested in five steps, step 1: all paths were fixed; step 2: the cross-lagged effect of victimization T1–social anxiety T2 was freely estimated; step 3: the other cross-lagged effect, social anxiety–victimization T2 was freely estimated; step 4: both cross-lagged effects and the stabilities of social anxiety and victimization were freely estimated; and step 5: the within-wave correlations, stabilities and cross-lagged effects were freely estimated. Per step, it was tested whether the model fit was significantly better compared to a model in which all parameters were fixed. A better fit was tested using the DIFFTEST command, which calculates chi-square differences in nested models. Chi-square differences are calculated based on log likelihood and scaling correction factors of the nested model compared to the comparison model. A significant chi-square difference indicated a better model fit. When gender was unknown, it was coded as a missing item. The children were still in the dataset, but were omitted by Mplus in the gender moderation analyses.

Graphical representations of the latent cross-lagged models can be found in Figure 1 and Figure 2. For constrained paths, average scores of coefficients for boys and girls are displayed in the figures. To ensure that change in the latent cross-lagged models was explained by the structural relations over time and not by the variance in trait measurement over time, we analysed our models under strict factorial invariance, which requires cross-measurement occasion equality in factor loadings, intercepts, and residual variances (Meredith, 1993). In addition, indicator residuals were allowed to correlate across waves. Analyses were performed omitting the 20 children who were involved in the intervention. The same patterns of statistically significant results were obtained when these children were included.

Results

Descriptive analyses

Preliminary analyses were performed to examine means, standard deviations, and correlations for the total sample, as well as for boys and girls separately (see Table 1).

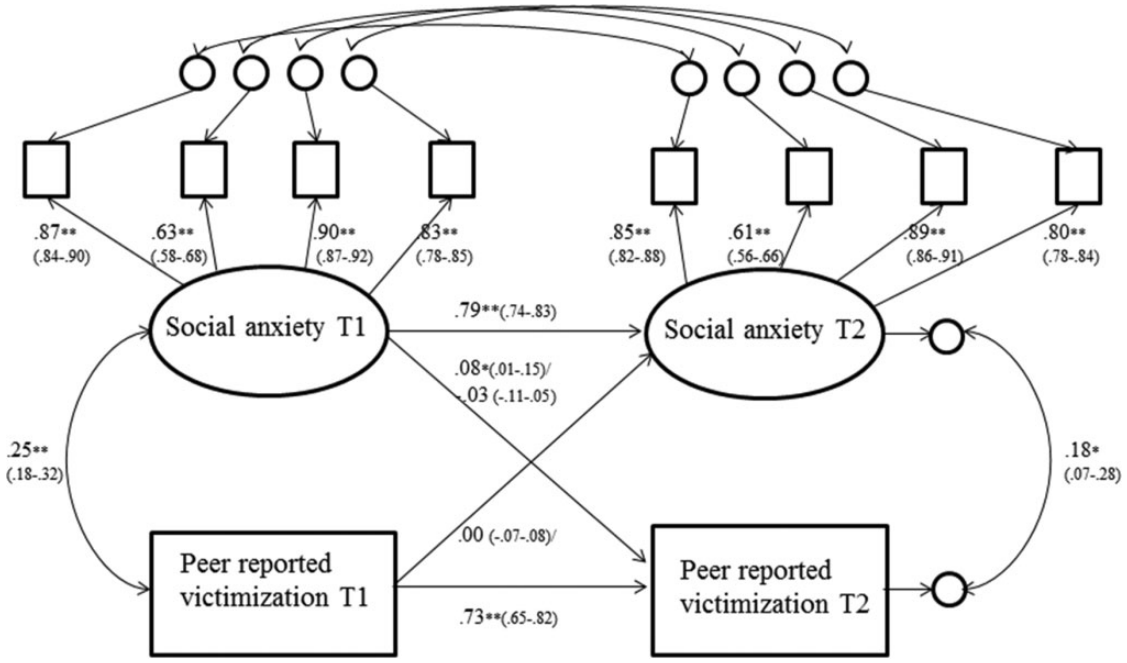

Figure 2. Latent cross-lagged model of the associations between social anxiety and peer-reported victimization.
Note. Factor loadings, measurement intercepts, and residual variances were constrained to be equal across waves, and indicator residuals were allowed to correlate over time. 95% CIs are displayed between brackets. Estimates of standardized beta coefficients are displayed in the figure for boys/girls when these differ significantly. T1 = wave 1, fall of Grade 1, T2 = wave 2, spring of Grade 1. $N = 1649$. *$p < .01$; **$p < .001$.

Table 1. Means, standard deviations and correlations for social anxiety and victimization at wave 1 and wave 2.

	n	*Observed range*	*M*	*SD*	*d*	1	2	3	4	5	6
Total group											
1. Social anxiety T1	1100	0–1	0.19	.20		–					
2. Social anxiety T2	1139	0–1	0.16	.19		.77*	–				
3. Self-reported victimization T1	1457	1–5	1.45	.57		.35*	.27*	–			
4. Self-reported victimization T2	1438	1–4.50	1.47	.59		.28*	.39*	.57*	–		
5. Peer-reported victimization T1	1629	0–0.94	0.06	.14		.24*	.19*	.43*	.39*	–	
6. Peer-reported victimization T2	1622	0–0.96	0.06	.16		.20*	.24*	.33*	.44*	.75*	–
Boys											
1. Social anxiety T1	519	0–0.94	0.14	.18	−.45***	–					
2. Social anxiety T2	515	0–0.91	0.12	.16	−.44***	.77*	–				
3. Self-reported victimization T1	664	1–4.50	1.51	.62	.21***	.36*	.29*	–			
4. Self-reported victimization T2	652	1–4.50	1.50	.62	.12*	.37*	.43*	.64*	–		
5. Peer-reported victimization T1	742	0–0.94	0.08	.17	.26***	.31*	.26*	.47*	.49*	–	
6. Peer-reported victimization T2	746	0–0.96	0.08	.19	.16**	.29*	.35*	.41*	.50*	.78*	–
Girls											
1. Social anxiety T1	515	0–1	0.23	.22	−.45***	–					
2. Social anxiety T2	508	0–1	0.20	.21	−.44***	.75*	–				
3. Self-reported victimization T1	670	1–4.75	1.40	.51	.21***	.41*	.37*	–			
4. Self-reported victimization T2	668	1–4	1.43	.56	.12*	.27*	.40*	.50*	–		
5. Peer-reported victimization T1	747	0–0.94	0.04	.11	.26***	.25*	.22*	.35*	.25*	–	
6. Peer-reported victimization T2	744	0–0.91	0.05	.14	.16**	.18*	.21*	.21*	36*	.69*	–

Note. *n* = number of participants, *M* = mean, *SD* = Standard deviation. T1 = wave 1, fall of Grade 1, T2 = wave 2, spring of Grade 1. Variable 1 and variable 2 are rated on a 2-point scale ranging from 0 to 1. Variable 3 and variable 4 are rated on a 5-point Likert scale, ranging from 1 to 5. Variable 5 and variable 6 are received nominations, possible scores range from 0 to 1. For all variables, higher scores indicate higher levels of the variable. Significant *d* values indicate mean level differences between boys and girls. Positive *d* values indicate that girls have higher scores than boys, and that negative *d* values indicate that boys have higher scores than girls. *$p < .05$; **$p < .01$; *** $p < .001$.

Model of self-reported victimization

Model fit was good, $\chi^2(112, N = 1{,}649) = 316.97$, $p < .001$, CFI = .97, TLI = .97, RMSEA = .03, SRMR = .04. In step 2, the cross-lagged effect of self-reported victimization T1–social anxiety T2 was freely estimated. Step 2 did not result in a better model fit, $\Delta\chi^2(1, N = 1{,}503) = 2.18$, $p = .14$, compared to step 1, indicating that there were no gender differences in the cross-lagged effect in which self-reported victimization predicts an incremental change in future social anxiety. However, step 3 (in which social anxiety T1–victimization T2 was freely estimated) did result in a trend significant better model fit, $\Delta\chi^2(1, N = 1{,}503) = 3.88$, $p = .05$, compared to step 1, indicating that that there were gender differences in the cross-lagged effect in which social anxiety predicts an incremental change in future self-reported victimization. Step 4 (both cross-lagged effects and the stabilities of social anxiety and victimization were freely estimated) and step 5 (in which the within-wave correlations, stabilities and cross-lagged effects were freely estimated) did not significantly improve the model fit any more, step 4: $\Delta\chi^2(4, N = 1{,}504) = 6.03$, $p = .20$; step 5: $\Delta\chi^2(6, N = 1{,}504) = 10.36$, $p = .11$, indicating no gender differences in the stabilities (step 4) and concurrent correlations (step 5).

Social anxiety and self-reported victimization were positively associated and were found to be stable over time. Stabilities are comparable with reliabilities of the constructs (see the Method section), indicating quite high stability. There was a significant cross-lagged effect of social anxiety predicting incremental change in future self-reported victimization for boys. The reverse effect of self-reported victimization predicting incremental change on future social anxiety was not found for boys. Concerning girls, no significant cross-lagged effects were found at all (see Figure 1).

The variance explained by the model for boys was $R^2 = .54$, $p < .001$ for self-reported victimization at T2, and $R^2 = .64$, $p < .001$ for social anxiety at T2. The variance explained by the model for girls was $R^2 = .38$, $p < .001$ for self-reported victimization at T2, and $R^2 = .59$, $p < .001$ for social anxiety at T2. In addition, because there was a significant cross-lagged effect of social anxiety predicting incremental change in future victimization, we calculated the R^2 of social anxiety over and above other variables by running the model twice. Once with the path social anxiety T1–self-reported victimization T1 fixed at 0 (boys: $R^2 = .63$, $p < .001$, girls: $R^2 = .58$, $p < .001$), and once with this model freely estimated (boys: $R^2 = .64$, $p < .001$, girls: $R^2 = .59$, $p < .001$. The explained variance of social anxiety over and above other variables was $R^2 = .01$ for both boys and girls.

Model of peer-reported victimization

The model fit under strict factorial invariance was good, $\chi^2(38, N = 1{,}649) = 122.97$, $p < .001$, CFI = .99, TLI = .98, RMSEA = .04, SRMR = .03. Again, gender differences were tested in five steps. In step 2 the cross-lagged effect of peer-reported victimization T1–social anxiety T2 was freely estimated. Step 2 did not result in a better model fit, $\Delta\chi^2(1, N = 1{,}503) = 1.32$, $p = .25$, compared to step 1, indicating that there were no gender differences in the cross-lagged effect in which self-reported victimization predicts an incremental change in future social anxiety. However, step 3 (in which social anxiety T1–peer-reported victimization T2 was freely estimated) did result in a significant better model fit, $\Delta\chi^2(1, N = 1{,}503) = 6.96$, $p < .01$, compared to step 1, indicating that that there were gender differences in the cross-lagged effect in which social anxiety predicts an incremental change in future peer-reported victimization. Step 4 (both cross-lagged effects and the stabilities of social anxiety and peer-reported victimization were freely estimated) and step 5 (in which the within-wave correlations, stabilities and cross-lagged effects were freely estimated) did not significantly improve the model fit any more, step 4: $\Delta\chi^2(4, N = 1{,}504) = 6.68$, $p = .15$; step 5: $\Delta\chi^2(6, N = 1{,}504) = 9.73$, $p = .14$, indicating no gender differences in the stabilities (step 4) and concurrent correlations (step 5).

Social anxiety and peer-reported victimization were positively associated and were stable over time. Stabilities are comparable with reliabilities of the constructs (see the Method section), again indicating quite high stability. Gender differences were found for the cross-lagged effects. There was a significant cross-lagged effect of social anxiety predicting incremental change in future peer-reported victimization in boys. The reverse effect of peer-reported victimization predicting incremental change on future social anxiety was not found for boys. Concerning girls, no significant cross-lagged effects were found at all (see Figure 2).

The variance explained by the model for boys was $R^2 = .61$, $p < .001$ for peer-reported victimization at T2, and $R^2 = .64$, $p < .001$ for social anxiety at T2. The variance explained by the model for girls was $R^2 = .48$, $p < .001$ for peer-reported victimization at T2, and $R^2 = .60$, $p < .001$ for social anxiety at T2. The R^2 of social anxiety over and above other variables was smaller than .001 for boys, and .01 for girls (fixed at 0: boys: $R^2 = .64$, $p < .001$, girls: $R^2 = .59$, $p < .001$, freely estimated: boys: $R^2 = .64$, $p < .001$, girls: $R^2 = .60$, $p < .001$).

Discussion

The main aim of the present study was to examine the direction of effects in the relation between social anxiety and victimization. This study was the first longitudinal study to use both self-reports and peer-reports of victimization in examining the relation between social anxiety and victimization in a large community-based sample. Due to inconsistent prior research findings, the longitudinal associations between social anxiety and victimization were examined in an exploratory manner. The results show that social anxiety predicts an incremental change in future self- and peer-reported victimization in boys but not in girls. Victimization did not predict an incremental change in future social anxiety. Gender differences were significant but small.

These findings are in line with two theoretical perspectives described in the introduction that higher emotional reactivity increases the risk of victimization and that a lack of social skills increases the risk of victimization, and are also in line with some previous empirical evidence (Siegel et al., 2009; Hodges & Perry, 1999). However, the findings only partly support the theoretical perspective of social information processing, which hypothesizes a bi-directional effect, and other empirical evidence (Hodges & Perry, 1999; Siegel et al., 2009; Vernberg et al., 1992), as it was not found that victimization predicts an incremental change in future social anxiety. There are several possible explanations for why we did not find this direction of effects. First, looking at it from a methodological perspective, it could be that the timespan of this longitudinal study was too short and that it takes more than 7 months for this direction of effect to be established. It might be that only a repetitive pattern of victimization over a prolonged period of time leads to social anxiety. This hypothesis would be

supported by the theory that children develop a hypervigilance to social situations after multiple incidences of exposure to harmful situations (Grills & Ollendick, 2002). In contrast, social anxiety might trigger victimization directly because the greater emotional reactivity (e.g., crying, getting angry) to social situations makes these children easy targets for bullies (e.g., Hodges & Perry, 1999). A second explanation could be that victimization only leads to an incremental change in future social anxiety for a specific group, because of a moderating factor. Genetic vulnerability, temperament factors and family factors, such as attachment or parenting styles, are known to influence the development of social anxiety (e.g., Essex, Klein, Slattery, Goldsmith, & Kalin, 2010). In a prior cross-sectional study, it was found that the relation between social anxiety and victimization was influenced by the levels of extraversion and agreeableness in the child (Mulder & van Aken, 2013). It could be that personality also influences the longitudinal relation between social anxiety and victimization. For example, less extraverted and victimized children might be at risk for developing social anxiety, whereas this might not be the case, to the same extent, for more extraverted children.

Apparently, social anxiety predicts an incremental change in future victimization only for boys. Gender roles might be important in explaining this finding. Gender roles describe boys as being dominant and tough. Socially-anxious boys do not fit the description of this gender role, making them an easy target for bullies. For girls, on the other hand, social anxiety might be less discrepant with their gender role, and more accepted (e.g., Weinstock, 1998). Although this study found gender differences, they were small. To be able to make definitive conclusions about gender differences in the longitudinal relation between social anxiety and victimization, more research is necessary.

Limitations and future research

Some strengths and limitations of the study should be discussed. This study is one of the first to longitudinally study the relationship between social anxiety and victimization in a large community-based sample using multiple informants.

Although this study showed a prospective relation from social anxiety to victimization, this relation was small, as is usually the case for cross-lagged effects. In addition, the effect of social anxiety over and above other variables was also small. There are some important factors to consider in future research that could be important in determining why these effects were small. Group processes of victimization (e.g., Salmivalli, 2010) are known to be important. For example, the number of bullies could be important for the impact of victimization. When a child gets bullied by several classmates, this could have greater influence on the wellbeing of the child, compared to when there is only one bully. Moreover, the reaction of the class on the bullying could also be important for whether the victim feels supported or rejected by the rest of their class. In addition, the frequency, duration, stability, and severity of victimization could influence the consequences of victimization (Kochenderfer & Ladd, 1996). Future research should examine the magnitude of these other factors on the relationship between social anxiety and victimization.

This study used self-reports and peer-reports of victimization, showing different results for boys and girls. For future research, it could be interesting to examine how parents and teachers report on the prospective relation between social anxiety and victimization, as they also have a different perspective on social anxiety and victimization than the children. These adults are very important in signaling social anxiety and incidences of victimization and in assisting a socially anxious child, as well as intervening when victimization takes place. Future studies should therefore examine whether the results of the current study are replicated using teachers' and parents' reports of victimization. Parents and teachers can be important in the prevention of victimization in socially anxious children. Parents, on the one hand, are the most suited to inform teachers about the social-anxiety problems of their children. Teachers, on the other hand, are the most suited to signal victimization as it occurs mainly during school hours. Concerning this idea, regular talks between the socially-anxious child, the teacher and the parents about relationships with classmates could be helpful. Future research should examine how this can be protocolled, for example, by conducting weekly meetings between the child and the teacher for children at risk, and through consultations between teachers and parents during their yearly meetings.

This study used a global scale of victimization. It is important to study the longitudinal relation between social anxiety and specific forms of victimization, for example relational victimization, verbal victimization, or exclusion, as this might be an explanation for why we did not find that victimization predicts social anxiety. When interpreting the results of the study, it should be kept in mind that only global victimization was measured, and it could be that results are different when the specific subtypes of victimization are measured. For example, Siegel et al. (2009) found differences in the prospective relation between social anxiety and victimization for overt, relational, and reputational victimization, with relational victimization playing a significantly larger role than the other two forms of victimization. In addition, Vernberg et al. (1992), who focused on exclusion, found that exclusion predicted incremental change in future social anxiety. Thus the direction of effects might be different for specific forms of victimization.

In this study, children did not report directly on their gender. Gender was derived by a child's name, as in the Netherlands most names are typical for boys or for girls. Unfortunately, in those cases where it was not certain whether the name was male or female, the gender was reported as missing. This is especially unfortunate because it is known that children with unusual names might suffer from peer problems (Hartup, 1970).

Although children were followed from the moment they started in a new class with essentially no social status yet established, naturally some children might already have a past of negative peer experiences. This should be kept in mind in interpreting the results. The current study found that social anxiety leads to victimization, however it could be that this development of social anxiety was already influenced by negative peer experiences in the past.

Data were not missing at completely at random. Systematic missingness was centered on peer-reported victimization. The FIML procedure assumes data to be missing completely at random. However, handling these data with the FIML procedure is, as far as we know, the best possible option, though this could have led to biased results.

Conclusion

This study is the first to longitudinally examine the direction of effects between social anxiety and victimization in a community-based sample using both self- and peer-reports. It was found that

social anxiety predicted incremental change in future victimization for boys but not for girls. Reverse cross-lagged effects of victimization predicting incremental change in future social anxiety were not found. Gender differences were significant but small. Future research is needed to examine long-term longitudinal relationships and the role of different forms of victimization and social anxiety.

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