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# Do Children, Parents, and Teachers Agree in Reports on Victimization and Internalizing Symptoms? Cross-Sectional Triangulation and a Two-Year Prediction

Audhild Løhre  <sup>a,b</sup>

<sup>a</sup>NTNU Department of Teacher Education, Norwegian University of Science and Technology, Trondheim, Norway;

<sup>b</sup>NTNU Center for Health Promotion Research, Norwegian University of Science and Technology, Trondheim, Norway

## ABSTRACT

Concordance in reports on victimization and emotional problems is understudied. This paper explores child, parent, and teacher agreement in cross-sectional reports on children's victimization, anxiousness, and sadness, as well as longitudinal associations between these factors. In this population-based study of 419 school children, the informants reported that four in ten children were victimized. Venn diagrams displayed agreement in 19 out of 140 cases, indicating low concordance. On the other hand, logistic regression models demonstrated strong agreement on anxiousness, suggesting two to four times higher odds compared with non-victimized peers. Early anxiousness, sadness, and victimization typically were associated with the same adversity in adjusted two-year linear regression models, with a low explained variance (5–16%). The paper critically discusses sensitivity and specificity related to the high prevalence and low concordance of victimization and hypothesizes that signs of anxiousness may lead – or mislead – a significant number of adults to assume victimization.

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## KEYWORDS

Primary and lower secondary school; students; concordance; Venn diagram; sensitivity; specificity; false positives; false negatives

## Introduction

Much research has been done on victimization and mental health problems (Arseneault, 2018; Kwan et al., 2020), whereas we have far less knowledge on the concordance between informants reporting on these adversities. Using primary and secondary schools as a framework, the present paper examines the concordance in reports on students' victimization and internalizing symptoms. The goal is to study the agreement between children, parents, and teachers. Previous research has typically measured agreement between two groups, such as children and parents, by reporting correlation coefficients. The present analyses go an important step further by showing the inter-relationship among children, their parents, and their teachers.

Only a few studies have assessed informant concordance in reports of victimization. Typically, the observed concordance shows low to moderate agreement between informants. Correlation or  $\kappa$  estimates of agreement between children and parents are usually around .20, whereas the corresponding estimates for children and teachers are lower or even show no statistically significant agreement (Holt et al., 2009; Ladd & Kochenderfer-Ladd, 2002; Nuijens

**CONTACT** Audhild Løhre  [audhild.lohre@ntnu.no](mailto:audhild.lohre@ntnu.no)  NTNU Department of Teacher Education, Norwegian University of Science and Technology, Trondheim 7491, Norway

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et al., 2009; Rønning et al., 2009; Shakoor et al., 2011; Williford et al., 2015; Zwierzyńska et al., 2013). Likewise, a recent investigation of concordance between teachers and children in kindergarten showed lower agreement between children and teachers than between self-reports and peer reports (Huitsing et al., 2019). We must also be aware that different scales of measurement may influence the results. For example, a small study on 188 adolescents (Pouwels, Lansu, et al., 2016) showed that the concordance between self-reports and peer reports had an  $r$  of .23 for continuous variables, while categorical variables had no statistically significant correlation.

A recent meta-analysis of stability in reports of victimization (Pouwels, Lansu, et al., 2016) showed overall moderate stability, but the stability decreased with longer time intervals between the measurements and varied among different groups of informants. Peer reports on victimization yielded, in general, higher stability than self-reports or reports by teachers. Regarding mental health problems, a systematic review of population and cohort studies with measurements that were minimally ten years apart (Bor et al., 2014) showed that the prevalence of internalizing problems was stable across time for children and adolescent boys, whereas for adolescent girls, most studies demonstrated increased internalizing problems. On the other hand, a large-scale, representative survey of U.S. adolescents between the ages of 13 and 18 found as the most common condition an aggregate category of anxiety disorders, which was nearly the same across all age groups (Merikangas et al., 2010).

Consistent findings worldwide are the strong associations of victimization with concurrent mental health problems (Hawker & Boulton, 2000; Kwan et al., 2020). Turning to longitudinal research, different studies have suggested different answers. A meta-analysis (Reijntjes et al., 2010) based on empirical data from 14,000 children concluded that internalizing problems might be both antecedents and consequences of victimization. Later studies have continued to publish divergent results. Some studies (Zwierzyńska et al., 2013) point to strong links of victimization with later internalizing problems, whereas other studies (Vaillancourt et al., 2013) do not find such associations. Conversely, internalizing problems have been shown to predict later victimization (Kochel et al., 2012; Vaillancourt et al., 2013). However, a recent review of longitudinal studies (Arseneault, 2018) concluded that the existing evidence demonstrates strong support for an independent contribution of victimization in childhood to poor health later in life, including mental health problems.

Relevant to the present study some publications have analyzed the predictive value of different informants' reports on victimization. Zwierzyńska et al. (2013) found that reports from children, parents, and teachers alike predicted so-called broad internalizing problems, with stronger associations for depression occurring closer in time than after several years. The strongest association, with an odds ratio of 3.89, was seen between victimization reported by teachers in children aged 7–9 years and parents' reports on the children's negative emotionality between the ages of 12 and 13. For severe internalizing problems, the children's self-reports proved to have the best predictive value. Children who reported victimization in Grades 8 or 9 were three times more likely to have severe depression two years later and two times more likely four years later (Zwierzyńska et al., 2013). In this respect, the results of a longitudinal study over 10–15 years by Rønning et al. (2009) are interesting: Reports on victimization from children and parents as well as teachers predicted later psychiatric disorders. However, when the researchers adjusted for the children's psychopathology at the first moment of measurement, when the children were 8 years old, all significant associations were fully attenuated.

## The Present Study

This study aims to explore concordance between children and significant adults in reports on students' victimization and internalizing symptoms, with the following research question: Do children,

parents, and teachers agree when reporting victimization, anxiousness, and sadness among children, and do their reports predict these adversities after two years?

## Methods

### *Procedure*

Data collected from five schools in one Norwegian county were used for this paper. The headmasters agreed to participate in two surveys, T1 and T2, which were set two years apart. The statutory School Collaborative Committees and the Norwegian Data Inspectorate approved the data collection.

The principal investigator and the headmaster informed the parents about the survey in the context of a school meeting, and in each class, the teachers informed the children. In addition, the schools sent information letters signed by the headmaster and by the principal investigator to all parents, describing the aims of the survey, emphasizing confidentiality and that participation was voluntary. Children and parents who did not want to participate were asked to notify the main teacher or headmaster. None of the families declined to take part in the surveys.

Both surveys applied the School Well-Being Questionnaire (SWQ) developed by the author of this paper in close collaboration with school nurses and headmasters. The SWQ has been demonstrated to have satisfactory construct, content, and face validity (Løhre et al., 2010b). Briefly, the reliability of the questionnaire was tested in another setting on children in Grades 3, 6, and 9 (Løhre, 2011). Of the 179 eligible children, 154 (86%) completed the questionnaire two times, three weeks apart. The test–retest reliability for the 49 ordinal questions was acceptable, with 82% of Spearman's  $\rho$  coefficients ranging between 0.45 and 0.64 (mean  $\rho = 0.55$ ) and all  $p$  values  $< 0.001$ .

The school nurses and headmasters administered the data collection at the end of the school year, from May to June. Most of the informants filled in the questionnaire themselves under the instruction of a trained teacher or school nurse during a lesson allocated to this task. However, using the SWQ as a guide, the school nurse interviewed younger children and children who had problems with reading or writing, as described in more detail elsewhere (Løhre et al., 2010b). At home, one parent filled in the parent version of the questionnaire, and the class teacher filled in the teacher version for each child. A specific code connected the questionnaires to the different informants.

### *Participants*

Three schools had Grades 1 through 7, and two schools had Grades 1 through 10. All children from the four schools and all children in Grades 7 through 10 from the fifth school were included. In total, 423 children between the ages of 7 and 16 were invited to participate at T1 along with their parents and teachers. One child moved before the data collection started, and three children were on sick leave during the study period. Thus, 419 (99%) children participated. We received parent responses for 377 (89%) children and teacher responses for 403 (95%) children.

Two years later, 135 of the 419 children had moved to other schools owing to the community school systems. Those who had finished Grade 7 at the schools with Grades 1 through 7, were transferred to lower secondary schools and those who had finished Grade 10 went to upper secondary schools. Further, in the two years that elapsed from T1 to T2, some families, which included 13 children, moved from the area. Among the 271 remaining and eligible children, three were not at school when the second survey was carried out, leaving 268 children (99%) to participate. The 268 children were in Grades 1 through 8 at T1 and in Grades 3 through 10 at T2. A previous publication reports more details (Løhre et al., 2014).

## Measures

The SWQ has one version for children, one for parents, and one for teachers (Løhre, 2011). The questionnaires consist of a combination of items that may promote well-being and items that may adversely affect well-being. Victimization (by peer bullying), anxiousness, and sadness are factors that could be adversely associated with good health. In this paper, anxiousness and sadness are denoted as internalizing symptoms or emotional problems. The informants marked the responses to the questions on ordinal scales, and the responses were about the current school year. This study addresses the following variables, each with corresponding questions:

### Victimization Reported by the Children

Three questions: “During recess, are you bothered in some way that makes you feel bad: (1) by being teased; (2) by being hit, kicked, or pushed; or (3) by being left out, excluded?” Each question had five response options (1–5): *never*, *seldom*, *sometimes*, *about every week*, and *about every day*. In the analyses, I employed the question(s) with the highest response score of the three questions (the maximum score, i.e., one score only).

### Victimization Reported by Parents or Teachers

Two questions: “During recess, do others tease or bother your daughter (son) / this child?” and “Does your daughter (son) / this child experience being left out from being together with peers?” Each question had five response options (1–5): *never*, *seldom*, *sometimes*, *about every week*, and *about every day*. In the analyses, I employed the question(s) with the highest response score of the two questions (the maximum score, i.e., one score only).

### Internalizing Symptoms Reported by the Children

Two questions: “Lately, how often have you felt (1) anxious or (2) sad?” Each question had five response options (1–5): *never*, *seldom*, *sometimes*, *often*, and *always*.

### Internalizing Symptoms Reported by Parents or Teachers

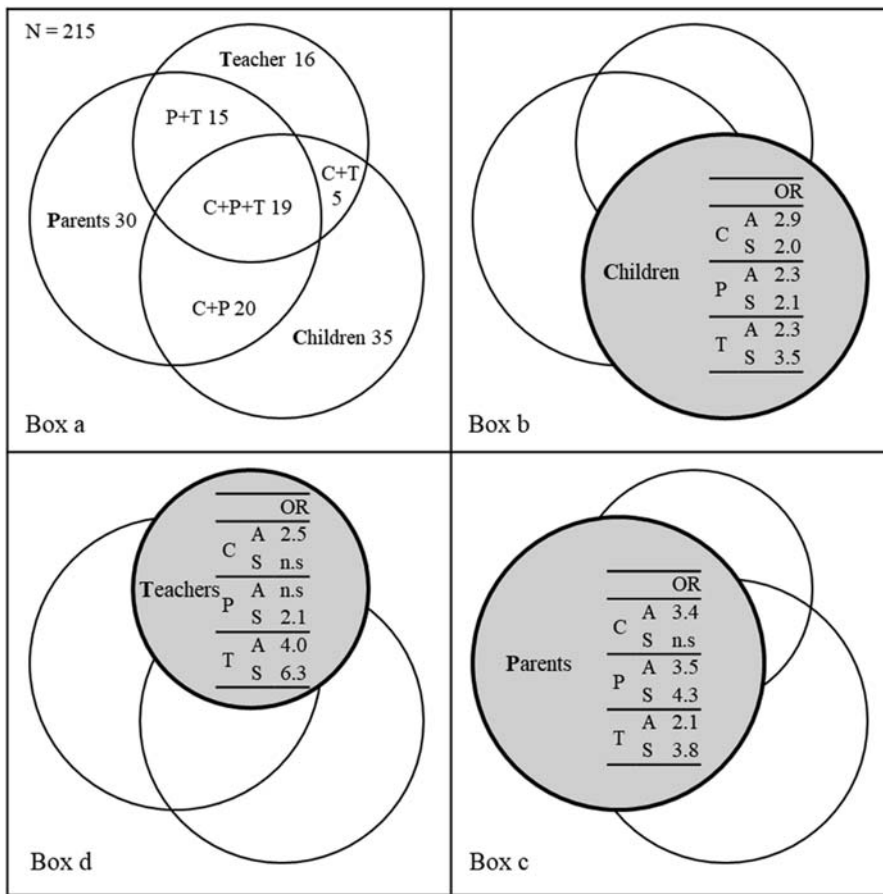
Two questions: “Lately, how often have your daughter (son) / this child felt (1) anxious or (2) sad?” Each question had five response options (1–5): *never*, *seldom*, *sometimes*, *often*, and *always*.

In the cross-sectional analyses, the above-mentioned items at T1 were applied, and the longitudinal analyses additionally used the children’s corresponding reports on victimization and internalizing symptoms at T2.

## Analytical Approach

To answer the first part of the research question, cross-sectional analyses were run. Descriptive statistics present the dispersion of the response options and the mean and SD of the variables. Spearman’s  $\rho$  coefficients report binary correlations using the ordinal scales. In addition to presenting binary correlations, it was important to explore the interrelationships between the three groups of informants. This was done in a Venn diagram showing the concordance between the informants’ scores on dichotomized victimization variables (see Figure 1, Box a). Victimization was dichotomized into *never/seldom* (not victimized) versus *sometimes/about every week/about every day* (victimized).

Further, it was of interest to investigate the associations of reported victimization with reports on internalizing symptoms. To prepare for these analyses, anxiousness and sadness were dichotomized into *never/seldom* (not anxious or sad) versus *sometimes/often/always* (anxious or sad) to be used as dependent variables in binary logistic regression models. For each of the three informants’ reports on victimization, a series of logistic regression models were run, all of them adjusted for gender and grade. The precision of the associations (odds ratio, OR) was set to 95% confidence intervals. Let us



**Figure 1.** Victimization and Internalizing Symptoms Reported by the Children (C), Parents (P), and Teachers (T) at T1. Box a. A Venn diagram presents agreement in reports of victimization by number of cases. Box b, Box c, and Box d present associations (Odds Ratio, OR) of victimization with internalizing symptoms in binary logistic regression analyses, adjusted by gender and grade. Box b. Associations of the Children's Reports on Victimization with Anxiousness (A) and Sadness (S) reported by the three groups of informants. Box c. Associations of the Parents' Reports on Victimization with Anxiousness (A) and Sadness (S) reported by the three groups of informants. Box d. Associations of the Teachers' Reports on Victimization with Anxiousness (A) and Sadness (S) reported by the three groups of informants.

use the children's reports on victimization as an example, as shown in Figure 1, Box b. First, the children's reports on victimization were run with their own reports on anxiousness and sadness as dependent variables. Thereafter, models with child-reported victimization were run against the parents' reports on anxiousness and sadness, and lastly, the teachers' reports on anxiousness and sadness were applied as dependent variables. In contrast to the Venn diagram which includes information on victimization from all three groups of informants, the presented logistic regression models use information from maximum two informants at a time. To increase the power in these analyses, all available data were applied. Again, to use the children's circle in Box b as an example, a few children might have been omitted from the analyses because of missing data in reports on internalizing symptoms. On the other hand, some other children outside the circle were included if the necessary data were available. Hence, the associations in the children's circle in Box b represent all children who reported themselves to be victimized, given they could be combined with the required data on internalizing symptoms. Using the dichotomized victimization variables children reported as victimized were compared to children reported as not victimized.

Next, to explore the second part of the research question, the ordinal scales of the children’s reports at T2 were preferred as outcome variables, treating them as continuous variables in linear regression models. Normality of residuals was checked by visual inspection of qq-plots. Linear regression was chosen to be able to estimate the explained variance in the dependent variables. A series of hierarchical linear models with the children’s reports on anxiousness, sadness, and victimization as outcomes present associations with each of the informants’ reports on the same variables (see Table 2). As it could be hypothesized that combined scores might yield higher predictive power, sum scores were computed. Again, a series of models were run, first with the children’s sum scores of anxiousness and victimization and then the same for parents and teachers (see Table 3). It could also be hypothesized that interactions between different informants’ reports might further increase the predictive power of the exposure variables. To test this, I computed sum scores of the informants’ reports on victimization and, thereafter, of their reports on anxiousness and victimization. All linear regression models were adjusted for gender and grade.

The statistical analyses were performed in SPSS for Windows (SPSS version 20, Chicago, Illinois), and all available data were used in the analyses. Tests for statistical significance were two-sided, and  $p$  values  $<0.05$  were considered significant.

Cross-Sectional Results

Table 1 presents the number of reports; the dispersion of response options; and the mean and SD for anxiousness, sadness, and victimization at T1. The mean values and small SD values show that most responses are below or close to 2 (*seldom*). Summing up the response options *never* (1) and *seldom* (2), we see that roughly four in five informants in all three informant groups report these frequencies in victimization and the two internalizing symptoms.

The information above might suggest that children, parents, and teachers strongly agree in their reports. This suggestion will be explored below as we turn to victimization. The five-level ordinal scales (Table 1) for victimization showed, however, rather low Spearman’s  $\rho$  estimates in the range of 0.17–0.36, with  $\rho = 0.17$  for children and teachers,  $\rho = 0.29$  for children and parents, and  $\rho = 0.36$  for parents and teachers.

In the next step, the victimization variables were dichotomized, and by using the three dichotomized variables the three groups of informants were identified with reports on 355 cases (Figure 1) out of the 419 participating children. Of the 355 children, 79 (22.3%) said they were sometimes, weekly, or daily victimized. Among the parents, 84 (23.7%) reported that their son or daughter was victimized at the same frequency, and the teachers reported that 55 (15.5%) children were

**Table 1.** The distribution of response options for anxiousness, sadness and victimization reported by the children, parents and teachers at T1.

Variables	Response options <sup>a</sup>					Total <i>N</i>	Mean	SD
	1 %	2 %	3 %	4 %	5 %			
Anxiousness <sup>b</sup>	54.7	28.0	12.9	3.2	1.2	411	1.68	0.90
Anxiousness <sup>c</sup>	31.3	51.1	15.3	2.0	0.3	352	1.89	0.75
Anxiousness <sup>d</sup>	44.4	39.2	14.0	2.2	0.2	401	1.75	0.80
Sadness <sup>b</sup>	24.5	48.9	23.5	2.7	0.5	413	2.06	0.79
Sadness <sup>c</sup>	9.7	52.5	34.4	2.2	1.1	360	2.33	0.73
Sadness <sup>d</sup>	22.8	56.0	19.8	1.5	0.0	400	2.00	0.70
Victimization <sup>b</sup>	55.2	24.2	16.5	2.2	1.9	417	1.71	0.95
Victimization <sup>c</sup>	41.1	36.0	19.5	1.9	1.6	375	1.87	0.90
Victimization <sup>d</sup>	40.5	43.5	13.7	1.0	1.2	402	1.79	0.81

<sup>a</sup>From 1 (never) to 5 (most frequently)

<sup>b</sup>Reported by children

<sup>c</sup>Reported by parents

<sup>d</sup>Reported by teachers



victimized. We see that the parents and children reported higher proportions of victimized children than the teachers did. The main challenge is, nevertheless, the low agreement between the different groups of informants (Figure 1, Box a). In 19 cases only, children, parents, and teachers seemed to agree in reports on victimization. When we add together all the children who the informants reported to be victimized, we obtain 140 (39%) cases, which constitute an unexpectedly high proportion.

The next step presents emotional symptoms among the children who reported that they were victimized. In order to include as much information as possible, the analyses (adjusted for gender and grade) are based on the number of reports presented in Table 1. The marked circle in Figure 1, Box b, symbolizes the children who reported victimization. These children were 2.9, CI [1.6, 5.2], times more anxious and 2.0, CI [1.2, 3.3], times sadder than the rest of the children. Parents roughly agreed on this and reported 2.3, CI [1.3, 4.3], for anxiousness and 2.1, CI [1.3, 3.6], for sadness. The teachers reported 2.3, CI [1.3, 4.1], for anxiousness but indicated a higher level of sadness, saying that the defined group was 3.5, CI [2.0, 6.0], times sadder compared with other children. From this, we can conclude that both the children and the significant adults described the group defined as victimized by the children as more anxious and sadder than other children.

For the parents, the group they defined as victimized is depicted in Figure 1, Box c. The parents reported these children to be 3.5, CI [2.0, 6.4], times more anxious and 4.3, CI [2.6, 7.3], times sadder than other children, whereas the teachers reported weaker associations:  $OR = 2.1$ , CI [1.1, 4.0], for anxiousness and  $OR = 3.8$ , CI [2.2, 6.8], for sadness. The children reported about the same level as their parents for anxiousness,  $OR = 3.4$ , CI [1.8, 6.1], but they did not agree with their parents or teachers on sadness. The children's reports on sadness showed no statistically significant association with the victimization reported by the parents,  $OR = 1.3$ , CI [0.7, 2.2]. Hence, we see that all informants agreed that children defined as victimized by their parents were more anxious. Sadness demonstrated, however, another picture. The significant adults agreed on high levels of sadness, whereas the children in this group reported no more sadness than other children.

The results of the last analyses focused on the group of children defined as victimized by their teachers (Figure 1, Box d). These results show a corresponding picture of sadness as described above (Figure 1, Box c). The children in this group did not report more sadness,  $OR = 1.0$ , CI [0.6, 1.9], than other children and thus disagreed with the significant adults. On the other hand, the teachers reported these children to be 6.3, CI [3.5, 11.2], times sadder compared with other children. Parents reported a lower level, with  $OR = 2.1$ , CI [1.2, 3.8]. Teachers also reported the highest level of anxiousness, saying that the children they indicated to be victimized were 4.0, CI [2.2, 7.3], times more anxious than other children. The parents' reports on anxiousness showed the contrary: no statistically significant association,  $OR = 1.25$ , CI [0.6, 2.6], with the teachers' reports on victimization. The children in the defined group reported 2.5, CI [1.3, 4.7], times higher anxiousness compared with other children. In other words, the teachers described the defined children to be sadder as well as more anxious than the other children. The children disagreed on sadness, and the parents disagreed on anxiousness.

To sum up, the informants weakly agreed on the reported victimization assessed by the dichotomized variables: Children, parents, and teachers altogether reported 140 out of 355 children as victimized and agreed on 19 (14%) of them. Moreover, the children reported to be victimized agreed on being far more anxious than the other children, regardless of whether they reported themselves to be victimized or not. Next, the children disagreed with the significant adults on sadness when the parents or teachers defined the victimized groups. The last point to highlight is that both teachers and parents reported the highest levels of emotional symptoms in the group that they themselves defined as victimized.

## Longitudinal Results

All analyses in this section apply to outcomes reported by the children at T2. The models are adjusted for gender and grade and proved to be reliable with  $F$  values being statistically significant.



Table 2 shows that the three child-reported variables at T1 were associated with later anxiousness in separate analyses adjusted only for gender and grade. When the three variables were included in the same multivariate analysis, anxiousness and sadness at T1 showed individual and statistically significant associations with later anxiousness, whereas the association with victimization was attenuated. The multivariate model explained 8% of the variance – only a small increase compared with what each variable explained in the separate analyses.

In the models in which the parents reported on anxiousness, sadness, and victimization, only victimization at T1 was associated with later anxiousness in the separate models, and this parameter continued to demonstrate a statistically significant association in the multivariate analysis, explaining 5% of the variance. For the teachers, their reports on anxiousness, sadness, and victimization at T1 showed statistically significant associations with later anxiousness in the separate analyses, but these associations were fully attenuated in the multivariate model.

Regarding child-reported sadness at T2, only the same emotion – namely, sadness at T1 – predicted later sadness in multivariate analyses of children and teachers, explaining 8% and 6% of the variance, respectively. None of the parental parameters were associated with later sadness in the multivariate model.

The analyses of child-reported victimization showed a special and interesting pattern (Table 2). In all three multivariate analyses, victimization at T1 was the only variable demonstrating an individual association with later victimization. Furthermore, victimization at T1 explained 10% to 17%

**Table 2.** Hierarchical linear regression with anxiousness, sadness and victimization at T2 reported by the children as dependent variables. Exposure variables reported by the children, the parents or the teachers at T1. All analyses adjusted by gender and grade.

	Anxiousness		Sadness		Victimization	
	Beta	Adj. $R^2$	Beta	Adj. $R^2$	Beta	Adj. $R^2$
<i>Reported by Children T1</i>						
<i>Step 1a</i>						
Anxious	0.23***	0.05	0.11	0.05	0.16**	0.08
<i>Step 1b</i>						
Sad	0.20**	0.04	0.20**	0.08	0.15*	0.08
<i>Step 1c</i>						
Victimized	0.18**	0.03	0.14*	0.06	0.22***	0.10
<i>Step 2</i>						
Anxious	0.17**	0.08	0.04	0.08	0.10	0.11
Sad	0.13*		0.18**		0.09	
Victimized	0.11		0.09		0.17**	
<i>Reported by Parents T1</i>						
<i>Step 1a</i>						
Anxious	0.09	<0.01	0.14*	0.03	0.07	0.09
<i>Step 1b</i>						
Sad	0.09	<0.01	0.08	0.02	0.08	0.08
<i>Step 1c</i>						
Victimized	0.25***	0.05	0.16*	0.05	0.31***	0.17
<i>Step 2</i>						
Anxious	−0.03	0.05	0.10	0.04	−0.05	0.16
Sad	0.05		−0.01		0.03	
Victimized	0.24**		0.13		0.30***	
<i>Reported by Teachers T1</i>						
<i>Step 1a</i>						
Anxious	0.13*	0.02	0.07	0.05	0.13*	0.07
<i>Step 1b</i>						
Sad	0.18**	0.03	0.15*	0.06	0.22***	0.10
<i>Step 1c</i>						
Victimized	0.16*	0.03	0.04	0.04	0.28***	0.13
<i>Step 2</i>						
Anxious	0.05	0.04	−0.01	0.05	−0.01	0.14
Sad	0.12		0.18*		0.12	
Victimized	0.10		−0.05		0.23**	

\* $p$ -value <0.05; \*\*  $p$ -value <0.01; \*\*\*  $p$ -value <0.001.

**Table 3.** Linear regression models with anxiousness, sadness and victimization at T2 reported by the children as dependent variables. Exposure variables are sum scores at T1. All analyses adjusted by gender and grade.

	Anxiousness Beta	Adj. $R^2$	Sadness Beta	Adj. $R^2$	Victimization Beta	Adj. $R^2$
Victimized & Anxious at T1 reported by:						
a. Children	0.26***	0.07	0.15*	0.06	0.24***	0.11
b. Parents	0.22**	0.04	0.19**	0.05	0.25***	0.13
c. Teachers	0.19**	0.04	0.06	0.04	0.26***	0.12
Victimized Sumscores CPT at T1	0.25***	0.06	0.14*	0.06	0.35***	0.18
Victimized & Anxious Sumscores CPT at T1	0.29***	0.08	0.17**	0.07	0.33***	0.16

CPT: Children, Parents, Teachers

\*  $p$ -value <0.05; \*\*  $p$ -value <0.01; \*\*\*  $p$ -value <0.001.

of the variance in the separate analyses, and this range did not increase going from separate to multivariate models.

The results above led to the question of whether combinations of exposure variables would yield better predictions of child-reported outcomes at T2. Therefore, several combinations of victimization and anxiousness were tested in linear regression models. As the children did not agree with the significant adults on sadness at T1, this variable was omitted. The analyses showed, however, that combinations of anxiousness and victimization in separate models for children, parents, and teachers did not yield any stronger predictions (Table 3). The associations and explained variance were roughly like those in Table 2; some estimates were a bit higher, and some were a bit lower. Further, combinations of reports from different informants did not add strength to the associations. The sum scores of victimization reported by children, parents, and teachers in Table 3 and the victimization scores reported by parents in Table 2 had roughly the same pattern. Corresponding results were found when the sum scores of the three informants' reports on anxiousness and victimization at T1 were used as one exposure variable. Thus, the potential effects of several different combinations did not increase the strength of prediction.

## Discussion

The cross-sectional results of the dichotomized variables demonstrated that a high proportion, 140 (39%) out of 355 children, was reported as victimized by any of the informants, whereas the concordance between children, parents, and teachers was low. The informants agreed on 19 of the 140 children. The most interesting finding, however, was that the 140 children were about three times more likely to self-report anxiousness compared with their peers.

The longitudinal analyses employed five-point ordinal scales, suggesting underlying continuous variables. All outcome variables at T2 were reported by the children. None of the reports on internalizing symptoms at T1 individually explained later victimization in the multivariate analyses. Likewise, when adjusted for emotional symptoms, the informants' reports on victimization at T1 did not predict later emotional symptoms, except that victimization reported by parents was associated with later anxiousness. However, all informants' reports on victimization at T1 still predicted victimization two years later when the reports were adjusted for the internalizing symptoms. The explained variance was low in the multivariate analyses. Combinations of victimization reported by different informants, as well as combinations of anxiousness and victimization, did not substantially add strength to the predictability.

## How Can We Understand the Results?

As for children in Grades 1 through 10, the total prevalence of victimization suggested by the informants was unexpectedly high. Rønning et al. (2009) also found many victimization cases reported by children (39.8%), parents (29.8%), and teachers (17.5%) in their sample of 8-year-old boys. In

this respect, we must bear in mind the worldwide large decrease in perceived victimization after the first years at school (Smith & Madsen, 1999). Therefore, the prevalence estimate of 39% is high for the age span of 7–16 years.

Previous studies have typically presented prevalence estimates individually for one, two, or more groups of informants, and to obtain an assessment of the degree of concordance, the researchers analyzed bivariate correlations (Holt et al., 2009; Ladd & Kochenderfer-Ladd, 2002; Nuijens et al., 2009; Rønning et al., 2009; Williford et al., 2015; Zwierzyńska et al., 2013). No previous publications have shown the total numbers of three groups of informants reporting on victimization, as displayed in Figure 1, Box a. This box – with overlapping numbers (agreement) and non-overlapping numbers (disagreement) – clearly shows the challenges related to specificity and sensitivity. Taking the children's reports as the gold standard, the Venn diagrams indicate low specificity as well as low sensitivity for both parents and teachers, resulting in many false positives and false negatives. Some children were labelled as victimized by parents or teachers without agreeing on the labelling (false positives), while other children perceived victimization without being recognized (false negatives). In such a situation, one could either discuss the choice of the gold standard or dig deeper into the relationships between reports of internalizing symptoms and victimization. This paper follows the last option, attempting to understand some of the relationships.

### **New Insights**

Because children confirmed victimization in less than half of the cases reported by the parents, it does not appear reasonable to assume that the parents' indications of victimization alone are the strongest link to, for instance, later anxiousness. There may be some clues in this complexity, which need to be explored in more detail.

The parents who thought they had a victimized child at T1 seemed to be strongly concerned about the child's mental health, as they simultaneously reported high odds of anxiousness and sadness, and the same can be argued for teachers. Significant adults may experience challenges in interpreting children's emotional expressions, especially the causes behind a child's emotional expression. At least, findings in two previous studies (Rønning et al., 2009; Zwierzyńska et al., 2013) may support this suggestion.

In the study by Rønning et al. (2009), psychiatric disorders (information based on military register data) between the ages of 18 and 23 seemed at first glance to be predicted by child-, parent-, and teacher-reported early victimization. However, adjusting for early pathology measured by Rutter's parent and teacher scales, the analyses showed that sum scores of the parents' and teachers' scores fully attenuated the association of victimization with later pathology. As the agreement in reports on victimization at the first point of measurement (children aged 8) was rather low ( $\kappa$  in the range 0.11–0.22), the significant adults might have assumed that a child was victimized when they saw signs of other problems.

Likewise, in the study by Zwierzyńska et al. (2013), it is reasonable to question what the teachers saw or knew and what they anticipated or interpreted when they reported on victimization in children aged 7 through 9. Those early reports by teachers showed strong associations with the parents' reports on negative emotionality in early adolescence. Like Rønning et al. (2009), this study found a rather low concordance in reports of victimization by parents, teachers, and children ( $\kappa$  in the range 0.09–0.19) at the first measurement. Hence, the teachers might have assumed victimization in children with signs of bad well-being even though some of the children did not perceive victimization themselves.

The present study may also shed some light on the results of previous longitudinal cohort studies (see Arseneault, 2018) by asking what the factors were that led adult informants to report victimization in children. For instance, what were the signs that led parents to suggest bullying victimization in children who about 40 years later had poor self-reported health and a higher prevalence of psychiatric disorders than those who were not reported as victimized by parents (Takizawa et al.,

2014)? It must be added that those associations were adjusted for teacher-reported internalizing and externalizing problems and a range of other relevant covariates. Nevertheless, for some parents, their report on victimization might be confounded by emotional distress in the child caused by other factors than bullying victimization. The low concordance of reported victimization in the present study (in line with the results of other studies, e.g., Rønning et al., 2009; Shakoor et al., 2011; Williford et al., 2015; Zwierzyńska et al., 2013) together with elevated levels of reported anxiousness in children indicated as victimized, support the suggestion above regarding the longitudinal cohort study. Correspondingly, misinterpretations may be central in other publications reporting on adult indicated victimization and later psychopathology in the children.

The findings by Rønning et al. (2009) teach us the importance of adjusting for highly relevant factors, as in their study a composite factor of parent and teacher scores. This methodological issue might explain some of the variety in reported stability of victimization (Pouwels, Souren, et al., 2016) as well as variety in the results of longitudinal relationships between emotional problems and victimization (Kochel et al., 2012; Reijntjes et al., 2010; Vaillancourt et al., 2013) and, vice versa, between victimization and emotional problems (Cosma et al., 2017; Vaillancourt et al., 2013; Zwierzyńska et al., 2013). The mentioned methodological issue about relevant adjustments is illustrated also in the present study where we in the longitudinal analyses (Table 2) saw that each of the reported adversities typically was associated only with the same adversity.

As the children in the present study seemed to agree with the significant adults on anxiousness but not on sadness, it is possible that hidden or expressed anxiousness was the most prominent emotion in the group of 140 children. Other publications (Bor et al., 2014; Merikangas et al., 2010) support this suggestion by demonstrating a high prevalence of anxiety disorders in populations of children and adolescents.

What are typical signs of anxiousness in children? Based on common sense, we know a lot about possible signs – both signs of the internalizing and the externalizing variety. These include nightmares, difficulties in sleeping, fear, crying, and anger. Do some of these signs or other signs lead parents or teachers to assume that a child is victimized? Saying the child is victimized implies that the pain is caused by others, such as its peers. Because most of the 140 children did not agree with the significant adults on being victimized, there are reasons to believe that the children's anxiousness was partly caused by other adverse factors than peer victimization. Regarding this concern, previous research has shown associations between anxiousness, perceived academic problems, and loneliness (Løhre et al., 2010a).

The suggestion above about confounding factors that are not included in the study is supported by the results in Table 3, with the sum scores of anxiousness and victimization offering no further explanation of later internalizing symptoms or victimization compared with the associations in Table 2. Also, the low percentages of explained variance in the linear regression models illustrate the empty space of not included confounding factors. Summing up, our knowledge is scarce and inadequate on concordance in reports of victimization and internalizing symptoms. Further, we need to know more about adverse factors that may cause anxiousness in children, and we need to elaborate on the relationship between children's anxiousness and signs that can make adults suspect peer victimization.

### **Strengths and Limitations**

The informant triangulation represented by three groups and visually displayed in Figure 1 is essential to this paper. Also, the time span of 24 months between the two measurements is a crucial aspect of this study. These methodological advantages made it possible to generate new insights by combining the results from cross-sectional and longitudinal analyses: The low concordance in reports on victimization invites critical discussion on sensitivity and specificity, and the high levels of anxiousness in children reported as victimized question whether emotional expressions of anxiousness may lead significant adults to suspect peer victimization in children.

A weakness of this study is the relatively small sample. More participants from both urban and rural schools could have strengthened the results. Despite the limited number of participants, the external validity of the results is supported by published studies reporting on concordance in reports on victimization (Holt et al., 2009; Ladd & Kochenderfer-Ladd, 2002; Nuijens et al., 2009; Rønning et al., 2009; Shakoor et al., 2011; Williford et al., 2015; Zwierzyńska et al., 2013), showing low to moderate informant agreement. The data collection methodology may have ensured reliable answers from the participants. However, dichotomizing the ordinal scales leads to loss of information, and applying one item questions to measure adversities might be a limitation. Further, shared method variance could be a problem in the analyses, but this is considered to be of minimal importance as the results showed no stronger predictive estimates for the children than for the parents or teachers in the longitudinal associations.

## Conclusion

The paper offers new insights into victimization and anxiousness in school-aged children by assessing informant agreement in reports on victimization and by exploring associations with internalizing symptoms, both current symptoms and those that are reported after two years. The informants – children, parents, and teachers – reported altogether that four in ten children were victimized. The concordance was low: The Venn diagram displayed agreement between the three groups of informants in only 14% of the cases reported as victimized. In contrast to the low concordance on victimization, the informants surprisingly agreed on elevated levels of anxiety. The informants indicated that the children reported as victimized were two to four times more anxious than their peers. The longitudinal analyses showed that early anxiousness and sadness as well as victimization were typically associated with the same adversity in the children's self-reports two years later, and the explained variance was low.

The low agreement, which is in line with previous research (e.g., Rønning et al., 2009; Williford et al., 2015; Zwierzyńska et al., 2013), together with the apparently high prevalence, calls for attention. In this situation, the risk of false negatives and false positives is obvious. Because perceived victimization may seriously harm individuals (Arseneault, 2018; Hawker & Boulton, 2000; Kwan et al., 2020), schools and communities need to take caution in assessing peer victimization.

At the same time, anxiousness in children calls for attention. The results give rise to the hypothesis that signs of anxiousness may contribute to assumptions about peer victimization. Further, the longitudinal results showed that adversities reported by any of the informants at T1 explained little of the variance in anxiousness at T2. Poorly explained variance indicates that factors not included in the analyses contributed to anxiousness. Therefore, significant adults at home and in schools must be advised to communicate with each child to understand what the child experiences as adverse factors influencing anxiousness as well as what causes perceived victimization.

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## ORCID

Audhild Løhre  <http://orcid.org/0000-0002-8653-3179>

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