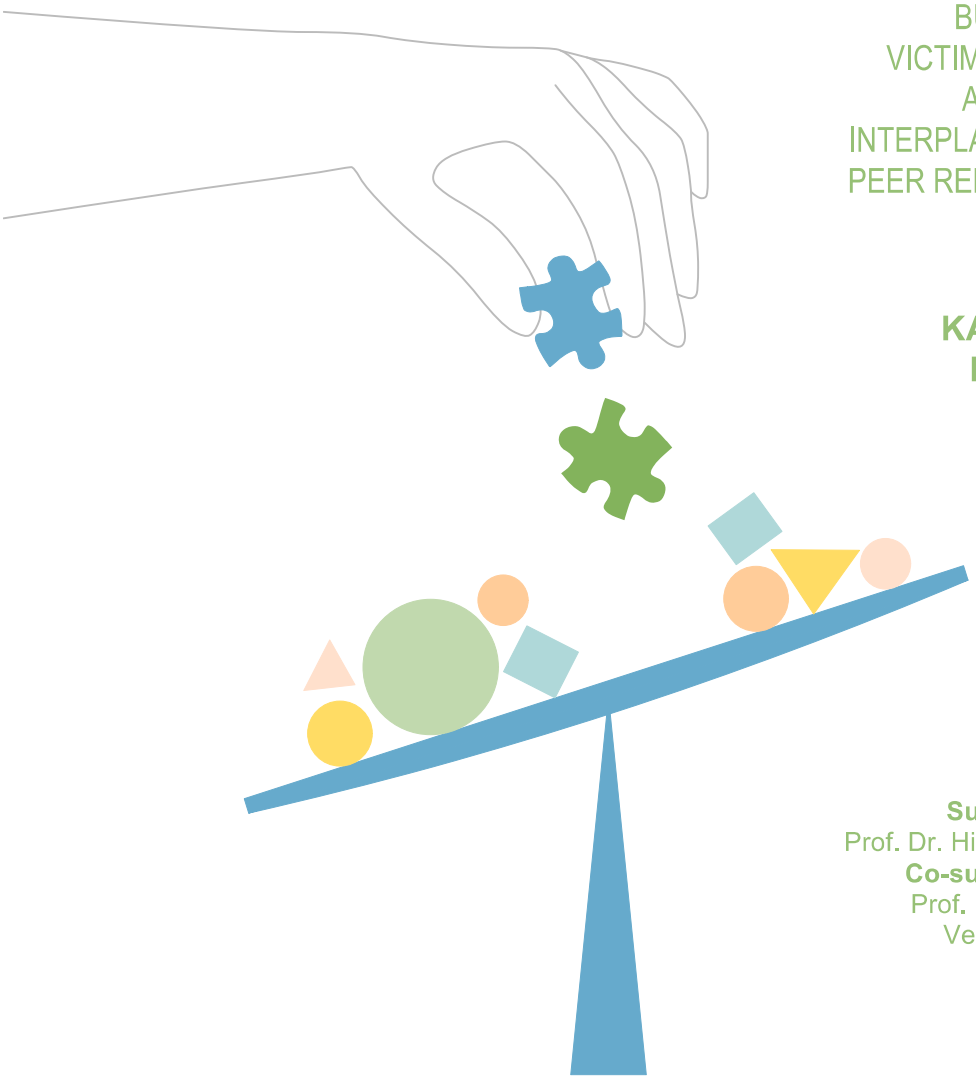
THE MULTIFACETED ROLE OF TEACHERS IN BULLYING VICTIMIZATION AND THE INTERPLAY WITH PEER RELATIONS

KARLIEN DEMOL



Supervisor:
Prof. Dr. Hilde Colpin
Co-supervisor:
Prof. Dr. Karine Verschueren

DOCTORAL THESIS OFFERED TO OBTAIN THE DEGREE OF DOCTOR IN PSYCHOLOGY

KU LEUVEN
SCHOOL PSYCHOLOGY AND DEVELOPMENT IN CONTEXT
FACULTY OF PSYCHOLOGY AND EDUCATIONAL SCIENCES

2021

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Supervisor

Prof. Dr. Hilde Colpin

Co-supervisor

Prof. Dr. Karine Verschueren

Members of the jury

Prof Dr. Benoît Galand	UCLouvain, Belgium
Prof. Dr. Jantine L. Spilt	KU Leuven, Belgium
Prof. Dr. Yvonne H. M. van den Berg	Radboud University, The Netherlands

Cover design

Lien Janssens

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Karlien Demol (2021). **The multifaceted role of teachers in bullying victimization and the interplay with peer relations**
Supervisor: Prof. Dr. Hilde Colpin, Co-supervisor: Prof. Dr. Karine Verschueren

Children's right to be protected from all forms of violence is seriously threatened by the problem of bullying in schools. Being the target of repeated and intentional aggressive acts by more powerful peers is related to a wide range of detrimental outcomes in the short and long run. Therefore, bullying prevention and intervention are crucial. Adopting a socio-ecological perspective, this dissertation aims to gain insight into two facets of the understudied role of teachers in bullying victimization: teachers' affective relationships with students and teachers' responses to bullying. Additionally, as students interact simultaneously with teachers and peers in classrooms, this dissertation aims to shed light on the role of peer relations and the interplay with teacher-student relations in predicting victimization.

Two main objectives are investigated in four studies in the fourth to sixth grade of elementary school. In Part I, two longitudinal studies (N_1 = 692; N_2 = 930) aim to provide more insight into the role of affective teacher-student relationships and peer relationships in relational and physical bullying victimization. Whereas Study 1 adopts a variable-oriented approach and investigates transactional associations among these variables, Study 2 adopts a person-oriented approach and examines differences in teacher-student and peer relations between empirically-derived victimization trajectory classes. In Part II, two experimental vignette studies (N_3 = 251; N_4 = 910) aim to unravel whether perceived teacher responses to bullying affect students' bullying-related cognitions (e.g., teacher bullying attitudes) that are hypothesized to mediate the relation between teacher responses and bullying processes.

In Part I, we demonstrate that peer and teacher-student relationships uniquely contribute to bullying victimization over time (Chapter 1). Low social status in the classroom is linked with more victimization across the school year (Chapter 1, Chapter 2). Additionally, low-quality teacher-student relationships earlier in the school year predict more victimization later on (Chapter 1). Thus, a first way to prevent and reduce bullying is ensuring positive social relations in the classroom. In Part II, we demonstrate that teachers' responses to bullying influence students' bullying-related cognitions (Chapter 3, Chapter 4). Especially active responses in which bullies are corrected have strong effects on student cognitions, and can, in turn, have beneficial effects on bullying processes in the classroom. Thus, a second way to prevent and reduce bullying is to increase teachers' awareness regarding the possible effects of their responses to bullying on student cognitions, and to ensure that teachers are well-prepared to respond effectively. The dissertation presents several avenues for future research to shed further light on the multifaceted role of teachers in bullying victimization in order to promote the well-being of children at school.

Karlien Demol (2021). **De veelzijdige rol van leerkrachten bij pesten onder leerlingen en de wisselwerking met peer relaties**
Promotor: prof. dr. Hilde Colpin, Copromotor: prof. dr. Karine Verschueren

Het recht van kinderen om te worden beschermd tegen alle vormen van geweld wordt ernstig bedreigd door het probleem van pesten op school. Herhaaldelijk het doelwit zijn van opzettelijk agressief gedrag door machtigere leeftijdsgenoten is gerelateerd aan verscheidene nadelige gevolgen op korte en lange termijn. Pesten moet daarom zoveel als mogelijk verminderd en vermeden worden. Dit proefschrift biedt vanuit een socio-ecologisch perspectief meer inzicht in twee aspecten van de rol van de leraar bij pesten: affectieve leraar-leerling relaties en reacties op pestincidenten. Aangezien leerlingen in de klas tegelijkertijd interageren met de leraar en klasgenoten werpt het ook een blik op relaties met klasgenoten en de combinatie van deze relaties met leraar-leerling relaties in de voorspelling van slachtofferschap van pesten.

In vier studies in het vierde tot zesde leerjaar worden twee hoofddoelen bestudeerd. In deel I trachten twee longitudinale studies (N_1 = 692; N_2 = 930) meer inzicht te verschaffen in de rol van affectieve leraar-leerling relaties en peer relaties bij relationeel en fysiek pesten. Terwijl Studie 1 een variabele-georiënteerde benadering hanteert en transactionele verbanden tussen deze variabelen onderzoekt, hanteert Studie 2 een persoonsgerichte benadering en onderzoekt de verschillen in leraar-leerling en peer relaties tussen empirisch geïdentificeerde victimisatie trajectklassen. In deel 2 trachten de experimentele vignetstudies (N_3 = 251; N_4 = 910) de invloed van leerkrachtreacties bij pesten op pestgerelateerde cognities van leerlingen te ontrafelen (bijv. anti-pesthouding van leraren) waarvan verwacht wordt dat zij het verband tussen leerkrachtreacties en pestprocessen mediëren.

Deel I toont aan dat leraar-leerling en peer relaties elk op een unieke wijze bijdragen aan slachtofferschap doorheen de tijd (hoofdstuk 1). Een lagere sociale status in de klas hangt samen met meer slachtofferschap tijdens het schooljaar (hoofdstuk 1, hoofdstuk 2). Bovendien voorspellen lage kwaliteit leraar-leerling relaties eerder in het schooljaar, meer slachtofferschap datzelfde jaar (hoofdstuk 1). Een eerste manier om pesten te voorkomen of te verminderen is dus zorgen voor positieve relaties in de klas. Deel II toont aan dat leerkrachtreacties bij pesten verscheidene pestgerelateerde cognities van leerlingen beïnvloeden (hoofdstuk 3, hoofdstuk 4). Vooral actieve reacties waarbij pesters worden gecorrigeerd, hebben een sterk effect op leerling cognities en dit kan, op zijn beurt, gunstige gevolgen hebben voor pestprocessen in de klas. Een tweede manier om pesten te voorkomen of te verminderen is dus het bewustzijn van leraren vergroten over de mogelijke effecten van hun reacties op leerlingcognities, en zorgen dat leraren goed voorbereid zijn om adequaat op pesten te reageren. Het proefschrift bevat aanbevelingen voor toekomstig onderzoek om het inzicht in de veelzijdige rol van de leraar bij pesten verder uit te diepen, om zo het welzijn van kinderen op school te bevorderen.

Tijdens m'n opleiding Psychologie leerde ik over de gunstige effecten van dankbaarheid voor ons welbevinden. Er zijn maar weinig momenten zo geschikt als deze om mijn dankbaarheid te uiten. Daarom heb ik, net als mijn voorgangers, een uitgebreid dankwoord voorbereid. Ik zal dit moment gebruiken om mensen te bedanken die op een meer directe of meer indirecte manier bijgedragen hebben aan dit doctoraat. Ondanks dat m'n goesting groot was om een mooi dankwoord in elkaar te knutselen, bleek het toch een moeilijkere opgave dan gedacht. Ik heb geprobeerd om er het beste van te maken.

Ik wil beginnen met het bedanken van mijn collega's bij SCenO. **SCenO** is een fantastische onderzoeksgroep om in te werken en ik ben heel blij dat ik nog wat langer kan blijven. Een aantal kernwaarden die volgens mij bij SCenO centraal staan, zijn collegialiteit, professionaliteit, feestelijkheid, eigenheid, vriendelijkheid – en zo kan ik nog heel lang doorgaan. Ik had heel deze voormiddag kunnen vullen met het uitspreken van de dankbaarheid die ik voel om te mogen werken binnen deze groep. Ik heb bewondering voor iedereen bij SCenO en ik kan jullie stuk voor stuk om meerdere redenen bedanken. Omdat de tijd beperkt is zal ik in dit dankwoord slechts een deel van de collega's expliciet bedanken. Dit zijn de collega's die op de meest directe manier een rol gespeeld hebben in het werken aan mijn doctoraat en in mijn werkgeluk.

Ik ga beginnen met het bedanken van het Teachers4Victims team, en meer specifiek met mijn promotor **Hilde**. Na het kiezen van m'n afstudeerrichting Schoolpsychologie leerde ik Hilde kennen als een lieve prof die begaan was met haar studenten en veel warmte koestert voor schoolpsychologie. Als onderwerp voor de masterproef kreeg ik mijn vierde keuze. De masterproef had Hilde als promotor, en jullie raden het nooit, bestudeerde pesten op school. Ik ervaarde Hilde haar begeleiding bij de masterproef als heel betrokken en deskundig, en naar mijn eigen verbazing vond ik het werken aan de masterproef nog niet zo'n onaangename ervaring. Een lang verhaal kort: Karine en Hilde waren succesvol geweest in het binnenhalen van een project rond pesten en ik had het geluk om hierop aangenomen te worden als doctoraatsstudent in 2017. Tijdens de afgelopen vier jaar mocht ik Hilde haar betrokkenheid en deskundigheid op een nog intensere manier ervaren. Hilde, ik ben jou heel dankbaar. Ik heb zoveel van jou geleerd. Jouw constructieve feedback en aanmoedigende woorden zijn van onschatbare waarde geweest. Ze gaven me telkens weer goesting om verder aan de slag te gaan en m'n werk te verbeteren. Daarnaast wil ik je ook bedanken voor je begrip en medeleven wanneer ik niet kon werken om voor een zieke Jules te zorgen. Jouw manier van

leidinggeven en vertrouwen in mij zorgen ervoor dat ik m'n verschillende rollen goed kan combineren. Dank je wel. Ik heb echt genoten van onze samenwerking en ik ben blij dat we deze nog verder kunnen zetten.

En over samenwerking gesproken, samen met **Karine** vorm jij een geweldig team. Jullie vullen elkaar mooi aan en de overlegmomenten met ons gedrieën hebben een cruciale rol gespeeld in het vorm krijgen van m'n doctoraat. Karine, ik bewonder je voorliefde voor schoolpsychologie, en je grote deskundigheid op zowel theoretisch als methodologisch vlak. Ik wil je bedanken voor al het meedenken. Jouw adviezen waren vaak heel helpend (of zelfs noodzakelijk) in het doorhakken van knopen. Daarnaast wil ik ook jou bedanken voor al je aanmoedigende woorden en complimenten.

En dan ben ik aangekomen bij het "Teachers4Victims – K3 – top team", Isabel en Fleur. **Isabel**, afscheid nemen van jou kwam zwaar binnen. Dat was natuurlijk niet geheel onverwacht want we hebben vier jaar intensief samengewerkt. We zijn meer geworden dan allerbeste collega's. We werden ook echte vriendinnen. Kom alsjeblieft nog vaak bij ons logeren, en nodig ons ook uit bij jou aan de overkant. Gesproken over de overkant… Iets minder dan een jaar na onze start, vervoegde **Fleur** ons team. Wat een aanwinst! Al vanaf het eerste moment in Utrecht klikte het tussen ons drieën. En wat lijkt dat moment al een eeuwigheid geleden… Er is zoveel gebeurd in de tussentijd, niet alleen op werkvlak, maar ook op privévlak. Fleur, het leven stelt jou voor hele grote uitdagingen. Maar jij slaat je erdoor, dat heb je al gedaan en dat zal je nog doen. Voor mij ben je een echte power woman. Voor de toekomst hoop ik van ganser harte dat het leven nog grote porties geluk voor jou in petto heeft. Dat verdien je ongelofelijk hard. **Fleur** en **Isabel,** samen waren we een topteam. Ik kon me geen betere collega's wensen om dit project mee te doen en ik hoop dat we vriendinnen voor het leven blijven.

En dan nu, tijd om mij te richten op **bureau 01.51**. Voor de pandemie bracht ik hier met heel veel plezier ongeveer al m'n werktijd door. Onze bureau is een heel aangename werkplek. Niet enkel qua ruimte, maar nog meer door de bureaugenootjes die de ruimte vullen. **Laura**, wat een geluk heb ik om over jou te mogen zitten. Ik ken je als een harde werker die tot het uiterste kan gaan, maar ook als iemand die het persoonlijke altijd op de eerste plaats zal zetten. Ik bewonder hoe begaan je bent met collega's en hun welbevinden. Daarnaast bewonder ik hoe lief je bent en steeds de juiste woorden en daden klaar hebt om mij en anderen te steunen wanneer het minder loopt. Dank je wel daarvoor. Ik hoop dat je een mooie toekomst tegemoet gaat die helemaal past binnen het

plaatje dat je voor ogen hebt. En wat een geluk heb ik gehad om naast **Flore** op de bureau te mogen zitten. Wat hebben we samen veel gelachen, gebabbeld, gesnoept, maar ook hard gewerkt. We waren elkaars steun en toeverlaat. Ik bewonder je doorzettingsvermogen, ambitie, ondernemingszin en multiculturaliteit (dit woord bestaat denk ik niet, maar ik vind het echt duidelijk en passend). Ik wil je bedanken voor je warmte, voor hoe begaan je bent met mij en anderen en voor je grote gastvrijheid. Ik ben blij dat we nog enkele momenten samen beleefd hebben op de bureau en hoop dat er nog velen mogen volgen. En dan mijn vroegere schuinoverbuur en ex-collegaatje, **Sofie**. Enkel met ons tweeën op de bureau zijn, was een risico. We konden dan wel eens vervallen in babbelen over van alles en nog wat, en over m'n diepste geheimen. Ik was nog maar een paar weken zwanger van Jules en ik kon het niet geheim houden voor jouw hypersensitieve voelsprieten. Dank je wel dat je zo'n geweldige bureaugenoot was. **Leni**, je was nog maar net gestart bij SCenO, en het leek al alsof je er altijd was geweest. Zo goed paste je in de groep en in onze bureau. Ik ben dankbaar om de bureau te mogen delen met iemand die zo lief en begaan is met anderen. **Tine**, je brengt zoveel warmte in onze bureau. Ondanks je drukke bezigheden op het werk en in je privéleven heb je altijd nog ruimte vrij voor ons. Je empathie is gigantisch en je hebt altijd de juiste woorden klaar. Dank je wel voor al jouw aanmoedigingen. **Alicia**, je ken je als een harde werker en een geweldige mama van je twee dochters. Ik vind het altijd leuk als je de tijd vindt om aan te sluiten bij de lunch en bakkie troost "vergaderingen", en je was van harte welkom op onze bureau. Dank je wel voor al je tips en je hulp bij m'n laatste paper. **Judith**, **Lore** en **Julie**, m'n drukke werkplanning en corona hebben tijd gestolen om elkaar al goed te leren kennen. Ik kijk dus uit naar de komende maanden en activiteiten samen met de groep en onze bureau om jullie beter te leren kennen.

En dan **FINK**. Ik had het geluk om ongeveer gelijktijdig met Flore, Nina en Isabel aan m'n doctoraat te starten. Samen deden we veel leuke uitjes. Ik hoop dat er nog veel mogen volgen. Flore en Isabel kwamen in dit dankwoord al aan bod, maar Nina verdient hier nog een mooie plaats. **Nina**, ik ken niemand die zoveel liefde koestert voor anderen en dit ook zo duidelijk toont. Ik bewonder hoe trouw je blijft aan jezelf en ik kijk echt op naar wie jij bent. Dank je wel om altijd die lieve zelve te zijn.

En dan zijn er nog een aantal collega's bij **SCenO** die ik ook nog een bijzondere vermelding wil geven. **Liesbet** en **Martine**, jullie mogen niet ontbreken in dit lijstje. Hoewel ik volgens veel collega's een administratief wonder ben, zijn jullie niet te

overtreffen. Ik ben jullie dankbaar voor al de hulp die jullie mij geboden hebben en voor jullie harde werk in de achtergrond om ons werk mogelijk te maken. **Koentje**, Adriaan en ik konden ons geen betere ceremoniemeester wensen voor onze trouw. Ik vind je een zalige collega. Ik hou van je humor en bewonder je kennis en kunde. Blijf alsjeblieft altijd je absurde zelf. **Lien** & **Nina S**, jullie zijn zo'n leuk duo en ik ben blij dat jullie elkaar gevonden hebben. Bedankt om mij up-to-date te houden over de laatste trends op sociale media. Lien, bedankt om de werkdruk op peil te houden door je bezoekjes, de organisatie van ontspannende activiteiten en verhalen tijdens de lunch. Nina, ik bewonder de kennis die je hebt over werkelijk alles, je stoerheid en je kritische stem. **Chloë**, een echte aanwinst voor het verdere onderzoek naar pesten in onze groep. Je bent altijd zo vriendelijk, enthousiast, spontaan en supporterend voor anderen. Dank je wel daarvoor! **Liedewij**, binnen de opleiding schoolpsychologie leerde ik je al kennen als een behulpzame, slimme medestudente. Nu als collega is dit zeker niet anders. Bedankt voor je bereidheid om de liedjes voor de collega's in te zingen. Ik wil jou en Simon al het beste wensen voor jullie zoontje die onderweg is. **Katrien**, bedankt voor al jouw praktische werkgerelateerde tips en ook voor jouw tips rond gezinsplanning. Hier heb ik veel aan gehad. Then, last but not least, my **Finnish colleagues**: Christina, Tiina, Marita, Sonja, Oskari, Virpi, and Johanna. I really enjoyed my research stay in your group. I experienced very warm feelings when I was back in Turku a month ago. It was really nice to see many of you again, and to meet new team members. **Christina**, thank you for welcoming me with open arms and for all your interesting advice and suggestions to improve my work. I am looking forward to our upcoming collaboration. Before I move to express my gratefulness for members of my personal environment, I want to thank **Stefan Ramaekers** for chairing my defense, and the members of the jury: **Yvonne van den Berg, Benoît Galand,** and **Jantine Spilt**, for reading my dissertation and challenging me with their interesting questions.

Dan ben ik nu aangekomen bij m'n **vriendinnen**: the girls, de gezellige groep en ex-celsior. Dank jullie wel voor jullie gigantische enthousiasme om op Jules te babysitten waardoor ik m'n proefschrift kon afwerken in de zomer en ook kan genieten van ontspannende activiteiten. Hier wil ik meteen ook even onze geweldige **crèche** bedanken. Jullie zorgen zo goed voor Jules en hij amuseert zich geweldig goed bij jullie. Wij kunnen Jules met alle vertrouwen naar de crèche laten gaan en ons ding doen op het werk. Dat is heel veel waard. In het bijzonder wil ik ook nog **Lien** bedanken. Ze maakt deel uit van elke vriendinnengroep die ik opsomde en ze ontwierp de cover van m'n doctoraat.

En dan nu volgt er nog een hele grote dankjewel voor m'n **familie** en **schoonfamilie**. Op verschillende manieren hebben jullie een niet te overschatten bijdrage geleverd aan mijn werk de afgelopen vier jaren. Jullie creëren de omstandigheden waarin het mogelijk is om te werken en dit goed te kunnen combineren met een gezin. Ten eerste hielpen jullie mee aan het creëren van een thuis in Leuven. Niet enkel blijkt ons huis een heel geschikte thuis voor ons gezinnetje, maar het bleek ook een geschikte werkplek tijdens pandemie. Ten tweede kunnen wij altijd op jullie rekenen om op Jules te passen. Deze steun is onmisbaar en wij prijzen ons heel rijk met zo'n goede opvang voor Jules. Ten derde zorgen jullie ervoor dat wij elke week onze voetjes onder tafel kunnen schuiven voor een uitgebreide, lekkere en gezonde maaltijd. Ook dit is voor ons van onschatbare waarde. Liefste **schoonfamilie**, tien jaar geleden ontvingen jullie mij met open armen in jullie grote gezin. Ik prijs me heel gelukkig met zo'n leuke schoonfamilie en ik kijk ernaar uit om Jules samen met zijn neefjes Flor en Nand verder te zien opgroeien. Liefste **mams** en **paps**, door mijn opleiding weet ik hoe belangrijk de omstandigheden zijn waarin kinderen kunnen opgroeien. Jullie gaven mij de beste opstart in het leven die ik kon krijgen en daar ben ik jullie heel dankbaar voor. Liefste **pepson**, we hebben het altijd goed met elkaar kunnen vinden als broer en zus. We waren goede speelkameraadjes voor elkaar en konden af en toe ook goed ruziemaken zoals alleen broers en zussen dat kunnen (en moeten doen). Je was m'n getuige op de trouw en je bent nu ook de peter van Jules. Ik kijk ernaar uit dat onze kleine professor jou, een grote professor vol engagement voor jeugdwerk, beter zal leren kennen.

Dan, ten slotte, **Adriaan** en **Jules**. Ze kwamen al vaak aan bod tijdens dit dankwoord, maar nu is het echt tijd om mijn gezin te bedanken. Jullie zijn het allerbelangrijkste voor mij. Alles verdwijnt in het niets als het zonder jullie zou moeten zijn. Ik prijs me zo gelukkig dat ik jullie heb. **Adriaan**, we zijn heel verschillend op sommige vlakken, maar vormen ook een grote match. Samenwonen, trouwen, een huis verbouwen en een kindje kopen, we doorstaan het allemaal op piekfijne wijze. Bedankt om altijd aan mijn zij te staan. En **Jules**, je maakte de droom waar die ik al koesterde als kind: mama worden. Ik kijk er naar uit om jou te zien opgroeien en nog veel avonturen samen te beleven.

Zo, officieel mogen de laudatio en dankwoord samen maximum 15 minuten duren. Ik hou me graag aan regeltjes, maar deze heb ik in de wind geslagen. Nu is het klaar. Bedankt allemaal!

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INTRODUCTION

The fundamental right of children to be protected from all forms of violence is seriously threatened by the problem of bullying in schools (Greene, 2006; UN General Assembly, 1989). School bullying is an important concern within our society, in particular for educators, parents and, above all, for children themselves. Children who are bullied by peers at school are at increased risk of experiencing various detrimental outcomes that can persist into adulthood (Arseneault, 2018). Therefore, it is crucial to identify ways to prevent and reduce bullying and victimization at school.

In line with the socio-ecological framework of bullying, researchers have examined the role of peers and teachers in bullying processes (Thomas, 2021). Whereas considerable insight into the role of peers has been obtained, the role of teachers is not well documented (Yoon et al., 2020). This doctoral project aims to improve insight into two facets of the largely undiscovered role of teachers in bullying processes. The first facet pertains to *teachers' affective relationships with students*. Several research objectives related to this facet will be pursued. For instance, this dissertation aims to uncover the extent to which teacher-student relationships contribute longitudinally to victimization, in addition to peer relationships. Additionally, the current dissertation aims to unravel whether empirically derived subgroups of students, based on victimization development, differ with regard to teacher-student relationship quality. The second facet pertains to *teachers' responses to bullying incidents.* This dissertation aims to provide insight into the possible impact of teacher responses to bullying on students' bullying-related cognitions. Overall, this dissertation fills several literature gaps by conducting two longitudinal and two experimental studies. In this way, we can contribute to knowledge for bullying prevention and intervention to help children who are confronted with bullying at school.

In this introductory chapter, state-of-the-art research is briefly reviewed to outline the rationale behind this dissertation. First, we conceptualize the problem of bullying victimization in schools, and discuss its magnitude and possible impact on students' well-being. Second, theory and research regarding affective teacher-student relationships is presented. In this section, we also discuss the role of relationships with classmates in victimization, and the combinative role of these relationships with teacher-student relationships. Third, theory and research regarding teacher responses to bullying is presented. Fourth, we give an overview of the research gaps that are addressed in this dissertation. Fifth and last, the chapters and studies included in this dissertation are described.

Bullying Victimization in Schools

Four decades ago, the work of Olweus (1978) set off research on school bullying (National Academies of Sciences, Engineering, and Medicine, 2016). Olweus (1993) defined bullying as repeated and intentional aggressive behavior towards others who have difficulty to defend themselves. According to this definition, bullying is a subtype of aggression with three defining features: it is *intentional* or goal-directed behavior, occurring *repeatedly* and over time, in *power-imbalanced relationships*. Especially the power imbalance between students who bully and students who are bullied distinguishes bullying from other types of aggression (Volk et al., 2017). Whereas in the early years, research focused strongly on the bully-victim dyad, later on, it became clear that bullying should be considered as a group process in which all students are involved as bystanders (Salmivalli et al., 1996). Besides bullying others or being bullied themselves, students can assist bullies, reinforce bullies' behavior, defend victimized peers, or remain non-involved outsiders.

Several studies indicated that many students are victimized in multiple ways (e.g., Bradshaw et al., 2015; Nylund et al., 2007). For instance, students can be bullied physically, verbally, or relationally (i.e., when their relationships with others are harmed or threatened to be harmed; Crick & Grotpeter, 1998). Additionally, bullying can happen online (i.e., cyberbullying). These forms of bullying can occur directly, when victimized students know who is targeting them, but also indirectly, when victimized students do not know by which peers they are targeted (Stassen Berger, 2007). The focus of this dissertation predominantly lies on the victimization side of bullying. More specifically, we focus on traditional ("offline") victimization by both general bullying as well as by relational and physical bullying.

The Magnitude of Bullying Victimization in Schools

Although prevalence rates vary considerably across studies (National Academies of Sciences, Engineering, and Medicine, 2016), several large-scale international studies demonstrated that bullying is a problem that affects the lives of many children worldwide. UNESCO (2019) summarized the findings of eight international studies and concluded that 32% of the 9 to 15-year-old students had been bullied by their peers at least once in the last month. In Europe, this was one student in four and, in Flanders, one in five.

The Impact of Bullying Victimization in Schools

Schools should offer a safe learning environment that not only benefits students' academic functioning, but also their overall well-being (Murray-Harvey & Slee, 2010). However, bullying victimization at school can seriously threaten students' safety and health. There is mounting evidence showing that victimization uniquely and directly predicts various acute and chronic difficulties (e.g., Arseneault, 2018). Several meta-analyses summarized cross-sectional and longitudinal evidence on links between bullying victimization and, for instance, mental health problems such as depression, anxiety, and even suicidal behavior (Christina et al., 2021; Moore et al., 2017; Van Geel et al., 2014), psychotic symptoms (van Dam et al., 2012), psychosomatic problems (Gini & Pozzoli, 2013), non-suicidal self-injury (van Geel et al., 2015), lower self-esteem (Tsaousis, 2016), and externalizing problems (Reijntjes et al., 2011). Further, based on quasi-experimental evidence, the meta-analysis by Schoeler et al. (2018) showed that victimization leads to lower academic achievement and higher internalizing and externalizing problems. Additionally, victimization has been linked to biological effects, such as changes to the neuroendocrine stress response system and increased inflammation (Vaillancourt, 2018). Besides its impact on mental and physical health, victims of childhood bullying are at greater risk for experiencing poor wealth and social relationships in adulthood, even when controlling for early risk factors (e.g., review by Wolke & Lereya, 2015).

Although bullying victimization can increase the risk of suffering from a wide range of problems, heterogeneity in victimization experiences can contribute to differences in the severity of these adverse outcomes (Prinstein & Giletta, 2016). A consistent finding is that students who are bullied to a higher extent and/or for a longer period of time are at higher risk of suffering than students who are bullied to a lesser extent and/or for a shorter period of time (Prinstein & Giletta, 2016). Additionally, research has shown that bullying victimization forms (e.g., physical and relational) are not similarly related to all outcomes (Casper & Card, 2017). Getting more insight into heterogeneity in bullying victimization experiences can help develop tailored interventions to help all victims. However, to our knowledge, no previous studies have investigated links between empirically derived patterns of victimization development, thereby including victimization forms, and social-emotional outcomes.

Summarizing, research has clearly demonstrated that being bullied by peers is not a "harmless rite of passage but throws a long shadow over affected people's lives" (Wolke et al., 2013, p. 1968). Therefore, research on the risk and protective factors of bullying victimization is crucial.

The Role of Teachers in Bullying Victimization

Building on ecological models (e.g., Bronfenbrenner, 1977), a socio-ecological framework of bullying has been developed (Thomas, 2021). Studies adopting this framework have investigated contextual factors as antecedents of victimization, both at proximal and more distal levels around the individual (e.g., Hong & Espelage, 2012). Review studies revealed that, in particular, interactions of children with members of their most immediate social environments predict the likelihood of being bullied and its impact on mental health (for an overview of studies, see Zych et al., 2017). For children and adolescents, schools are crucial immediate social environments with, in particular, the school class as most significant context (Thornberg et al., 2018). Teachers are the responsible adults in class, and are expected to create safe learning environments in which harmful peer interactions, such as bullying, are not tolerated (Yoon & Barton, 2008). However, until recently, teachers have been largely overlooked in bullying research (Troop-Gordon, 2015). As a result, evidence regarding the role of teachers in bullying and victimization is rather limited (Yoon et al., 2020). The current dissertation aims to improve insight into teachers' role in bullying victimization by examining several understudied research questions.

Spotlight on Two Facets of Teachers' Role in Bullying Victimization

Victimization often arises from peer ecologies in classrooms (Brendgen & Troop-Gordon, 2015). Although teachers are not a direct part of these peer ecologies, they can exert a considerable influence on them (Brendgen & Troop-Gordon, 2015). According to the conceptual model of Gest and Rodkin (2011), teachers can affect bullying victimization processes by, on the one hand, the quality of their general interactions with students, and, on the other, network-related teaching practices, such as bullying management strategies. Van der Zanden et al. (2015) provided cross-sectional evidence for this model by showing that both teachers' general interactions with students as well as their bullying management strategies were independently related to students' bullying behaviors. However, studies examining the role of affective teacher-student relationships and teacher responses to bullying are still limited and have yielded mixed, mostly cross-sectional evidence.

This dissertation aims to shed further light on the link between affective teacher-student relationships and victimization development. Additionally, it aims to increase insight into how teacher responses can impact students' bullying-related cognitions.

Facet I: Affective Teacher-Student Relationships

A first way through which teachers can impact bullying and victimization in the classroom is by the relationships they establish with students (Gest & Rodkin, 2011). Scholars have used different models to conceptualize teacher-student relationships (e.g., socialization models, social-motivational models), and each model provides a complementary perspective (Verschueren, 2015). The importance of *affective* teacher-student relationship quality for children's development was largely derived from evidence on parent-child attachment (e.g., Ainsworth et al., 1978; Bowlby, 1969). Research comparing the primary attachment relationship with the teacher-student relationship revealed that teachers can function as ad hoc attachment figures (Verschueren & Koomen, 2012; Zajac & Kobak, 2006). Within the attachment framework, the affective quality of teacher-student relationships is described as the degree to which the interactions are warm and supportive versus the degree to which they are negative and conflicted (Pianta et al., 2003; Verschueren & Koomen, 2012). Accordingly, closeness and conflict are two key dimensions of teacher-student relationship quality that have been distinguished (Pianta et al., 2003; Verschueren & Koomen, 2012). Closeness refers to the degree to which the communication between teachers and students is warm and open, and the extent to which students use teachers as a safe haven. Conflict, on the other hand, refers to the degree to which the interactions between students and teachers are negative and disharmonious. The affective quality of teacher-student relationships is associated with various student outcomes, such as academic engagement and achievement (for a meta-analysis, see Roorda et al., 2017), but also social and emotional development (for a review, see Jennings & Greenberg, 2009; for a meta-analysis, see Lei et al., 2016).

Building on an attachment perspective on teacher-student relationships (Verschueren & Koomen, 2012), researchers have provided several ideas regarding how closeness in teacher-student relationships might be related to lower levels of victimization. They argue that close relationships with caring teachers contribute to students' social skills, including their ability to resolve peer conflicts, such as victimization (Reavis et al., 2010). Additionally, when students have a close relationship with their teacher, they may rely more on them in times of stress (Serdiouk et al., 2016).

Accordingly, they might be more willing to report victimization to them (Eliot et al., 2010). Consequently, teachers may be more aware of victimization and more likely to support victimized students. Contrarily, conflict in teacher-student relationships might be related to more victimization as teachers may be less effective in supporting these students to develop effective skills to manage victimization (Elledge et al., 2016). Additionally, when students make less use of their teachers as a safe haven and do not disclose to them about victimization, it can be harder for teachers to detect and reduce this harmful problem in peer relationships.

Studies have investigated the association between the affective quality of teacher-student relationships and bullying victimization. However, longitudinal studies in elementary school are scarce and have provided inconsistent evidence. For instance, one study demonstrated that higher levels of teacher-reported closeness with fifth grade students was related to lower victimization later in the school year (Serdiouk et al., 2016). However, this was not confirmed in another longitudinal study with fourth and fifth grade students also examining teacher-reported closeness (Troop-Gordon & Kopp, 2011). Nonetheless, cross-sectional evidence supported the idea that victimization is negatively associated with closeness (e.g., Murray-Harvey & Slee, 2010; Raskauskas et al., 2010) and positively with conflict (e.g., Longobardi et al., 2021).

Further, researchers have argued that teacher-student relationships may shape students' peer relationships by referring to the mechanisms of modelling and social referencing (Hendrickx et al., 2016). First, teachers can be role models for students as can be argued from social learning theory (Bandura, 1977). Social learning theory states that children learn novel social behaviors by observing others. More specifically, children use their observations of others' social behavior and its consequences to guide their own behavior (Rubin et al., 2006). In the classroom, social practices and relational skills modelled by teachers set expectations for interactions among students (Farmer et al., 2011; Gest & Rodkin, 2011). It is assumed that students copy teachers' behavior, that is, when teachers show support, students are also supposed to show warmth to each other and to engage in positive peer interactions (Hendrickx et al., 2016). Second, teachers can be social referents for students as can be argued from social referencing theory (Walden & Ogan, 1988). In the classroom environment, teachers' behavior towards a particular classmate provides students with cues on the likability of this classmate and these perceptions guide them in how to relate with this fellow student (Hughes et al., 2001).

A number of studies provided support for the idea of the teacher as a role model (e.g., Weyns et al., 2017) and a social referent for students (e.g., Hendrickx, Mainhard, Oudman, et al., 2017; Mercer & Derosier, 2008). For instance, peer-perceived teacher disliking of students predicted later peer disliking of these students (Hendrickx, Mainhard, Boor-Klip, et al., 2017). Summarizing, based on an attachment perspective and the mechanisms of modelling and social referencing, more supportive teacher-student relationships can be expected to protect students from victimization.

Based on previous evidence, differential links between teacher-student relationship quality and victimization forms, such as relational and physical victimization, can be expected (Troop-Gordon & Kopp, 2011). For instance, studies have demonstrated that, compared to physical victimization, teachers perceive relational victimization as less serious, they are less likely to feel empathy for relationally bullied students, and they are less likely to respond to relational bullying incidents (Bauman & Del Rio, 2006; Yoon et al., 2016). However, potential differential associations between affective teacher-student relationships and victimization forms have rarely been investigated. In addition, as contextual influences can operate differently across groups (National Academies of Sciences, Engineering, and Medicine, 2016), subgroups of victims, for instance identified based on the duration and form of victimization, can be expected to differ regarding the affective quality of teacher-student relationships. However, to our knowledge, no prior studies adopted a person-oriented approach to investigate this.

As classroom processes are dynamic and associations are assumed to be bidirectional (Bronfenbrenner & Morris, 2006), it is also important to investigate whether victimization affects the quality of teacher-student relationships. Due to a strong focus on teachers as socializing agents (Farmer et al., 2011), limited attention has been given to whether peer processes, such as victimization, can predict teacher-student relationships. However, in line with Mercer and Derosier (2008) who found negative effects of peer rejection on teacher's liking of students, similar effects regarding victimization could be expected.

Social relations in the classroom: Investigating peer relationships together with teacher-student relationships

In classrooms, students interact simultaneously with their classroom teacher and with peers. As a result, it is important to not only consider how students' relationships with teachers contribute to victimization, but also their relationships with peers.

In this section, first, theory and research regarding the role of peer relationships in victimization will be presented. Second, the combinative role of peer and teacher-student relationships in victimization will be discussed.

The role of peer relationships in victimization. The peer ecology framework helps to understand the role of peers in victimization (Brendgen & Troop-Gordon, 2015). Peer ecologies are microsystems of students who interact, influence, and socialize one another (Rodkin, 2004). Within these ecologies, bullying is not an isolated phenomenon (National Academies of Sciences, Engineering, and Medicine, 2016). Other peer processes are intertwined with it and could be both risk and protective factors for victimization (National Academies of Sciences, Engineering, and Medicine, 2016; Salmivalli, 2010). Thus, in order to get a better understanding of the development and maintenance of victimization in the class context, other peer processes need to be taken into account.

During the elementary school years, establishing positive relationships with peers and gaining a sense of belonging within the peer group become increasingly important goals for students (Dijkstra et al., 2008; Rubin et al., 2006). Students can develop positive relationships with peers to the extent that they behave in a socially accepted manner. In contrast, students can be rejected when they behave in ways that are judged as less socially competent or normative by the peer group (Rubin et al., 2006). Accordingly, researchers have introduced the concepts of peer acceptance and peer rejection, two dimensions of peer social status, that reflect the degree to which students are liked and disliked by the peer group (Cillessen & Bukowski, 2018).

Students who have a low social status in the peer group (i.e., low levels of peer acceptance, high levels of peer rejection) are at increased risk for being victimized as they may be less protected by peers or more often alone and available as targets for bullies (Hodges & Perry, 1999). Conversely, scholars have argued that victimized students may become less accepted and more rejected because peers may distance themselves from victims in order to protect or enhance their own social standing in the group (Salmivalli & Peets, 2018; Sentse et al., 2015). Indeed, cross-sectional and longitudinal studies demonstrated that lower social status predicted higher levels of victimization, and vice versa (e.g., de Bruyn et al., 2010; Hodges & Perry, 1999; Sentse et al., 2015).

Further, a few cross-sectional studies showed similar associations of peer rejection with relational and physical victimization (e.g., Putallaz et al., 2007). However, this link has not been examined longitudinally in upper elementary school. Evidence concerning how heterogeneous patterns of victimization development are related to peer rejection and peer acceptance is more scarce. Findings from a few person-oriented longitudinal studies show that students who are more rejected by peers, are more likely to belong to a group of students that is characterized by high levels of victimization over time (e.g., Kaufman et al., 2018). However, no previous studies have included victimization forms, such as physical and relational victimization, to examine links between heterogeneous patterns of victimization and peer social status.

The combinative role of peer and teacher-student relationships in victimization. Building on the socio-ecological model of bullying (Thomas, 2021), relationships with peers and teachers are not hypothesized to stand on their own, but are expected to jointly contribute to students' development. While students interact simultaneously with peers and teachers in classrooms, almost all previous studies investigated links between victimization and interactions with only one classroom interaction partner. A few studies investigated the combined effects of relationships with peers and teachers and pointed out the importance of studying them together in the prediction of victimization. For instance, a cross-sectional study showed that the quality of the teacher-student relationship was not directly linked to victimization, but indirectly through its association with the quality of relationships among students (Thornberg et al., 2018). To our knowledge, only one longitudinal study in upper elementary school investigated links of victimization with peer rejection and teacher-student relationships together (Elledge et al., 2016). They found that more supportive teacher-student relationships attenuated the link between lower social preference (i.e., the standardized difference between acceptance and rejection) and victimization.

By investigating links of victimization with peer and teacher-student relationships together, further knowledge will be provided regarding how these relationships jointly impact victimization in class. For instance, it is possible to investigate indirect effects (e.g., whether teacher-student relationships predict victimization via peer rejection) and to examine whether relationships with peers and teachers predict victimization on top of each other.

Facet II: Teacher Responses to Bullying

A second, more direct, way through which teachers can impact bullying processes in the classroom is by their bullying management strategies or their responses to bullying incidents (Gest & Rodkin, 2011). Although teachers are expected to reduce bullying at school, little is known regarding how teacher responses impact victimization and how students perceive these responses (Brendgen & Troop-Gordon, 2015; Troop-Gordon & Ladd, 2015).

Teacher responses can be expected to affect victimization in several ways. First, based on social cognitive theory (Bandura, 1986), students are expected to observe teachers' responses to bullying and think about the meaning behind these responses. Further, building on moral domain theory (Smetana, 2010; Turiel, 1983), students' understanding of moral issues such as bullying may improve when teachers underscore the harm of the behavior (Campaert et al., 2017; Thornberg et al., 2017). Thus, based on these theories, we expect that students observe and think about teachers' management of bullying (Bandura, 1986) which can contribute to students' understanding of bullying (Campaert et al., 2017). Second, with their responses, teachers can model accepted behavior and set behavioral expectations in class (Bandura, 1977; Veenstra et al., 2014). For instance, when teachers repeatedly ignore bullying or when they reject bullies by using a harsh, humiliating response, teachers model insensitive and uncaring behaviors (Yoon & Bauman, 2014). Further, by ignoring bullying or by responding more passively, teachers may provide the signal that bullying is tolerated and this may further reinforce the behavior (Elledge et al., 2013; Van der Zanden et al., 2015; Yoon & Kerber, 2003). In contrast, by intervening actively, teachers show that they disapprove of bullying (Van der Zanden et al., 2015).

The handful of studies that investigated associations between teacher responses to bullying (e.g., more active responses, more passive responses and non-responses) and levels of bullying and victimization have not always provided consistent results (Colpin et al., 2021). Generally, it is not clear which responses work best and for what reason. Scholars suggested several mechanisms that might underlie the association between teacher responses and victimization (e.g., Troop-Gordon & Quenette, 2010). More specifically, teacher responses can be expected to affect several bullying-related cognitions of students which, in turn, might influence students' own behavior in bullying. However, few studies have looked into this.

This dissertation aims to investigate whether and how different teacher responses to bullying affect a comprehensive set of student cognitions that are expected to mediate the association with levels of bullying and victimization in classrooms. First, teacher responses may affect students' own cognitions about bullying such as their own bullying attitudes (Salmivalli & Voeten, 2004). For instance, when teachers do not respond to bullying, they may convey the impression that bullying is not a problem and thereby undermine anti-bullying attitudes. Second, teacher responses possibly affect students' cognitions regarding the teacher, such as student-perceived teacher bullying attitudes (Saarento, Boulton, et al., 2015). For instance, when teachers correct bullies, students might perceive that they disapprove of bullying. Third, teachers' responses are expected to affect students' cognitions about future bullying-related behavior of classmates (i.e., participant role behaviors), such as the extent to which classmates will actively bully others or defend victimized fellow students (Salmivalli et al., 1996). For instance, when teachers show a supporting response to victims, students might expect higher levels of defending by peers. Investigating effects of teacher responses to bullying on these student cognitions can provide more insight into how teachers can affect victimization processes.

This Dissertation

This dissertation embraces the socio-ecological framework of bullying (Thomas, 2021) to understand how teachers can affect victimization processes in the classroom. More specifically, this dissertation aims to increase insight into two facets of the understudied and largely undiscovered role of teachers in bullying victimization: teachers' affective relationships with students and teachers' responses to bullying. Several gaps were identified while reviewing the literature and will be addressed.

This dissertation consists of two thematic parts, both including two studies. Part I consists of two longitudinal studies that shed light on the role of affective teacher-student relationships and peer relationships in bullying victimization experiences. Additionally, one of these studies investigates how heterogeneity in victimization experiences is linked to social-emotional outcomes. Part II consists of two experimental studies that shed light on student perceptions and cognitions of teacher responses to bullying.

Throughout this dissertation, bullying victimization is also referred to as peer victimization. Although some studies conceptualized peer victimization in a broader way (i.e., the experience of different forms of aggression by peers), our conceptualization of peer victimization is more narrow as it is based on bullying, which is one specific subtype of peer aggression. Given that several studies found that bullying and victimization peak during middle childhood and early adolescence (Hymel & Swearer, 2015), this dissertation investigates bullying victimization in these developmental periods.

Part I: The Role of Affective Teacher-Student Relationships and Peer Relationships in Bullying Victimization Experiences

Part I consists of two longitudinal studies that together bridge four gaps in the literature. First, although the affective quality of teacher-student relationships is expected to play a role in victimization, few studies provided insight into the direction of effects and into how teacher-student relationships are related to heterogeneity in victimization experiences. On the one hand, the current dissertation aims to provide insight into the temporal links between teacher-student relationships and victimization by conducting a variable-oriented study (Study 1). On the other hand, the current dissertation aims to provide insight into patterns in victimization development and into potential differences between these patterns regarding teacher-student relationship quality by conducting a person-oriented study (Study 2).

Second, while prior research indicated that the quality of students' mutual interactions can affect the quality of students' relationships with teachers, to date, few longitudinal studies examined whether victimization predicts teacher-student relationship quality. The current dissertation aims to provide more insight into these processes for both theoretical and practical purposes (Study 1). For instance, if higher levels of victimization are found to predict more negative teacher-student relationships later on, this should be countered in interventions to support victimized students.

Third, even though students interact simultaneously with teachers and peers in classrooms, almost all available studies have investigated how interactions with either peers or teachers are associated with victimization. In this way, the interplay between peer relationships and teacher-student relationships and their combined effects have been overlooked. The current dissertation aims to provide more insight into the unique, additive effects of relationships with peers and teachers by examining how they predict victimization together (Study 1).

This investigation is particularly interesting in early adolescence as the influence of teachers might be lower in these developmental phase as compared to previous developmental phases (Verschueren, 2015).

Fourth, previous studies indicated that the social antecedents and emotional outcomes of victimization forms may differ. However, most studies investigated whether peer and teacher-student relationships predict victimization in general. The current dissertation aims to provide insight into potential differential associations of peer and teacher-student relationships with physical and relational victimization (Study 1). Additionally, to date, no person-oriented studies identified trajectory classes of victims based on victimization forms to investigate differences between these classes regarding social antecedents and emotional outcomes. The current dissertation aims to shed light on this to help develop tailored interventions to reduce victimization in all its forms (Study 2).

Summarizing, Study 1 and 2 investigate the role of the affective quality of teacher-student relationships and peer relationships in bullying victimization experiences. More specifically, Study 1 investigates the transactional associations among affective teacher-student relationships (i.e., closeness/support), peer relationships (i.e., rejection), and physical and relational victimization, respectively, across one school year. Study 2 investigates differences between empirically derived trajectory classes of relational and physical victimization with regard to peer social status (i.e., acceptance and rejection) and the affective quality of teacher-student relationships (i.e., closeness and conflict) at the beginning of the school year. Additionally, differences between these classes with regard to depressive symptoms and self-esteem at the end of the school year are investigated.

Part II: The Impact of Teachers' Responses to Bullying on Students' Bullying-Related Cognitions

Part II consists of two experimental studies that fill a large gap in the literature. Although a limited number of studies reported associations between teacher responses and the levels of bullying and victimization, to date, it remains largely unclear how exactly teacher responses may impact bullying. In this regard, scholars have suggested that teacher responses might predict student cognitions that are associated with bullying behavior (Menesini, 2019; Troop-Gordon & Quenette, 2010). However, studies are very scarce and correlational in nature. The current dissertation aims to further unravel how teacher responses to bullying can impact victimization by conducting two experimental studies.

Study 3 and 4 investigate how experimentally manipulated teacher responses (in vignettes) influence three sets of student cognitions that are expected to mediate the association with victimization. The studies have a similar design, but focus partly on different cognitions. Both Study 3 and 4 investigate the effects of teacher responses on student cognitions related to the teacher. Study 3 also investigates cognitions that were more distal to the teacher responses, that is, cognitions related to students' own attitudes and behavior. Study 4 does not examine these cognitions, but focuses on student cognitions related to the behavior of classmates.

Overview of Chapters

This doctoral dissertation consists of two longitudinal (Study 1, Study 2) and two experimental studies (Study 3, Study 4; see Table 1). The studies were conducted using three different samples of fourth to sixth grade elementary students. In Flemish schools, students are grouped into classes (of around 15-25 students) in which they follow most of the courses often taught by a single teacher. Often, class compositions remain largely similar over the years of elementary school, but each year, classes get a different teacher. The three-wave data of Study 1 were collected in a previous research project. The data of the other studies were collected in the first and second year of the four-year doctoral period. These data are part of the Teachers4Victims research project that consisted of one longitudinal data collection and two experimental data collections. In the next section, a brief overview of the methodology of the studies is presented.

Part I

The studies in Part I investigate similar constructs (i.e., teacher-student relationships, peer relationships, and bullying victimization) and use data with a similar three-wave one-year longitudinal design (from two different samples). However, a different analytical approach is used. Study 1 adopts a variable-oriented approach to provide evidence on how variables are interrelated over time. Study 2 adopts a person-oriented approach to provide evidence on group differences in patterns of development over time and on links between these patterns and other variables (Laursen & Hoff, 2006). Thus, Study 1 sheds light on between-person differences over time and Study 2 on between-person differences in within-person changes over time (Jung & Wickrama, 2008).

Chapter 1. Study 1 is a three-wave longitudinal study that investigates the transactional associations among affective teacher-student relationships, peer rejection, and physical and relational victimization, respectively. The first aim of this study is to investigate how relationships with peers and teachers together contribute to the prediction of physical and relational victimization over the course of one school year. Second, the study aims to investigate the reverse effect of victimization on relationships with peers and teachers as well.

Data were collected in a joint research project of Thomas More University College and KU Leuven at the beginning, middle, and end of school year 2014-2015. The sample at the first wave consists of 692 students (48.4% girls, age: M = 10.28 years, SD = 0.94, range 7.92-13.14) from 36 classes in 8 elementary schools (35.3%, 33.1%, 31.6% in Grade 4, 5, 6 respectively). Both teacher-student interaction quality (i.e., the degree to which students experience their relationship with the teacher to be close and supportive) and peer victimization are assessed by student self-report. Peer rejection is assessed by peer-report. Cross-lagged structural equation modelling is executed in Mplus 8 (Muthén & Muthén, 1998-2017).

Chapter 2. Study 2 is a three-wave longitudinal study that investigates how two dimensions of dyadic teacher-student relationship quality (i.e., closeness, conflict) and two dimensions of peer social status (i.e., rejection, acceptance) relate to trajectory classes of physical and relational victimization. The first aim is to determine whether discrete classes of students can be identified based on the initial level of relational and physical victimization and the rates of change across the school year. The second aim is to examine how these identified classes differ with regard to levels of peer rejection, peer acceptance, teacher-student closeness, and teacher-student conflict at the beginning of the school year. The third aim is to examine how these trajectory classes differ with regard to depressive symptoms and self-esteem at the end of the school year.

Data from the first to the third wave of the Teachers4Victims longitudinal data collection are used. Students completed questionnaires over the course of one school year (November 2018, February 2019, and April-May 2019). The final sample for this study consists of 930 students (53.1% girls; Wave 1: M_{age} = 10.55, SD = .90, range 8-13 years) from 55 classes in 12 elementary schools. In this sample, 30.9%, 36.0% and 33.1% of the students were in Grade 4, 5, and 6, respectively.

Bullying victimization is assessed by student self-report (Wave 1 – Wave 3). Peer rejection, peer acceptance, teacher-student closeness, and teacher-student conflict are assessed by peer-report (Wave 1). Depressive symptoms and self-esteem are assessed by student self-report (Wave 3). Latent growth modeling (i.e., Latent Class Growth Analyses, Growth Mixture Modeling) is executed in Mplus 8 (Muthén & Muthén, 1998-2017). Additionally, the modified 3-step BCH approach is used to examine differences between the identified trajectory classes (Bakk et al., 2014).

Part II

The studies in Part II are experimental vignette studies unravelling how teacher responses to bullying affect student cognitions that are hypothesized to mediate the association between teacher responses and victimization. Study 4 builds on Study 3 and focuses on outcomes that are more proximal to the teacher responses. Study 3 and 4 have a similar design, use similar analytical techniques, but data from two different samples.

Chapter 3. Study 3 is an experimental vignette study that investigates whether teacher responses to bullying affect student attitudes and cognitions related to bullying. Inspired by other studies in this field (e.g., Campaert et al., 2017; Wachs et al., 2018), this study investigates the effects of four teacher responses to bullying (i.e., non-response, comforting the victim, correcting the bully, and the combination of these two last responses) on several student cognitions (i.e., students' attitudes towards bullying, students' empathy towards victims, students' judgement about the teacher's response, students' perceptions of the teacher's bullying attitudes). In April 2018, data were collected from 251 students (55.8% girls, age: M = 10.86 years, SD = 0.89, range 8.94-12.31) of 18 classes in three schools (33.5%, 35.1%, 31.5% in Grade 4, 5, 6 respectively).

Before reading the vignette, participants had to imagine that they changed schools. Then, the vignette described a bullying incident between two students from their new class and their new class teacher's response to it. Each participant read one vignette that only differed regarding the hypothetical teacher's response (between-subject design with randomization within classes). Following this manipulation, self-report instruments for students were administered consisting of both general measures (e.g., students' bullying attitudes) and story-adapted measures (e.g., hypothetical teacher's bullying attitudes). The statistical analyses consist of ANOVAs, eventually followed by planned or post-hoc comparisons.

Chapter 4. Study 4 builds on the findings of Study 3. The objective of Study 4 is to investigate effects of teacher responses on measures that are more proximal to the manipulation, thus the teacher's response (i.e., students' perceptions of the teacher's bullying attitudes, students' willingness to report bullying to the teacher, students' expectations regarding bullying-related behavior of classmates). Additionally, as students' perceptions of teacher responses can be affected by students' individual characteristics, Study 4 explores whether students' own participant role behaviors in actual bullying (i.e., actively bullying others, reinforcing bullies, assisting bullies, being victimized themselves, defending victimized peers, and remaining non-involved outsiders) moderate the association between teacher responses and their cognitions. For instance, students who are relatively more victimized may be more tuned to teacher responses and interpret them more strongly. As a result, it can be tentatively expected that their cognitions are more strongly affected by the teacher responses in the vignette.

The same teacher responses as in Study 3 are used and the design is similar. Peer nomination data about students' own participant role behaviors in bullying were collected in the third wave of the Teachers4Victims longitudinal data collection and used as a moderator in this study. Two weeks after the third wave, the experimental study took place and students completed the questionnaires about their cognitions. Experimental data from 910 students (55 classes, 11 elementary schools, 47% boys, M_{age} = 11.04 years, SD = .91, range: 9.27-13.95) are available. Of these students, 31.2%, 35.7%, and 33.1% were in Grade 4, 5, and 6, respectively. Self-report instruments for students are used and consist of story-adapted measures and measures developed for the purpose of this study. The analyses are similar to the analyses of Study 3.

Table 1

Overview of Chapters

Chapter	Part	Design	Final sample: *N*	Aims	Main analyses	Main variables (informant)
1	I	Longitudinal	692	▪ Transactional associations among peer and teacher-student relationships, and victimization forms	Cross-lagged modeling	▪ Physical and relational victimization (SR) ▪ Peer rejection (PR) ▪ Affective quality of teacher-student relationships (closeness/support) (SR)
2	I	Longitudinal	930	▪ Victimization trajectory classes ▪ Group differences: relationships with peers and teachers, social-emotional consequences	Latent growth modeling	▪ Physical and relational victimization (SR) ▪ Peer rejection, peer acceptance (PR) ▪ Affective quality of teacher-student relationships (closeness, conflict) (PR) ▪ Depressive symptoms (SR) ▪ Self-esteem (SR)
3	II	Experimental	251	▪ Effects of teacher responses to bullying on students' attitudes and cognitions of the teacher and the response	Analyses of variance	▪ Students' bullying attitudes (SR) ▪ Students' empathy towards victims (SR) ▪ Perceived teacher bullying attitude (SR) ▪ Students' judgement about the response (SR)
4	II	Experimental	910	▪ Effects of teacher responses to bullying on students' cognitions of the teacher and classmates	Analyses of variance	▪ Perceived teacher bullying attitudes and moral disengagement (SR) ▪ Willingness to report bullying (SR) ▪ Expectations regarding hypothetical classmates' participant role behaviors in bullying (SR) ▪ Students' own participant roles in bullying (PR)

Note. SR = students' self-report; PR = peer report (peer nominations).

PART I

The role of affective teacher-student relationships and peer relationships in bullying victimization experiences

Chapter 1

Revealing the transactional associations among teacher-child relationships, peer rejection, and peer victimization in early adolescence

Published manuscript:
Demol, K., Leflot, G., Verschueren, K., & Colpin H. (2020). Revealing the transactional associations among teacher-child relationships, peer rejection and peer victimization in early adolescence. *Journal of Youth and Adolescence, 49*(11), 2311–2326. https://doi.org/10.1007/s10964-020-01269-z

Abstract

Peer victimization is a persistent problem in early adolescents' peer relationships that is related to various difficulties in the short and long run. Previous studies have investigated whether relationships with peers and teachers predict victimization, but to date, few studies have examined the simultaneous contribution of both classroom-based relationships to victimization over time. Therefore, this study investigated how peer rejection and teacher-child relationships uniquely predict peer victimization over the course of one school year in upper elementary school. The transactional associations among teacher-child relationships, peer rejection, and relational and physical victimization were examined in a sample of 692 children (36 classes; M_{age} = 10.28; range: 7.92-13.14; 48.4% female). Teacher-child relationship quality and peer victimization were measured by student self-report, peer rejection by peer-report. Cross-lagged analyses showed that rejection predicted victimization from Wave 1 to Wave 2. In turn, more victimization predicted more rejection throughout the whole school year. More supportive teacher-child relationships predicted less victimization. Additionally, more victimization (Wave 1) predicted less supportive relationships with teachers (Wave 2). Peer rejection and teacher-child relationships were found to have unique, additive effects on victimization in early adolescence over time. Therefore, to effectively intervene in victimization processes, relationships with both peers and teachers need to be considered.

Introduction

Peer victimization, i.e., repeated targeted aggression of peers towards children who have difficulties to defend themselves (Olweus, 1993), is a widespread and persistent peer process that can harm development in various domains (Arseneault, 2018). A recent UNESCO report (2019) covering 144 countries showed that almost one third of the 9- to 15-year-olds were bullied at school at least once in the last month. These youth are at increased risk of experiencing various short and long term negative consequences concerning their mental and physical health, wealth, and social relationships (e.g., Moore et al., 2017). Hence, research on the risk and protective factors for peer victimization at school is critical. Building on social-ecological models (e.g., Bronfenbrenner & Morris, 2006), researchers have demonstrated that interactions with peers (e.g., peer rejection) and teachers (e.g., teacher-child relationships) predict peer victimization over time (e.g., Serdiouk et al., 2016; Serdiouk et al., 2015). However, questions rise on the uniqueness of these longitudinal associations since, in classrooms, children are confronted with peers and teachers at the same time. Only one two-wave longitudinal study has focused on both peer rejection and teacher-child relationships in the prediction of victimization (Elledge et al., 2016). The current study adds to this by using a three-wave design and cross-lagged modelling to examine the transactional associations among teacher-child relationships, peer rejection and, respectively, relational and physical victimization across one school year in fourth to sixth grade of elementary school.

Peer Rejection and Peer Victimization

Peer rejection, i.e., the degree to which children are disliked by the peer group, is a peer process that has been linked to victimization (Cillessen, 2009). First, longitudinal studies throughout elementary school and at the beginning of secondary school have shown that rejected children were more likely to be victimized at a later moment in time (e.g., Hodges & Perry, 1999; Serdiouk et al., 2015). Rejected children can become victimized because they may be less protected by the peer group, less able to benefit from peers' advice on how to handle victimization and more often alone and available as targets for bullies (Hodges & Perry, 1999). Also, bullies are more likely to pick children who are rejected because they can demonstrate their power to the group without having to fear a confrontation (Salmivalli & Peets, 2009).

Second, as classroom processes are dynamic, the associations may be bidirectional (cf. Bronfenbrenner & Morris, 2006) and victimization might also predict rejection over time. For instance, in order to protect or enhance their own status in the group, peers may distance themselves from victims (Salmivalli & Peets, 2009). This was supported by longitudinal studies throughout elementary school and at the beginning of secondary school showing bidirectional associations among rejection and victimization (e.g., Hodges & Perry, 1999; Ladd & Troop-Gordon, 2003). One study with two student cohorts (Grades 3-6 and Grades 7-9) found these bidirectional associations for girls only (Sentse et al., 2015).

Third, research has not been consistent regarding the links between peer relationships and different forms of victimization. This study differentiates between relational and physical victimization to explore the longitudinal links between these forms of victimization and peer rejection. Previous research has indicated that, in general, early adolescents perceive some forms of relational aggression to be less wrong than physical aggression (Goldstein & Tisak, 2010). Also, strong associations between relational aggression and perceived popularity may indicate that, with age, relational aggression is increasingly reinforced in the peer group (Cillessen & Mayeux, 2004). Therefore, it is possible that relationally victimized students are less protected by the peer group and even more disliked than physically victimized students. However, a few cross-sectional studies in the upper grades of elementary school have shown similar positive associations of peer rejection with both physical and relational victimization (e.g., Crick & Grotpeter, 1998; Putallaz et al., 2007). Moreover, no longitudinal studies examining the associations between rejection and different forms of victimization in early adolescence were found.

Teacher-Child Relationships and Peer Victimization

Referring to an extended attachment perspective (Verschueren & Koomen, 2012), a positive teacher-child relationship is described as the degree to which the interactions between a teacher and a student are warm and high in support. This study investigates this relationship dimension from the child's perspective (i.e., the degree to which children perceive their dyadic relationship with the teacher to be close and supportive).

Researchers have argued that teacher-child relationships may shape children's peer relationships, including victimization (e.g., Gest & Rodkin, 2011). This may be explained by social learning theory (e.g., Hendrickx et al., 2016), stating that children learn novel social behaviors by observing others (Bandura, 1977). In classrooms, social practices and relational skills modeled by teachers set the expectations for students' social behaviors (Farmer et al., 2011). For instance, when teachers show support to students, children learn they should also show warmth to each other and engage in positive peer interactions (Hendrickx et al., 2016).

In addition, the role of teacher-child relationships in peer victimization may be explained by attachment theory (Bowlby, 1969). When children have close relationships with teachers, they may perceive that they can rely on them in times of stress (e.g., Serdiouk et al., 2016; Verschueren & Koomen, 2012). This may increase their willingness to report victimization (e.g., Eliot et al., 2010) which enables teachers to intervene and support children. Further, close teacher-child relationships may help children to develop better coping and conflict resolution skills to manage victimization (Reavis et al., 2010). Also, when teachers have close relationships with children, they may be more sensitive to children's needs, notice victimization and intervene more quickly (e.g., Reavis et al., 2010). Further, based on teacher's pet phenomenon, children in upper elementary school who have close relationships with teachers could be less victimized because bullies might perceive a threat of reprisal when picking these students (Elledge et al., 2016).

To date, empirical evidence regarding the longitudinal prediction of victimization by dyadic teacher-child relationships is scarce. One longitudinal study has demonstrated that elementary students with whom teachers reported more positive teacher-child relationships, were less victimized later in the school year (Serdiouk et al., 2016). However, another longitudinal study with 4th and 5th grade students also using teacher report of the relationship did not confirm this (Troop-Gordon & Kopp, 2011). Besides longitudinal evidence, cross-sectional studies throughout elementary school have shown that more supportive teacher-child relationships as perceived by children were associated with lower levels of victimization (Lucas-Molina et al., 2015; Murray-Harvey & Slee, 2010; Raskauskas et al., 2010).

As for peer rejection, the quality of the teacher-child relationship may differentially impact relational and physical victimization (Troop-Gordon & Kopp, 2011). A close teacher-child relationship may be more effective in protecting children from physical victimization as previous research has shown that teachers are less likely to define relational aggression as bullying, feel empathy for relationally victimized children, and intervene in relational victimization (Bauman & Del Rio, 2006; Yoon et al., 2016). However, no studies examining the prediction of different forms of victimization by teacher-child relationships were found.

In turn, victimization may also affect teacher-child relationships. However, due to a strong focus on teachers as socializing agents (Farmer et al., 2011), less attention has been paid to whether peer processes can predict teacher-child relationships. Accordingly, no studies are available that have investigated whether victimization predicts teacher-child relationship quality. On the one hand, building on attachment theory (Bowlby, 1969), teachers can be expected to provide more support to victimized children in their role to function as a safe haven (Verschueren & Koomen, 2012). Accordingly, more victimization could predict more supportive teacher-child relationships over time. On the other hand, social stigmas associated with victimization may reduce teachers' sympathy for and support to these students (Juvonen & Graham, 2014).

Peer Rejection and Teacher-Child Relationships

As indicated above, teacher-child relationships may affect the relationships that children establish with each other (e.g., Farmer et al., 2011). Compared to victimization which refers to behavior occurring within groups, peer rejection refers to an affective reaction held by the peer group (Rubin et al., 2015). Therefore, social referencing theory (Walden & Ogan, 1988) is more suited to explain how teacher-child relationships may affect peer rejection than social learning theory, which was used to explain the associations with victimization. Social referencing theory states that children turn to significant others for cues on how to respond to situations (Walden & Ogan, 1988) and applied to the classroom context, teachers can be social referents for students' affective evaluations of peers (Hendrickx, Mainhard, Boor-Klip, et al., 2017). In classrooms, children typically have many opportunities to observe their teacher's interactions with their classmates. From these observations, children can develop ideas about classmates' academic and social abilities, and desirability as a friend (Hughes & Im, 2016). Then, these perceptions guide them in how to relate with this fellow child (Hughes et al., 2001).

Longitudinal studies have provided support for the idea of the teacher as a social referent regarding peer rejection (Hughes & Im, 2016). For instance, an explicit test of social referencing theory was conducted by Hendrickx, Mainhard, Oudman, et al. (2017). In their study with 5th grade children, they found that observed negative teacher behavior towards children predicted peer perceived teacher disliking of children and this, in turn, predicted later peer disliking of these children. Other studies have provided implicit support for a social referencing effect by showing that earlier teacher behavior (perceived by both children and teachers) predicted peer social preference later on (e.g., De Laet et al., 2014; Mercer & Derosier, 2008).

Vice versa, earlier peer relationships could also predict future teacher-child relationships. As stated above, theories and research regarding the prediction of teacher-child relationships by peer relationships are more limited. However, evidence suggests that teachers form cognitive schemas about children's social status and that teachers look for confirmation of these schemas by behaving in ways consistent with these (often biased) beliefs (Mercer & Derosier, 2008; Nesdale & Pickering, 2006). Accordingly, teachers may develop negative schemas of rejected children which can result in lower teacher support toward these students. However, it is also possible that more peer rejection could predict more supportive teacher-child relationships later on as children experiencing negative peer relationships may try to achieve close relationships with teachers to satisfy their relational needs (Davidson et al., 2010). Also, building on attachment theory (Bowlby, 1969), teachers may increase their support to rejected children in order to protect them from further rejection.

Although, based on theory, peer rejection can be expected to predict both less and more supportive teacher-child relationships over time, evidence is more in favor of the former. A number of longitudinal studies in middle and upper elementary school have found that lower peer social status predicted less teacher support later in time as reported by both students and teachers (De Laet et al., 2014; Hughes & Chen, 2011; Mercer & Derosier, 2008). For instance, children who were rejected, were less liked by the teacher later on. Additionally, children who were less liked by their teachers in Grade 3, were more rejected by their peers in Grade 4 (Mercer & Derosier, 2008).

Indirect Effects of Peers and Teachers on Peer Victimization

Based on previous theorizing and evidence, it is possible that relationships with teachers and peers not only directly predict victimization over time, but also indirectly. Low supportive teacher-child relationships can increase the risk for low supportive peer relationships, including rejection (Hendrickx, Mainhard, Oudman, et al., 2017). This, in turn, could increase the risk for victimization (Serdiouk et al., 2015). Also, peer rejection can increase the risk for low supportive relationships with teachers (Hendrickx, Mainhard, Boor-Klip, et al., 2017) which could increase the risk for victimization (Serdiouk et al., 2016).

A cross-sectional study in Grades 4 to 6 has provided some evidence for an indirect effect of teacher-child relationships on victimization (Thornberg et al., 2018). The quality of teacher-child relationships as reported by children was not directly linked to victimization, but indirectly through its association with the quality of relationships among children. However, the data were analyzed at the classroom level and due to the cross-sectional design, the authors could not pinpoint the direction of effects. No studies testing the effect of rejection, via teacher-child relationships, on victimization were found.

Early Adolescence

Researchers have argued that the relative influences of peers and teachers may depend on children's developmental stage (Bierman, 2011). For instance, when entering adolescence, peer relationships become increasingly valued and relied on to guide students' own behavior (Wentzel, 2009). Also, teacher-child closeness generally reduces (Jerome et al., 2009) and peer social status becomes more crystallized and stable (Bierman, 2011). As a result, the influence of teachers to that of peers on students' psychosocial development may be lower in early adolescence as compared to previous developmental levels.

For instance, in the 4th and 5th grade, the negative association between victimization and supportive peer-perceived teacher-child relationships did not hold when controlling for peer rejection (Elledge et al., 2016). According to the authors, this indicates that early adolescents' relationships with peers are more predictive of victimization than their relationships with teachers. Also, other studies with early adolescents have found more consistent paths from peers to teachers than vice versa.

For instance, studies in Grades 4 to 6 found that the paths from peer social status to teacher-child support (reported by children) were more consistent than vice versa (De Laet et al., 2014; Weyns et al., 2018). However, De Laet et al. (2014) argued that supportive relationships with teachers may still influence peer relationships in early adolescence as teacher-child support predicted peer social status from Grade 5 to 6.

Current Study

To date, few longitudinal studies have examined the prediction of peer victimization by peer and teacher-child relationships together. Further, few studies have investigated the associations for different forms of victimization separately. To provide insight in the simultaneous contribution of peer and teacher-child relationships to victimization over time, this study examines the transactional associations among teacher-child relationships, peer rejection, and relational and physical victimization respectively.

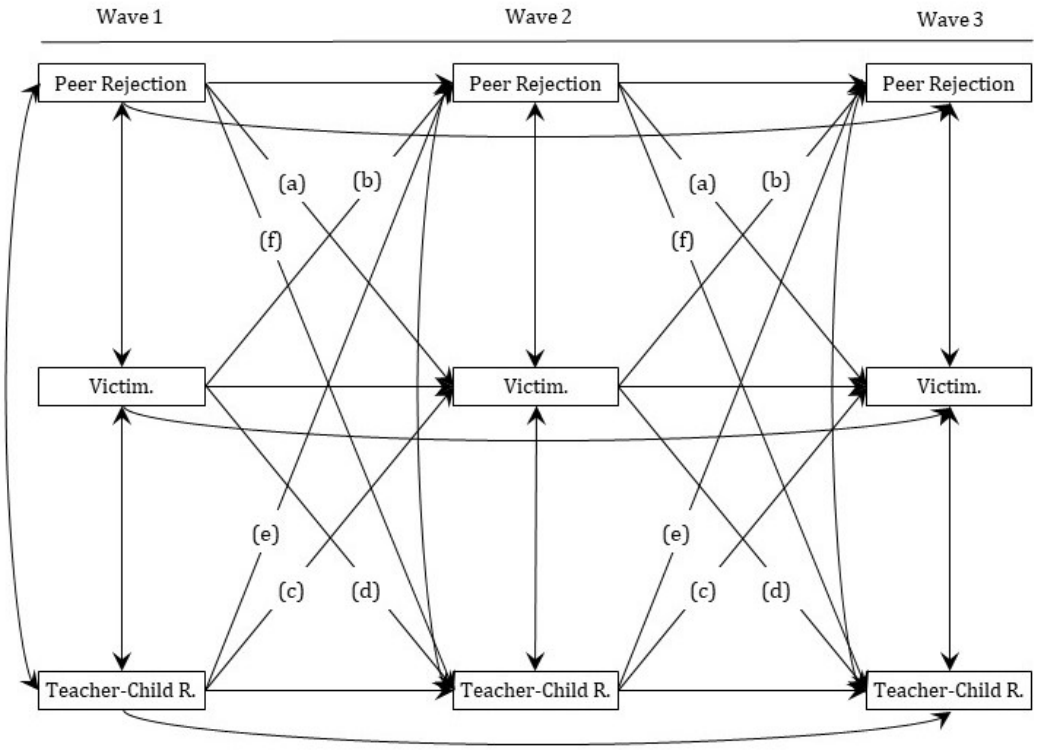
Hypotheses are formulated for six different direct longitudinal links (see Figure 1). Based on the available research (e.g., Serdiouk et al., 2015), children rejected by peers are expected to be at increased risk of becoming victimized (paths a), and vice versa (b). Due to inconsistencies in the current literature, no hypotheses are formulated regarding the potential differences between relational and physical victimization in relation to peer rejection. Further, based on theory (Bandura, 1977; Bowlby, 1969) and available evidence (e.g., Serdiouk et al., 2016), more supportive teacher–child relationships are expected to predict a lower risk for being victimized (c). This could be stronger for physical victimization as teachers are more likely to intervene in response to physical than relational victimization (e.g., Yoon et al., 2016). Based on attachment theory (Bowlby, 1969), teachers can be expected to provide more support to victimized children. However, teachers' sympathy for and support to victims may be reduced by social stigmas associated with victimization (Juvonen & Graham, 2014). Thus, with regard to the prediction of teacher-child relationships by victimization (d), two alternative hypotheses are formulated. Hence, differences between the forms of victimization are also exploratory investigated. Based on social referencing theory (Walden & Ogan, 1988) and the available studies (e.g., Mercer & Derosier, 2008), less supportive teacher-child relationships are expected to predict more peer rejection (e).

Further, even though based on theory (Bowlby, 1969; Davidson et al., 2010), peer rejection can be expected to predict both less and more supportive teacher-child relationships, prior evidence (e.g., Mercer & Derosier, 2008) leads to the expectation that more rejection would predict less supportive teacher-child relationships (f).

To further enhance knowledge on how relationships with peers and teachers impact victimization, two indirect effects are also explored: whether teacher-child relationships (Wave 1) predict victimization (Wave 3) via peer rejection (Wave 2), and whether peer rejection (Wave 1) predicts victimization (Wave 3) via teacher-child relationships (Wave 2). In light of the developmental period (early adolescence), stronger paths are expected from peer rejection to peer victimization than from teacher-child relationships to peer victimization. Further, more consistent paths are expected from peer rejection and peer victimization to teacher-child relationships than vice versa.

Figure 1

Hypothesized Associations Between Peer Rejection, Peer Victimization, and Teacher-Child Relationships



Note. Victim. = victimization; Teacher-Child R. = teacher-child relationships; Path labels refer to the formulated hypotheses in the Current Study section.

Method

Participants and Procedure

The data of this study are part of a one-year study coordinated by University College Thomas More and KU Leuven, and approved by the Ethical Committee of the first institute. Children of ten primary schools participated at the beginning (September/ October), middle (February) and end (May/ June) of the school year 2014-2015. Active consent from the parents was obtained for 727 children of Grades 4 to 6 (88.6%). The participants completed a set of questionnaires under the supervision of undergraduate students of the Psychology department of both institutes. Four classes with participation rates lower than 60% were excluded from the analyses due to reliability concerns regarding the peer nomination procedure (Cillessen, 2009). As a result, the final sample comprised 692 children from 36 classes (48.4% girls, M_{age} = 10.28 years, *SD* = 0.94 years, range: 7.92-13.14, 35.3% in Grade 4, 33.1% in Grade 5 and 31.6% in Grade 6). At Wave 1, 2, and 3, questionnaires were obtained from respectively 680, 655 and 671 children (response rates: 98%, 95%, 97% with resp. 97%, 93%, 95% full response).

Following Wave 1, half of the schools started implementing a Flemish version of the Good Behavior Game (Dolan et al., 1989; Leflot et al., 2017) as part of a quasi-experimental intervention study. The other half of the schools served as controls. The Good Behavior Game is a universal intervention aimed at preventing externalizing behavior and promoting on-task behavior through an improvement of the teacher's behavioral management and peer relations (Leflot et al., 2010). In the present study, intervention status was controlled for in the analyses. In addition, age and gender effects were controlled for.

Measures

Relational and physical peer victimization

Peer victimization was assessed with two scales of the validated Social Experiences Questionnaire (SEQ) (Crick & Grotpeter, 1998). For relational victimization, participants had to indicate how often their relationships with others are harmed or threatened to be harmed (e.g., "How often do your peers leave you out on purpose when it is time to do an activity?"). For physical victimization, participants had to indicate how often they are harmed or threatened to be harmed physically (e.g., "How often do you get hit?"). Each item was measured on a 5-point Likert scale ranging from "*never*" to "*always*".

The original scales measured respectively relational victimization (5 items) and overt victimization, of which physical (3 items) and verbal (2 items). However, Crick and Grotpeter (1998) dropped the verbal victimization items as they cross-loaded on the scales. A confirmatory factor analysis (CFA) in Mplus 8 was conducted to assess the factor structure of the original SEQ with the 10 items in this sample. In line with the findings of previous studies (Crick & Grotpeter, 1998; Desjardins et al., 2013; Storch et al., 2005), a two-factor structure for victimization was hypothesized. To deal with item-level missingness (< 1%) and non-normality, maximum likelihood estimation with robust standard errors was used (Muthén & Muthén, 1998-2017; Newman, 2014). Following current guidelines, model fit was evaluated by the Root Mean Square Error of Approximation (RMSEA) (including the associated 90% confidence interval), which should be less than .08, and preferably .06; the Standardized Root Mean Square Residual (SRMR), which should be less than .10, and preferably .08; the Comparative Fit Index (CFI) and the Tucker-Lewis index (TLI), which should exceed .90, and preferably .95 (Hu & Bentler, 1999; Kline, 2005; Weston & Gore, 2006).

The two-factor model had a mediocre fit and factor loadings were high (see Table 1). The latent factor correlation was large (r = .89) (Cohen, 1988). As in the study of Crick and Grotpeter (1998), modification indices indicated that a better fit could be obtained when the verbal victimization items were allowed to cross-load on the factors. In line with the authors of the scale and the purpose of this study to investigate physical and relational forms of victimization separately, the verbal victimization items were dropped. The fit of this model with dropped verbal victimization items was good, the factor loadings high (see Table 1) and the latent factor correlation large (r = .77) (Cohen, 1988). Over the waves, Cronbach's alphas for relational victimization ranged from .83-.85, and for physical victimization from .79-.82. Mean scores on the scales were calculated and used in the subsequent analyses.

Peer rejection

Peer rejection or the degree to which children are disliked by the peer group was measured by one peer nomination item ("Which classmates do you like the least?") (Coie et al. 1982) that has been shown to be a valid and reliable measure of this construct (Cillessen 2009). An unlimited number of nominations was allowed (Terry 2000), but self-nomination was not allowed.

To ensure reliability, in each class the participation rate was at least 60% (Cillessen 2009). Proportion scores were calculated by dividing the number of received nominations by the total number of possible nominations, and used in the subsequent analyses.

Table 1

CFA Standardized Factor Loadings and Model Fit Statistics

SEQ item	Latent Construct	Original Model	New Model
1. Hit	Overt	.67	.71
2. Push/Shove	Overt	.72	.76
3. Kick/Pull	Overt	.72	.79
4. Mean Names	Overt	.75	/
5. Beat Up	Overt	.70	/
6. Leave Out	Relational	.62	.61
7. Get Back	Relational	.67	.66
8. Tell Lies	Relational	.75	.76
9. Won't Like	Relational	.69	.68
10. Say Mean	Relational	.81	.82
Model fit			
RMSEA (90% CI)		.08 (.07-0.9)	.06 (.05-.08)
SRMR		.04	.03
CFI		.94	.97
TLI		.92	.95

Teacher-child relationship quality

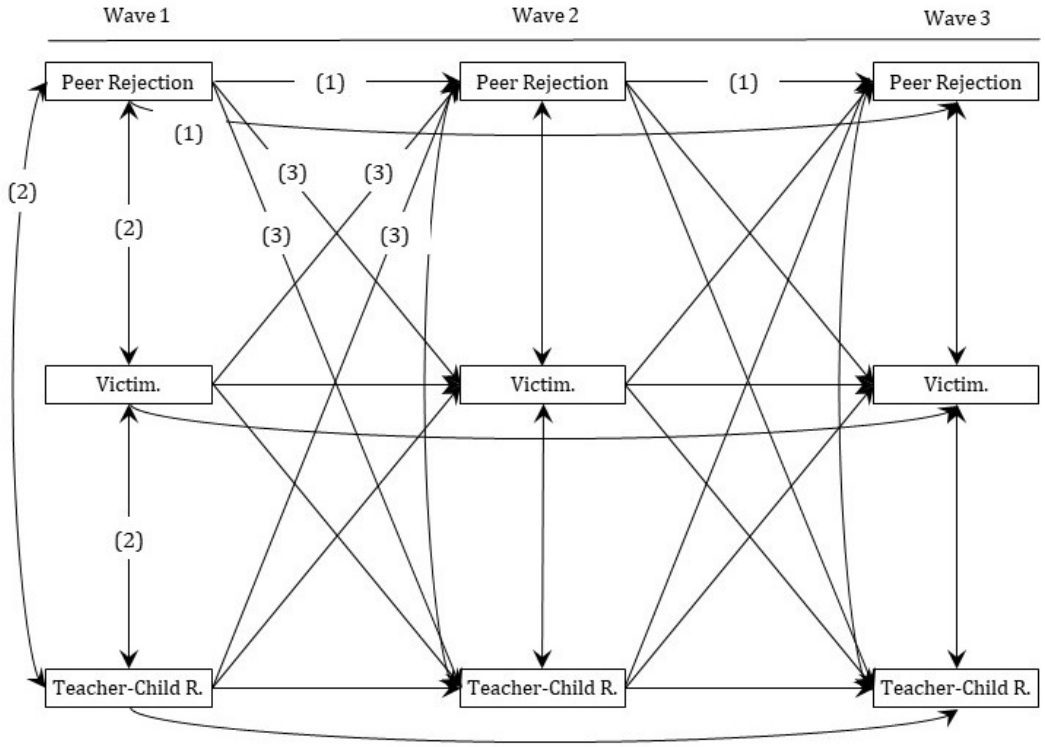
The quality of the teacher-child relationship or the degree to which children perceive their relationship with the teacher to be close and supportive was assessed by the Teacher-Child Interaction Quality scale of the Dutch Class Climate Scale (DCCS) (Donkers & Vermulst, 2011). The authors reported evidence for the content and construct validity (e.g., confirmed factor structure, measurement invariance for educational level and gender), and reliability of the scale (Cronbach's alpha: .88, test-retest Pearson correlation: .78) (Donkers & Vermulst, 2011). The scale consisted of 11 items (e.g., "I like the teacher", "This teacher helps you if you cannot do something") measured on a 4-point Likert scale ranging from "*never*" to "*always*". Over the waves, Cronbach's alphas ranged from .87-.91. Mean scores were calculated and used in the subsequent analyses.

Statistical Analyses

Descriptive and correlational analyses were executed in IBM SPSS Statistics 25 and Mplus 8 (Muthén & Muthén, 1998-2017). Mplus was also used to perform the confirmatory factor analysis for the SEQ and the cross-lagged analyses. Cross-lagged analyses (Jöreskog, 1970) were used to investigate the hypothesized longitudinal links between peer rejection, teacher-child relationships and peer victimization. The analyses allow the investigation of longitudinal bidirectional associations between peer rejection, teacher-child relationships and peer victimization while taking into account previous levels of each variable and within-time associations between variables. Thus, three types of associations were estimated: (1) autoregressive, (2) concurrent and (3) cross-lagged associations (see Figure 2). Further, by including peer rejection and teacher-child relationships together in the cross-lagged model, their unique or additive effects on victimization were investigated. For instance, the effect of rejection on victimization was examined on top of the effect of teacher-child relationships on victimization. To explore the possible indirect effects of rejection and teacher-child relationships on victimization, these paths were specified using the "model indirect" command.

Figure 2

Estimated Associations Between Peer Rejection, Peer Victimization, and Teacher-Child Relationships



Note. Victim. = victimization; Teacher-Child R. = teacher-child relationships; Only the autoregressive associations of peer rejection (1), the Wave 1 concurrent associations (2), and the Wave 1-Wave 2 cross-lagged associations (3) are numbered for clarity.

Given the nested structure of the data, Intraclass Correlation Coefficients (ICCs) and design effects were computed at the level of the classroom (Peugh, 2010) (See Table 2). As several variables had medium to large ICCs (Hox, 2002) and design effect values above 2 (Peugh, 2010), the "complex analysis" feature was applied, which uses models with robust standard errors (Williams, 2000). Classroom was taken as the cluster variable. Model estimation terminated normally when running these analyses; however, as the models contained more parameters than the number of clusters, a warning appeared concerning the trustworthiness of the standard errors of the model parameters. Therefore, in a supplementary analysis, the results of these models with robust standard errors were checked against the results of the models without robust standard errors. To deal with missing data, the models were analysed using the full information maximum likelihood (FIML) algorithm, which uses all available data instead of imputing scores and has been shown to be effective and less biased than traditional missing data techniques (Newman, 2014). To control for non-normality, the MLR estimator (maximum likelihood with robust standard errors) which is robust for skewness was used.

Cross-lagged models were estimated separately for relational and physical victimization. As the associations were not expected to be different over time, three different nested models for each type of victimization were planned to be tested: (1) a fully unconstrained model, (2) a model with autoregressive paths constrained to be equal over time and (3) a model with both autoregressive and cross-lagged paths constrained to be equal over time. To compare the relative fit of the nested models, the Satorra-Bentler (S-B) scaled χ^2 difference test was used (Satorra & Bentler, 2010). Further, the fit of the models to the data was evaluated by the RMSEA (with 90% confidence interval), SRMR, CFI and TLI (Hu & Bentler, 1999; Kline, 2005; Weston & Gore, 2006).

Table 2

Descriptive Statistics

Variable	*N*	ML Mean (*SD*)	Range	ICC	Design effect
Relational Victimization W1	672	.89 (.78)	0.00-4.00	.03	1.55
Relational Victimization W2	642	.94 (.82)	0.00-3.80	.08	2.46
Relational Victimization W3	657	.92 (.78)	0.00-4.00	.11	3.00
Physical Victimization W1	672	.74 (.75)	0.00-4.00	.09	2.64
Physical Victimization W2	642	.77 (.77)	0.00-4.00	.10	2.82
Physical Victimization W3	657	.75 (.78)	0.00-4.00	.11	3.00
Peer Rejection W1	672	.16 (.15)	0.00-0.82	.07	2.28
Peer Rejection W2	690	.17 (.17)	0.00-0.93	.05	1.91
Peer Rejection W3	681	.16 (.16)	0.00-0.95	.03	1.55
Teacher-Child R. W1	679	2.27 (.54)	0.00-3.00	.23	5.19
Teacher-Child R. W2	654	2.24 (.55)	0.00-3.00	.24	5.37
Teacher-Child R. W3	671	2.13 (.64)	0.00-3.00	.25	5.56

Note. N = number of participants; ML = Maximum Likelihood; *SD* = standard deviation; Range = observed range; W1 = Wave 1; W2 = Wave 2; W3 = Wave 3; Teacher-Child R. = teacher-child relationships.

Results

Descriptive and Correlational Analyses

As maximum likelihood missing treatment was used, the maximum likelihood means, standard deviations (Table 2) and correlations were computed (Table 3) (Newman, 2014). As can be seen in Table 2, mean scores on victimization and peer rejection were low and standard deviations small. Regarding teacher-child relationships, mean scores were higher and standard deviations small. As can be seen in Table 3, relational and physical victimization were modestly positively correlated with peer rejection and moderately negatively with the quality of the teacher-child relationship (Cohen, 1988). Further, teacher-child relationships were modestly negatively correlated with peer rejection (Cohen, 1988). Correlations also revealed that older children reported less victimization ($-.18 < r < -.26$, $p < .001$), except for relational victimization at Wave 1. Gender significantly correlated with peer rejection throughout the school year with higher chances to be rejected for boys ($.22 < r < .23$, $p < .001$). Further, boys reported significantly less close relationships with their teachers at the end of the school year ($r = -.14$, $p < .010$). Intervention condition was not significantly related with any of the study variables.

Table 3

Maximum Likelihood Correlations Between Relational Victimization, Physical Victimization, Peer Rejection, and Teacher-Child Relationships

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Relational Victimization W1	1														
2. Relational Victimization W2	.48**	1													
3. Relational Victimization W3	.49**	.66**	1												
4. Physical Victimization W1	.63**	.39**	.39**	1											
5. Physical Victimization W2	.35**	.67**	.49**	.48**	1										
6. Physical Victimization W3	.35**	.44**	.65**	.41**	.54**	1									
7. Peer Rejection W1	.14**	.15**	.08	.06	.12*	.11*	1								
8. Peer Rejection W2	.18**	.20**	.17**	.11*	.17**	.13**	.68**	1							
9. Peer Rejection W3	.19**	.23**	.23**	.14**	.20**	.18**	.60**	.74**	1						
10. Teacher-Child R. W1	-.25**	-.21**	-.26**	-.22**	-.23**	-.26**	-.12*	-.10	-.08	1					
11. Teacher-Child R. W2	-.20**	-.25**	-.25**	-.22**	-.23**	-.21**	-.13*	-.14**	-.12*	.61**	1				
12. Teacher-Child R. W3	-.12*	-.16**	-.25**	-.14**	-.16**	-.22**	-.13*	-.16**	-.12*	.53**	.68**	1			
13. Gender[1]	.04	-.07	-.07	.12	.11	.11	.23**	.23**	.22**	-.11	-.08	-.14*	1		
14. Age	-.09	-.18**	-.21**	-.20**	-.21**	-.26**	.05	.06	-.00	-.09	.04	.04	.00	1	
15. Condition[2]	-.03	-.06	-.11	.07	-.00	-.11	.01	-.01	-.04	.11	.08	.09	.10	-.00	1

Note. [1] girl = 0; boy = 1. [2] control group = 0; intervention group = 1. W1 = Wave 1; W2 = Wave 2; W3 = Wave 3; Teacher-Child R. = teacher-child relationships.

* $p < .010$. ** $p < .001$. Two-tailed testing of significance.

Cross-lagged Analyses

Relational victimization

Cross-lagged analyses for relational victimization, peer rejection and teacher-child relationship quality were conducted following the procedure described above. The Satorra-Bentler scaled χ^2 difference test indicated that the fit of the model with time-constrained autoregressive paths was significantly worse than the fully unconstrained model (ΔS-B χ^2 (3) = 13.200, p = .004). The fit of the fully unconstrained model was good (RMSEA = .000, RMSEA 90% CI = [.000-.023], SRMR = .008, CFI = 1.000, TLI = 1.023) and this model was used to interpret the results.

Figure 3 displays the significant results. To begin with, the autoregressive associations were explored and indicated that peer rejection, relational victimization and teacher-child relationships were stable over time. With regard to peer rejection and relational victimization, first, the concurrent associations were explored and showed that more rejection was associated with more victimization at each wave. Second, the cross-lagged associations indicated that relational victimization positively predicted peer rejection over time. Additionally, rejection positively predicted relational victimization from Wave 1 to Wave 2. Regarding teacher-child relationships and relational victimization, first, the explored concurrent associations showed that less supportive teacher-child relationships were related with more victimization at each wave. Second, the cross-lagged associations indicated that less supportive relationships with the teacher predicted more relational victimization over time. In turn, more relational victimization at Wave 1 predicted less supportive teacher-child relationships at Wave 2. With regard to peer rejection and teacher-child relationships, first, the explored concurrent associations showed that less supportive teacher-child relationships were associated with more rejection at Wave 1. Second, the cross-lagged associations between rejection and teacher-child relationships were not significant. As a result, neither the explored indirect paths (prediction of relational victimization by teacher-child relationships via peer rejection, and by peer rejection via teacher-child relationships) were significant.

Physical victimization

The Satorra-Bentler scaled χ^2 difference test indicated that the fit of the model with time-constrained autoregressive paths was significantly worse than the fully unconstrained model (ΔS-B χ^2 (3) = 11.077, p = .011). The fit of the fully unconstrained model was good (RMSEA < .001, RMSEA 90% CI = [.000-.000], SRMR = .007, CFI = 1.000, TLI = 1.032) and this model was used to interpret the results.

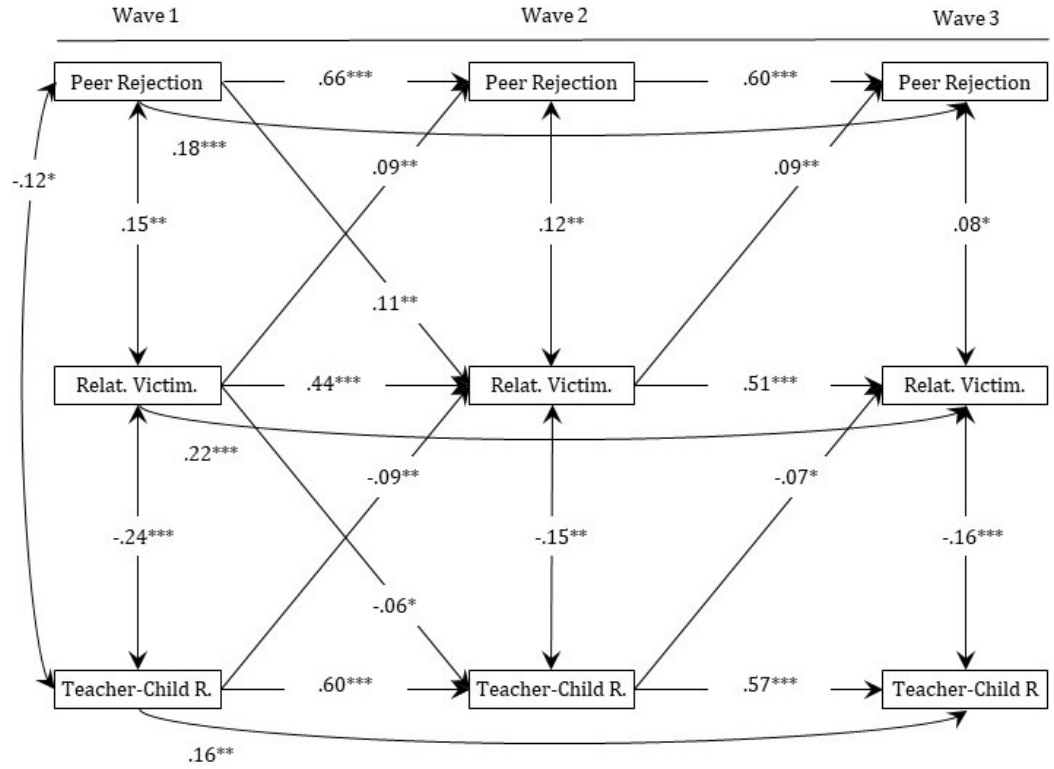
Figure 4 displays the significant results. To begin with, the autoregressive associations were explored and indicated that peer rejection, physical victimization and teacher-child relationships were stable over time. With regard to peer rejection and physical victimization, first, the concurrent associations were explored and showed that more rejection was associated with more physical victimization only at Wave 2. Second, the cross-lagged associations indicated that physical victimization positively predicted peer rejection over time. Additionally, rejection positively predicted physical victimization from Wave 1 to Wave 2. Regarding teacher-child relationships and physical victimization, first, the explored concurrent associations showed that less supportive teacher-child relationships were related with more victimization at Wave 1. Second, the cross-lagged associations indicated that less supportive relationships with the teacher predicted more physical victimization over time. In turn, more physical victimization at Wave 1 predicted less supportive teacher-child relationships at Wave 2. With regard to peer rejection and teacher-child relationships, first, the explored concurrent associations showed that less supportive teacher-child relationships were associated with more rejection at Wave 1. Second, the cross-lagged associations between rejection and teacher-child relationships were not significant. As a result, neither the explored indirect paths (prediction of physical victimization by teacher-child relationships via peer rejection, and by peer rejection via teacher-child relationships) were significant.

Alternate Model Analyses

As a warning appeared when using the "complex analysis" feature, the results of these models were checked against the results of models without robust standard errors. In line with the analyses with robust standard errors, the Satorra-Bentler scaled χ^2 difference test indicated that, for both relational and physical victimization, the fit of the model with time-constrained autoregressive paths was significantly worse than the fully unconstrained model (resp. ΔS-B χ^2 (3) = 15.989, p = .001; ΔS-B χ^2 (3) = 14.479, p = .002). The fit of the fully unconstrained model for respectively relational and physical victimization was good (RMSEA = .046, RMSEA 90% CI = [.024-.068], SRMR = .018, CFI = .993, TLI = .959; RMSEA < .001, RMSEA 90% CI = [.000-.041], SRMR = .007, CFI = 1.000, TLI = 1.004) and these models were used to verify the results. All significant paths remained significant, except for one. More relational victimization at Wave 1 did not significantly predict less supportive teacher-child relationships at Wave 2 (β = -.06, p = .07).

Figure 3

Cross-Lagged Model of Peer Rejection, Relational Victimization, and Teacher-Child Relationships

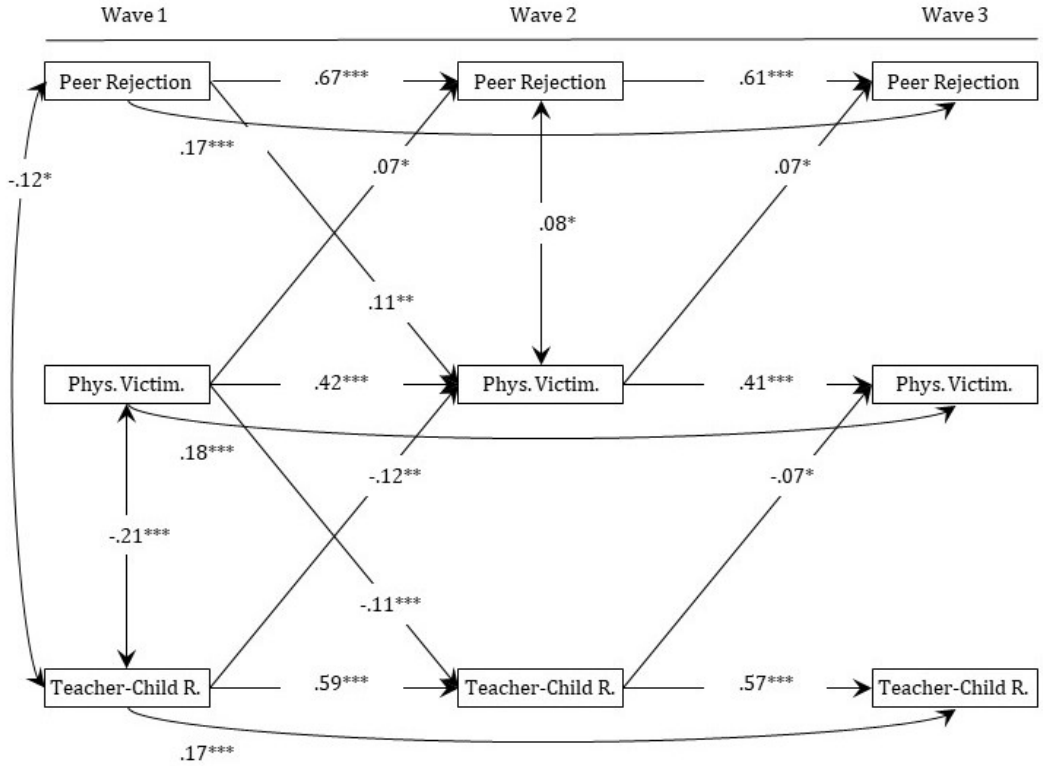


Note. Relat. Victim. = relational victimization; Teacher-Child R. = teacher-child relationships; Significant paths with standardized coefficients are displayed.

* $p < .050$. ** $p < .010$. *** $p < .001$.

Figure 4

Cross-Lagged Model of Peer Rejection, Physical Victimization, and Teacher-Child Relationships



Note. Phys. Victim. = physical victimization; Teacher-Child R. = teacher-child relationships; Significant paths with standardized coefficients are displayed.

* $p < .050$. ** $p < .010$. *** $p < .001$.

Discussion

Peer victimization at school is a widespread and persistent problem related to various detrimental consequences in the short and long run (Arseneault, 2018). In their search for risk and protective factors, researchers have demonstrated associations of peer victimization with peer rejection and teacher-child relationships. However, although children are simultaneously confronted with peers and teachers in classrooms, to date, only one longitudinal study has investigated the links of victimization with peer rejection and teacher-child relationships together (Elledge et al., 2016). In addition, few studies have differentiated between forms of victimization even though research indicated that teachers' and peers' beliefs regarding relational and physical victimization differ, as well as their responses to them (Bauman & Del Rio, 2006; Goldstein & Tisak, 2010). By including both peer rejection and teacher-child relationships into one model, the current study provides insight in the additive, unique effects of peers and teachers on relational and physical victimization over time. The transactional associations among teacher-child relationships, peer rejection and, respectively, relational and physical victimization were investigated in three waves over the course of one school year in upper elementary school.

Role of Peers and Teachers in Peer Victimization

First, the longitudinal links between peer rejection and peer victimization were explored. With regard to the victimization forms, similar associations were found. From Wave 1 to Wave 2, peer rejection was positively bidirectionally associated with relational and physical victimization. From Wave 2 to Wave 3, higher levels of relational and physical victimization predicted more rejection, but not the other way around. Thus, in general, children who were more rejected earlier in the school year, were more relationally and physically victimized in the middle of the school year and the other way around. Also, generally, children who were more victimized in the middle of the school year, were more rejected at the end of the school year. Although, as expected, rejection and victimization predicted each other in the first half of the school year, the results are more in line with, for instance, the idea that peers may distance themselves from victims (Salmivalli & Peets, 2009; Sentse et al., 2015). However, in the first half of the school year, support was also found for the idea that rejected children may be less protected by the peer group (Hodges & Perry, 1999). Besides the similar longitudinal findings, differences between the victimization forms appeared concerning their concurrent associations with rejection.

Relational victimization was positively associated with peer rejection at each wave, but for physical victimization, this was only found at the second wave. A possible explanation for the more consistent concurrent associations between relational victimization and peer rejection is that these are two forms of peer adversity that are more similar to each other. Peer rejection describes the degree to which children are disliked by the peer group. Relational victimization includes aggressive behavior aimed at making peers stop liking the victim (e.g., "How often are lies told about you to make sure other children don't like you anymore?"). Contrarily, physical victimization includes physical aggressive behavior that is not specifically aimed at making peers stop liking the victim. However, as these findings pertain concurrent associations that were only explored, further research is recommended.

Second, evidence was found for the hypothesis that more supportive teacher-child relationships predict less victimization over time. Thus, generally, children reporting greater support in the relationship with their teacher earlier in the school year, were less relationally and physically victimized later in the school year. This finding adds to the available cross-sectional evidence (e.g., Lucas-Molina et al., 2015; Raskauskas et al., 2010) and is in line with previous longitudinal evidence (Serdiouk et al., 2016). Contrary to expectations, the association with physical victimization was not stronger (Yoon et al., 2016). These results show that in the context of supportive teacher-child relationships, teachers may model positive relational skills (Hendrickx et al., 2016) and may be better able to notice victimization and intervene more quickly (e.g., Reavis et al., 2010). Also, when children enjoy more supportive relationships with their teachers, they may develop better skills to manage victimization and may be more willing to report it (e.g., Eliot et al., 2010; Reavis et al., 2010; Serdiouk et al., 2016). In turn, effects of relational and physical victimization on teacher-child relationships were explored as teachers could be expected to provide more but also less support to victims (Bowlby, 1969; Juvonen & Graham, 2014). Evidence was limited, but more in line with the latter. More victimization at the beginning of the school year was found to predict less supportive relationships with teachers at the middle of the school year. This finding is unfortunate as supportive relationships with teachers can protect victimized children from later difficulties, such as internalizing problems (for a review, see Ttofi et al., 2014). For relational victimization, this association was less strong and careful interpretation is recommended as it was not confirmed in the analysis in which was not controlled for the clustering of participants in classrooms.

A possible explanation for this difference between physical and relational victimization is that teachers are generally more aware of physical victimization (Yoon & Barton, 2008) and that this may cause greater classroom management challenges to them. Nonetheless, victimization only predicted teacher-child relationships from the beginning to the middle of the school year. Thus, evidence for the prediction of victimization by teacher-child relationships was more consistent. Also, as stated earlier, due to a strong focus on teachers as socializing agents, less attention has been given to whether peer relationships predict teacher-child relationships (Farmer et al., 2011). Therefore, more research is needed.

Third, regarding peer rejection and teacher-child relationships, apart from a negative concurrent association at the beginning of the school year, no consistent links were found. Thus, over the school year, teacher-child relationships did not predict peer rejection, neither did peer rejection predict teacher-child relationships. As a result, neither support was found for the hypothesized indirect prediction of victimization by teacher-child relationships via peer rejection, and by peer rejection via teacher-child relationships. A first possible explanation for these findings is that, in contrast with previous studies (e.g., Hendrickx, Mainhard, Oudman, et al., 2017; Mercer & Derosier, 2008), the tested models included victimization. Therefore, when looking at the unique effects of teachers, their relationships with children seem to be even more important in the prediction of peer victimization than of peer rejection. It is possible that teachers have stronger effects on victimization as victimization refers to behavior occurring within groups whereas rejection refers to an affective reaction held by the peer group (Rubin et al. 2015). Accordingly, it is also possible that support from teachers is more determined by victimization than rejection. Victimization may cause greater classroom management challenges than rejection. A second possible explanation is that peer rejection is more strongly predicted by negative teacher behavior than positive. For instance, Hendrickx et al. (2017b) found evidence for a social reference effect but only through negative teacher behavior. Contrary to high conflict in the teacher-child relationship, low support in the relationship may not give peers the impression that the teacher dislikes the child and may, therefore, not guide peers in disliking the child themselves. In turn, peer rejection may be more predictive of negative dimensions of teacher-child relationships than positive dimensions.

Third, teacher-child relationships may not be predictive for peer rejection as early adolescents may turn less to their teachers for social information about peers than younger children. However, more research focusing together on peer victimization, peer rejection and teacher-child relationships is needed.

Based on the findings, some conclusions can be formulated. To begin with, peer rejection and teacher-child relationships uniquely predict victimization (positively and negatively respectively) when they are both taken into account and while all previous and concurrent levels of the variables are controlled for. Therefore, to explain victimization processes in early adolescence, relationships with both peers and teachers need to be considered. Further, in light of the developmental period of early adolescence, stronger effects were expected from peers to teachers than vice versa. This was not confirmed. Only in the first half of the school year, more rejection predicted more victimization, but more supportive teacher-child relationships predicted less victimization throughout the whole school year. Thus, in contrast with Elledge et al. (2016), children's relationships with teachers were more predictive of victimization than their relationships with peers. Consequently, the findings reflect that for early adolescents, relationships with teachers play an important role in victimization processes. Finally, the associations of physical and relational victimization with peer rejection and teacher-child relationships were almost similar. Therefore, overall, the results of this study do not reflect differences within peers' and teachers' beliefs and responses regarding relational and physical victimization (Bauman & Del Rio, 2006; Goldstein & Tisak, 2010).

Strengths, Limitations and Suggestions for Future Research

The purpose of this study was to explore the role of relationships with peers and teachers in the development of relational and physical victimization during one school year. The longitudinal design made it possible to determine the direction of effects, unlike most previous research. Further, the design permitted to study the relationships of children with peers and teachers within the same classroom context over one school year, which is particularly suitable to investigate within-class dynamics. Also, as the study distinguished between relational and physical victimization, more insight in these different forms was provided. Despite these strengths, the study also had some limitations.

First, a student self-report questionnaire was used to measure supportiveness in teacher-child relationships. A positive relationship dimension was measured, even though different studies found (direct) effects of negative teacher-child relationship dimensions such as stressful relationships (Murray-Harvey & Slee, 2010) and teacher-to-student aggression (Lucas-Molina et al., 2015) on victimization. Also, as both teacher-child relationships and victimization were measured by self-report, the results should be interpreted with caution because of the possibility of shared method variance that could have increased the effects. Another limitation related to the measures is that students from 3 out of the 36 classrooms had two teachers and reported about their relationship with these two teachers in general. Students from the other classes had one teacher which is typical for elementary classrooms in Flanders. Future studies could include multiple dimensions of teacher-child relationships as well as perceptions of students, peers and teachers.

Second, this study provided information on the temporal order of effects, but future studies are needed to provide further insight in the possible explanatory mechanisms to deepen understanding of how classroom social relationships predict victimization and each other. For instance, it could be investigated whether mechanisms based on social learning and attachment theory (e.g., modeling, teacher's sensitivity, children's emotional security, their willingness to report bullying) mediate in the association between earlier teacher-child relationships and victimization. Also, future studies could include teachers' interventions in bullying to better understand how perceived teacher support predicts victimization and vice versa. Further, participants in this study were entering early adolescence. It would be interesting to investigate in future research whether similar associations are found later on in early adolescence, for instance at the beginning of secondary school.

Third, although the cross-lagged analyses provide information on the temporal order of effects, they do not permit to draw causal conclusions. Also, the cross-lagged models do not disentangle between- and within-person variance (Keijsers, 2016). Therefore, no conclusions regarding within-person change can be drawn from these results.

Practical Implications

Establishing and maintaining positive relationships with peers and teachers are important for children's adjustment (e.g., Bukowski et al., 2018). This study showed that peer rejection and teacher-child relationships have unique, additive effects on victimization over time, meaning that each contribute to the development of peer victimization on top of the other. Thus, relationships with both peers and teachers matter, indicating two possible ways for intervention. Further, the lack of significant associations between peer rejection and teacher-child relationships may imply that targeting one relationship does not automatically lead to improvement in the other. Therefore, to decrease victimization, both relationships should be focused on.

First, victimization can be reduced by promoting positive peer relationships and by using interventions aimed at decreasing peer rejection (for an overview, see Bierman, 2004). It is important that teachers are aware of the connection between peer social dynamics and victimization and that they know how to manage these dynamics such that rejection is reduced and opportunities for positive peer interactions are promoted (Farmer et al., 2018). For instance, when teachers are attuned to the peer social system, they may better identify functions of behavior and better match interventions (Lee, 2018).

Second, efforts to maintain support between students and teachers are encouraged as well as interventions promoting teacher-student closeness and support. For instance, Sabol and Pianta (2012) give an overview of training programs for teachers that take a relational perspective. In line with this, a relationship-focused reflection program to promote teachers' relationships with behaviorally at-risk children was developed and evaluated (Spilt et al., 2012). In addition, interventions focused on improving school climate can be used (Smith, 2019). Further, meta-analyses on the effectivity of anti-bullying programs found that teacher training was an important component to reduce bullying (e.g., Ttofi & Farrington, 2011). Based on the findings of the current study, it is encouraged that attention is paid to teacher-student relationships in these trainings.

Besides their effects on the levels of victimization, positive peer and teacher relationships are also important in protecting victims' quality of life. Evidence shows that victims highly value support from peers and teachers, but that they perceive that they are not receiving it (Demaray & Malecki, 2003). Also, peer social support in combination with teacher support has been found to be the strongest buffer against the negative effects of victimization (Flaspohler et al., 2009).

Next, by focusing interventions on more than one classroom interaction partner, the effectiveness might improve. As in classrooms, relationships with peers and teachers may function together as a system, changes in one relationship may contribute to changes in the other and, in turn, influence students' functioning (Farmer et al., 2018). Person-in-context interventions responsive to the social ecology, students' individual social experiences, and their interplay, are needed (Farmer et al., 2018).

Conclusion

The current study investigated how relationships with peers and teachers uniquely contribute to the prediction of peer victimization over the course of one school year in upper elementary school. Prior research was extended by taking these two classroom-based relationships simultaneously into account and by differentiating between two forms of victimization. The transactional links among teacher-child relationships, peer rejection, and respectively relational and physical victimization were investigated. Findings were similar for relational and physical victimization. Support was found for an additive model in which peer and teacher-child relationships add unique variance to the development of peer victimization in early adolescence. On the one hand, peer victimization can be reduced by decreasing peer rejection and, on the other, by increasing supportiveness in teacher-child relationships. Additionally, victimization positively predicted peer rejection throughout the school year and negatively predicted teacher-child support from the beginning to the middle of the school year. It is important that teachers are aware of these classroom social dynamics and try to manage them to increase students' chances of positive interactions in the classroom.

Chapter 2

Trajectory classes of relational and physical bullying victimization: Links with peer and teacher-student relationships and social-emotional outcomes

Published manuscript after revision:
Demol, K., Verschueren, K., ten Bokkel, I. M., van Gils, F. E., & Colpin, H. (2021). Trajectory classes of relational and physical bullying victimization: Links with peer and teacher-student relationships and social-emotional outcomes. *Journal of Youth and Adolescence.* https://doi.org/10.1007/s10964-021-01544-7

Abstract

Gaining a better understanding of heterogeneous patterns of bullying victimization can help develop tailored interventions against this harmful problem. This one-year three-wave study examined trajectory classes of relational and physical victimization at school and their link with teacher-student relationships, peer relationships and social-emotional outcomes. Participants were 930 students in Grades 4 to 6 (53.1% girls, M_{age} = 10.55). A 3-step approach including Latent Class Growth Analyses and Growth Mixture Modeling yielded two trajectory classes. Most students experienced low, decreasing relational and physical victimization. A smaller group experienced higher, generally stable victimization, more relational than physical. This group was more rejected, less accepted, reported more depressive symptoms and lower self-esteem. Teacher-student closeness and conflict were similar across trajectory classes.

Introduction

Bullying victimization poses a serious threat to early adolescents' well-being (Schoeler et al., 2018). In the most recent Health Behavior in School-aged Children (HBSC) survey, one in ten students reported having been bullied by peers at school in the last months (Inchley et al., 2020). Being the target of repeated and intentional aggressive acts by more powerful peers (Olweus, 1993) puts students at increased risk for a wide range of short- and long-term difficulties (Arseneault, 2018). Therefore, interventions to decrease victimization are critical.

Increasing evidence suggests that students differ regarding their victimization experiences. Identifying subgroups of students with different patterns of victimization development is necessary for designing tailored interventions in addition to universal interventions. The present study used a person-oriented approach to identify patterns of victimization development, thereby combining physical and relational victimization. Additionally, building on ecological models (Thomas, 2021), this study examined whether these victimization trajectory classes differed regarding two possible antecedents: the quality of students' relationships with teachers and peers in the classroom. Finally, this study examined differences between the victimization trajectory classes regarding two possible consequences: students' depressive symptoms and self-esteem. Whereas previous studies mapped victimization trajectories across multiple school years, thereby leaving room for attenuating or amplifying influences from external factors in subsequent years, this study examined victimization trajectories throughout one school year and investigated their link with classroom social relationships at the beginning of the school year and social-emotional outcomes at the end of the school year.

Role of Peers and Teachers in Bullying Victimization

Adopting an ecological perspective on bullying (Thomas, 2021), variable-oriented studies in elementary school have shown that students' relationships with teachers and peers play an important role in bullying victimization over time (Greene, 2021; Pouwels & Garandeau, 2021). Whereas variable-oriented studies can provide evidence on how variables interrelate over time, person-oriented studies can provide evidence on group differences in patterns of development over time and on links between these patterns and other variables (Laursen & Hoff, 2006).

Regarding bullying victimization, adopting a person-oriented approach permits to investigate heterogeneity in victimization experiences by empirically grouping together students who share a similar pattern of change in victimization over time (Frankfurt et al., 2016). Additionally, these victimization subgroups or trajectory classes can be compared on variables that have been found to be associated with victimization over time, such as the quality of students' relationships with peers and teachers.

Relationships with peers: Rejection and acceptance

Bullying is not an isolated phenomenon in classroom peer ecologies, but co-occurs with other peer processes (National Academies of Sciences, Engineering, and Medicine, 2016). Prior variable-oriented research indicated that lower peer acceptance (i.e., the degree to which students are liked by the peer group) and higher peer rejection (i.e., the degree to which students are disliked by the peer group) were related to higher levels of victimization concurrently and longitudinally (e.g., de Bruyn et al., 2010; Demol et al., 2020; Sentse et al., 2015). A possible explanation for this negative association between social status and victimization is that bullies generally tend to target students who are not cared for in the peer group to avoid the loss of affection from significant others in this group (Veenstra et al., 2010). Additionally, students with a low social status may be less protected by the peer group, more often alone and available as targets for bullies and less able to get peer support to handle victimization (Hodges & Perry, 1999). Few studies investigated associations between peer relationships and victimization trajectory membership by using a person-oriented approach. Two studies found that students who experienced more negative interactions with peers (e.g., more peer problems, less peer support) at the end of elementary school were more likely to be in stable or increasing victimization groups after transitioning to secondary school (Lester & Cross, 2014; Lester et al., 2013). Additionally, one study found that elementary students with higher levels of peer rejection were more likely to follow a persistent victimization trajectory rather than a decreasing or stable low/no trajectory (Kaufman et al., 2018). However, these studies mapped trajectories across multiple school years, leaving room for (attenuating or amplifying) influences of peers in subsequent years.

Relationships with teachers: Closeness and conflict

Teachers are not a direct part of classroom peer ecologies, but they can exert a considerable influence on it and shape peer processes, including bullying victimization (Farmer et al., 2011; Gest & Rodkin, 2011). Building on an extended attachment perspective (Verschueren & Koomen, 2012), affective dyadic teacher-student relationships characterized by high levels of closeness (i.e., the degree of warmth and openness) and low levels of conflict (i.e., the degree of discordant interactions) are expected to protect students from victimization. Students who have a close relationship with their teacher may receive more support from them, as teachers may be more sensitive to these students' needs (Reavis et al., 2010). Additionally, these students may be more likely to tell their teacher about their victimization experiences (Eliot et al., 2010). Contrarily, teachers may be less likely to support students with whom they have high-conflict relationships (Reavis et al., 2010) and they may be less effective in supporting these students to develop effective skills to manage victimization (Elledge et al., 2016). A number of variable-oriented cross-sectional studies found evidence for these ideas, i.e., victimization was negatively associated with closeness (e.g., Raskauskas et al., 2010) and positively with conflict (e.g., Longobardi et al., 2021). Additionally, a number of studies showed that more closeness earlier in the school year was related to lower victimization later on (Demol et al., 2020; Serdiouk et al., 2016). However, this was not confirmed in another one-year longitudinal study (Troop-Gordon & Kopp, 2011). One cross-sectional study adopted a person-oriented approach and used cut-off criteria to group students as bullies, victims, bully-victims, or uninvolved (Marengo et al., 2018). High-conflict teacher-student relationships positively predicted the likelihood of being identified as a victim (Marengo et al., 2018). However, neither cross-sectional nor longitudinal studies investigated differences between empirically derived classes of victims regarding teacher-student relationships.

Trajectory Classes of Physical and Relational Victimization

An increasing number of longitudinal studies have investigated heterogeneity among victimized students by empirically grouping students in victimization trajectory classes (e.g., Sheppard et al., 2019). Most of these studies did not distinguish between victimization forms, but examined the development of victimization in general.

A consistent finding is that most students experience low to moderate levels of victimization across multiple school years and that a minority of students experience persistent high levels of victimization (Brendgen et al., 2016; Zhou et al., 2020). Further, some of these studies identified subgroups of students that follow unstable victimization trajectories with, in elementary school, more students experiencing increasing than decreasing victimization trajectories (Brendgen et al., 2016). However, students may not only differ regarding the duration of victimization, but also regarding the victimization form (Nylund et al., 2007).

With regard to traditional bullying, researchers often differentiate between physical victimization and relational victimization. Physical victimization refers to being harmed physically, for instance, by being kicked (Crick & Grotpeter, 1998). Relational victimization refers to relationships that are harmed, for instance, by being excluded (Crick & Grotpeter, 1998). To date, a small number of cross-sectional and longitudinal studies identified classes based on co-occurrences of different victimization forms. Consistent with studies not distinguishing between forms, these studies demonstrated that most students were not victimized in any way. Regarding the group of victimized students, some studies did not find different classes based on form (Nylund et al., 2007; Olivier et al., 2021), whereas other studies did (Bradshaw et al., 2015; Bradshaw et al., 2013). However, no classes representing only one form of victimization were identified (Bradshaw et al., 2015; Bradshaw et al., 2013).

Although relational and physical victimization have been found to interrelate substantially (Casper & Card, 2017), their emotional consequences may differ. In general, victimization is related to various negative social-emotional outcomes, such as depressive symptoms (for a meta-analysis, see Christina et al., 2021) and low self-esteem (for a meta-analysis, see Tsaousis, 2016). However, heterogeneity in victimization episodes can contribute to differences in the severity of these adverse outcomes (Prinstein & Giletta, 2016). For instance, research has shown that relational victimization is more strongly related to internalizing problems, such as depressive symptoms, than overt victimization (i.e., physical or verbal victimization) (for a meta-analysis, see Casper & Card, 2017). Several studies investigated differences in depressive symptoms between empirically derived classes of victims based on victimization in general (e.g., Ouellet-Morin et al., 2021) and provided evidence for a dose-response relationship between victimization and depressive symptoms (Moore et al., 2017).

However, this has not been examined for classes of victims based on victimization forms. Additionally, regarding self-esteem, no previous studies have compared empirically derived classes of victims. However, one longitudinal study used cut-off scores to distinguish four groups of victimized students (Juvonen et al., 2000). They found that stable victims and new victims had lower self-worth than earlier victims and stable nonvictims (Juvonen et al., 2000). Summarizing, even though relational and physical victimization have been found to be differentially related to internalizing problems, no studies so far have investigated whether physical and relational victimization trajectory classes differ regarding depressive symptoms and self-esteem.

Additionally, the social antecedents of relational and physical victimization may differ. Regarding the role of teachers, previous research indicated that, compared to physical victimization, teachers perceive relational victimization as less serious, they have less empathy for relationally bullied victims and are less likely to intervene in relational bullying (Bauman & Del Rio, 2006; Yoon et al., 2016). As a result, teacher-student relationship quality might be lower for relationally victimized students compared to physically victimized students. However, one longitudinal study found similar negative associations of teacher-student relationship quality with both relational and physical victimization (Demol et al., 2020). Regarding peers, a few cross-sectional studies in upper elementary school found similar positive associations of peer rejection with both physical and relational victimization (e.g., Putallaz et al., 2007). Accordingly, in one longitudinal study, associations between peer rejection and peer victimization were similar for relational and physical victimization (Demol et al., 2020). However, it has not been examined whether empirically derived physical and relational victimization trajectory classes are similarly related to classroom relationships (i.e., affective teacher-student relationships and peer social status).

Within-Year Victimization Trajectories in Upper Elementary School

Except for one study (Serdiouk et al., 2016), interindividual differences in intraindividual change in victimization have been investigated across multiple school years. Some studies focused on relatively shorter time spans (e.g., Biggs et al., 2010; Gage et al., 2014) and investigated, for instance, development of victimization during the transition from elementary to secondary school (e.g., de Vries et al., 2021). Other studies focused on longer time spans and, for instance, followed participants from early childhood into adolescence (e.g., Geoffroy et al., 2018).

In the only one-year study, third and fifth graders experienced increasing levels of victimization across the school year on average, but there were also substantial differences in the growth rates (Serdiouk et al., 2016). Although the study did not classify students in trajectories, it demonstrated that victimization can change for elementary students in a relatively short period of time (Serdiouk et al., 2016). The current study also investigates victimization trajectories within one school year in elementary school. Examining associations of victimization trajectories with classroom relationships is particularly interesting within one school year as, in this period of time, class compositions generally remain the same and elementary students typically have one classroom teacher with whom they spend a lot of time. Further, investigating these processes in upper elementary school is pertinent as most studies report that victimization peaks in early adolescence, and declines afterwards (Hymel & Swearer, 2015).

Current Study

The current three-wave longitudinal study examined whether development in relational victimization covaries with development in physical victimization from the beginning through the middle to the end of the school year. Both intraindividual development and interindividual differences in this development were investigated by identifying joint trajectory classes of relational and physical victimization across one school year in upper elementary school. Additionally, this study examined the associations of joint growth trajectory membership with peer relationships (i.e., peer rejection, acceptance) and teacher-student relationships (i.e., closeness, conflict) at the beginning of the school year. Finally, this study investigated whether and how students in distinct trajectory classes differed regarding depressive symptoms and self-esteem at the end of the school year.

Although an exploratory approach was used to investigate heterogeneous patterns of victimization, initial hypotheses regarding the possible number of trajectory classes were necessary to explore this heterogeneity in a guided way (Ram & Grimm, 2009). That is, the analyses should generate models with an increasing number of classes until, at least, the hypothesized number of classes is exceeded by one. A consistent finding from longitudinal studies spanning multiple school years is that most students experience no/low levels of victimization, whereas a small group experiences high levels of victimization.

Accordingly, it was assumed that throughout one school year in upper elementary school, most students were not or only slightly victimized, and that few students were highly victimized. Additionally, previous studies showed that some students follow increasing and decreasing trajectories of victimization across multiple school years. Accordingly, it was tentatively expected that some students become more victimized throughout one school year, whereas others become less victimized this period of time. Thus, four trajectory classes could be tentatively expected based on the available evidence. Additionally, it was explored to what extent relational and physical victimization follow different trajectories. Moreover, it was explored whether the identified trajectories were differently related to social antecedents (i.e., affective teacher-student relationships, peer social status) and emotional consequences (i.e., depressive symptoms, self-esteem).

Method

Participants

The current study used data from the one-year three-wave longitudinal study of the Teachers4Victims research project that investigated the role of teachers in bullying victimization. Across school year 2018-2019, three waves of data collection were conducted in the fourth to sixth grade of elementary school. Time-intervals between the waves were held equal for all participants (± 10 weeks). After obtaining ethical approval from the Social and Societal Ethics Committee of KU Leuven, convenience sampling was used to select the schools. Following principals' and head teachers' permission, written active parental consent was acquired for 1051 students (81.5%). Of these students, 845 participated in all three waves, 85 in two waves, 115 in one wave and six in none of the waves. Students who participated in at least two waves were selected for the analyses. Of the 121 students who participated in less than two waves, 91 belonged to a school of which the principal decided to withdraw from the study after Wave 1. In addition, 18 students belonged to a class in which a bullying problem came to light after Wave 1. To protect the well-being of the students, the school decided to end this class' participation. Finally, eight students changed schools after Wave 1, three were absent multiple times due to illness and one did not master the language of the questionnaire sufficiently to participate. As a result, the final sample consisted of 930 students within 55 classes in 12 schools (53.1% girls; Wave 1: M_{age} = 10.55, SD = .90, range 8-13 years). In this sample, 30.9%, 36.0% and 33.1% of the students were in Grade 4, 5 and 6, respectively. Most students were born in Belgium (92.1%) and spoke Dutch at home (86.4%).

Procedure

During two class hours, students individually completed paper questionnaires under the supervision of at least one master or doctoral student of the Faculty of Psychology and Educational Sciences of KU Leuven. To ensure confidentiality, students put a ring binder between their desks. At the start of each data collection moment, standardized instructions were given (e.g., how to fill in the questionnaires, how confidentiality is guaranteed) and a definition of bullying (Olweus, 1993) was read out aloud by the researcher. Students followed by simultaneously reading the definition on a printed copy. During the data collection moments, students could ask questions at any time. At the end of the study, the researcher gave a debriefing.

To reduce respondent burden, a three-form planned missing data design was used (Graham et al., 2006). Adopting current guidelines (Little & Rhemtulla, 2013; Rhemtulla & Hancock, 2016), questionnaire items (whole scales) were assigned to four item sets (X, A, B, and C). Set X was the largest and consisted of the most informative items. The four sets (X, A, B, and C) were allocated across three questionnaire forms with each form including X and missing A, B, or C (i.e., XAB, XAC, XBC). At the first wave, randomization at student-level (within classes) was used to assign students to forms (Rhemtulla & Hancock, 2016). Each form was completed by approximately one third of the students. After the first wave, forms were systematically rotated (Rhemtulla & Hancock, 2016). Thus, at the other two waves, students were assigned to the two different forms. Consequently, students who participated at all three waves completed each form once. All variables of the present study were included in set X, thus presented to the students at each wave, except for depressive symptoms and self-esteem. As the planned missing data design leads to missingness being completely at random, modern missing data techniques, such as multiple imputation, can be used to reduce the loss of power (Enders, 2010).

Measures

Victimization (Wave 1-3)

Bullying victimization as perceived by students themselves was measured by the victimization scales (i.e., relational victimization and physical/verbal victimization) of the validated Social Experiences Questionnaire (Crick & Grotpeter, 1998) as translated in Dutch (Demol et al., 2020).

Students had to indicate how often their relationships with others are harmed or threatened to be harmed (5 items) (e.g., "How often does another kid say they won't like you unless you do what they want you to do?") and how often they are harmed or threatened to be harmed physically (3 items) and verbally (2 items) (e.g., "How often do you get pushed or shoved?"; "How often are you being yelled at and called mean names?"). Each item was measured on a five-point Likert scale (1 = *Never* to 5 = *Always*). A Confirmatory Factor Analysis (CFA) in Mplus 8.6 was conducted to confirm the two-factor structure of the scale in the current sample. Model fit was evaluated by the Root Mean Square Error of Approximation (RMSEA; including its 90% confidence interval), which should be < 0.08, and preferably < 0.06; the Standardized Root Mean Square Residual (SRMR), which should be < 0.10, and preferably < 0.08; the Comparative Fit Index (CFI) and the Tucker-Lewis index (TLI), which should > 0.90, and preferably > 0.95 (Hu & Bentler, 1999; Kline, 2005; Weston & Gore, 2006). At the first wave, fit indices showed acceptable model fit (RMSEA = .08, 90% CI [.07, .09], SRMR = .05, CFI = .93, TLI = .90). However, modification indices showed that model fit could be improved by allowing the two verbal victimization items to cross-load on the factors. As in the original study with this scale (Crick & Grotpeter, 1998) and later studies (e.g., Demol et al., 2020), the verbal victimization items were dropped to be able to study physical and relational forms of victimization separately. The fit of this model with verbal items deleted was good (RMSEA = .06, 90% CI [.04, .07], SRMR = .03, CFI = .97, TLI = .96). Standardized factor loadings ranged from .63 to .78 for relational victimization and from .73 to .75 for physical victimization. Across the waves, McDonalds' Omega (Hayes & Coutts, 2020) ranged from .86 to .88 for relational victimization and from .84 to .85 for physical victimization. Mean scores on the scales were calculated and used in the subsequent analyses.

Relationships with peers and teachers (Wave 1)

All antecedents of the victimization trajectory classes, i.e., peer rejection, peer acceptance, teacher-student closeness, and teacher-student conflict, were measured by peer nominations at the first wave. Peer rejection and peer acceptance were measured with the following items: "Which classmates do you like the least?" and "Which classmates do you like the most?" (Coie et al., 1982). These items have been shown to be reliable and valid measures of the corresponding constructs (Cillessen & Bukowski, 2018).

Teacher-student closeness and teacher-student conflict were measured with the following items: "Which classmates does your teacher like the most?" and "Which classmates does your teacher often get angry with?" (Doumen et al., 2009). Discriminant validity was confirmed by medium correlation between closeness and conflict (r = -.30). Additionally, in previous research, these peer nomination items correlated significantly with students' and teachers' report of teacher-student relationship quality (Doumen et al., 2009).

Students received a list with all names of their classmates to complete the peer nominations. They were allowed to nominate an unlimited number of classmates (Terry, 2000), but not allowed to nominate themselves. Classes in which less than 60% of the students participated (Cillessen & Bukowski, 2018) or in which less than 10 students participated were excluded from the analyses to ensure reliability. Raw nomination scores were corrected for biases that could result from variations in class size using a regression-based technique (Velásquez et al., 2013). Class size (independent variable) was centered at the median value of 17 and explained 27.1% of the variance in the peer-reported measures (dependent variable). The unstandardized coefficient for the linear effect of class size was .090 and for the quadratic effect -.002. The corrected nomination scores were obtained by subtracting the class size linear and quadratic effects (i.e., centered class size * regression coefficient) from the raw nominations scores. These corrected nomination scores were used in the subsequent analyses.

Social-emotional outcomes (Wave 3)

Depressive symptoms were measured by a Dutch revision of the Major Depressive Disorder Scale (Chorpita et al., 2000) as used in studies about bullying in the Netherlands (e.g., Kaufman et al., 2018; van der Ploeg et al., 2015). Students indicated how often they experienced different kinds of depressive symptoms (e.g., "I feel that nothing is much fun anymore") by responding to nine items on a four-point Likert scale (1 = *Never* to 4 = *Always*). Self-esteem was measured by a Dutch revision of the Rosenberg Self Esteem Scale (Rosenberg, 1965) as used in studies about bullying in the Netherlands (e.g., Kaufman et al., 2018). Students indicated how often they thought or felt what the item stated (e.g., "On the whole, I am satisfied with myself"). They responded to five items on a five-point Likert scale (1= *Never* to 5 = *Always*).

Standardized factor loadings based on one-factor CFA models ranged from .49 to .65 for depressive symptoms and from .70 to .85 for self-esteem. To date, fit statistics when using the MLR estimator for imputed data are not provided in Mplus 8.6. McDonalds' Omega was .86 for depressive symptoms and .90 for self-esteem. Mean scores on the scales were calculated and used in the subsequent analyses.

Statistical Analyses

The analyses related to the exploration of missingness, and the descriptive and correlational analyses were conducted in SPSS IBM 27. The remainder of the analyses were conducted in Mplus 8.6. As preliminary analyses, first, attrition analyses were conducted to compare the students in the attrition group (N = 121) with the students in the final sample (N = 930*)* on several background and study variables measured at the first wave (Jeličić et al., 2010). A chi-square test was used to compare students' sex between the two groups. Welch's t-tests were used to compare the groups on age, relational and physical victimization, and the peer-reported antecedents of the victimization trajectory classes (i.e., peer acceptance, peer rejection, teacher-student closeness and teacher-student conflict) (Delacre et al., 2017). Second, unplanned missingness in victimization was explored by examining the levels of wave and item nonresponse. Third, intercorrelations between the study variables (i.e., antecedents, victimization forms, outcomes) were examined. Fourth, as students were clustered in classes, Intraclass Correlation Coefficients (ICCs) and design effect statistics were computed at the classroom level for all study variables (Peugh, 2010) (see Table 1). As a number of variables had small to medium ICCs (Hox, 2002) and design effect values above 2 (Peugh, 2010), in all analyses, clustering of the students in classes was taken into account by using the MLR estimator in combination with the "type = complex" command (Muthén & Muthén, 1998-2017).

Table 1

Descriptive Statistics and Correlations Between the Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Rel. Vict. (W1)	1											
2. Rel. Vict. (W2)	.69***	1										
3. Rel. Vict. (W3)	.59***	.72***	1									
4. Phy. Vict. (W1)	.50***	.38***	.33***	1								
5. Phy. Vict. (W2)	.42***	.54***	.43***	.63***	1							
6. Phy. Vict. (W3)	.37***	.42***	.51***	.55***	.62***	1						
7. Peer reject. (W1)	.16***	.11**	.07*	.10**	.09**	.01	1					
8. Peer accept. (W1)	-.17***	-.16***	-.13***	-.13***	-.12***	-.09*	-.43***	1				
9. T-S Clo. (W1)	-.05	-.02	.01	-.11**	-.10**	-.09**	-.23***	.29***	1			
10. T-S Con. (W1)	.02	-.01	-.02	.10**	.07*	.04	.53***	-.13***	-.30***	1		
11. Depr. Symp. (W3)	.30***	.40***	.40***	.29***	.30***	.34***	.10**	-.08*	-.10**	-.02	1	
12. Self-esteem (W3)	-.20***	-.31***	-.25***	-.12***	-.19***	-.18***	-.02	.03	-.01	.05	-.42***	1
N	898	877	896	898	874	890	930	930	930	930	928	927
ICC	.08	.08	.04	.10	.12	.11	.06	.12	.07	< .01	.04	.03
Design effect	2.15	2.16	1.67	2.46	2.77	2.69	1.87	2.91	2.03	1.02	1.70	1.46
Mean (*SD*)	1.93 (.77)	1.87 (.78)	1.77 (.73)	1.95 (.82)	1.84 (.77)	1.74 (.74)	2.37 (2.37)	4.01 (2.38)	1.90 (2.36)	1.73 (3.58)	1.70 (.48)	3.75 (.88)
Range	1.00-4.80	1.00-4.80	1.00-4.60	1.00-5.00	1.00-4.33	1.00-5.00	.00-13.00	.00-13.82	.00-12.82	.00-21.56	1.00-4.00	1.00-5.00

Note. Rel. Vict. = relational victimization; Phy. Vict. = physical victimization; Peer reject. = peer rejection; Peer accept. = peer acceptance; T-S Clo. = Teacher-student closeness; T-S Con. = teacher-student conflict; Depr. Symp. = depressive symptoms; *N* = number of participants; ICC = intraclass correlation coefficients. For depressive symptoms and self-esteem, the descriptive statistics of the imputed data are shown.
* $p < .05$. ** $p < .01$. *** $p < .001$. Two-tailed testing of significance.

Identification of relational and physical victimization trajectory classes

Bivariate latent growth modeling was used to determine whether development in relational victimization covaries with development in physical victimization and to investigate both intraindividual development and interindividual differences in this development by identifying victimization trajectory classes (Duncan et al., 2006; Jung & Wickrama, 2008). A four step process was followed in which both bivariate latent class growth analyses (LCGA) and bivariate growth mixture modeling (GMM) were used (Berlin, Parra, et al., 2014; Ram & Grimm, 2009). Whereas all previous studies used only one of these techniques, the current study used both LCGA and GMM as different assumptions are underlying these modeling approaches and more robust conclusions can be drawn when results are similar (Herle et al., 2020; van de Schoot et al., 2017). The main difference between the approaches is that LCGA assumes homogeneity within classes, whereas GMM does not (Herle et al., 2020). To deal with unplanned missingness in the data, the original idea was to improve maximum likelihood estimation by including variables that correlate with missingness as auxiliary variables in the analyses (Enders, 2010). However, this could not be executed as this auxiliary option for missing data correlates is not yet available for LCGA and GMM ("type = mixture") in Mplus 8.6.

In Step 1, patterns of change over time in relational and physical victimization were investigated. Univariate single-class latent growth curve models were estimated for relational and physical victimization separately (Duncan et al., 2006). The fit of an intercept only model was compared to the fit of a model that included an intercept and a linear slope (Ram & Grimm, 2009). A chi-square difference test based on loglikelihood values and scaling correction factors obtained with the MLR estimator was used. To evaluate the fit of the selected models, RMSEA (including its 90% confidence interval), SRMR and CFI were inspected (e.g., Kline, 2005). The best-fitting univariate latent growth curve models were then used in a bivariate latent growth curve model (i.e., modelling relational and physical victimization simultaneously) and model fit was evaluated.

In Step 2, starting from the bivariate latent growth curve model from Step 1, a series of unconditional bivariate latent class growth models and a series of unconditional bivariate growth mixture models were specified with an increasing number of classes that had to be generated (Berlin, Parra, et al., 2014). The number of classes that had to be generated was at least five, as four different trajectory classes were expected (Ram & Grimm, 2009).

However, to examine the full range of possible solutions, models with higher numbers of classes were estimated until the fit indices of at least two models had stopped improving (van de Schoot et al., 2017). As a starting point, Mplus default settings regarding parameterization were used.

In Step 3, the models specified in Step 2 were estimated. The LCGA models were estimated first as they are more restrictive and tend to have fewer statistical problems (Berlin, Parra, et al., 2014). To avoid local maxima, the number of random sets of starting values was set at 100, and the number of final stage optimizations and STITERATIONS at 20 (Muthén & Muthén, 1998-2017). If the best loglikelihood value was not replicated in the initial stage, random starts were increased. If the best loglikelihood value was replicated, the analysis was rerun with twice the random starts to investigate whether the value was again obtained and replicated (Muthén & Muthén, 1998-2017).

In Step 4, the number of classes was decided on. Several criteria were used to compare models within modeling approaches and to decide for each modeling approach which models could be considered for interpretation (Ram & Grimm, 2009). First, the output was inspected for potential problems (e.g., warnings or local maxima). Second, it was verified that no classes consisted of less than 5% of the students (Nguena Nguefack et al., 2020). Third, several statistics were inspected. Improvement in fit was examined by comparing the Bayesian information criterion (BIC) with lower values indicating better fit. Additionally, the Vuong-Lo-Mendell-Rubin likelihood ratio test (VLMR-LRT) and the adjusted Lo-Mendell-Rubin likelihood ratio test (adjusted LMR-LRT) were inspected with significant p-values showing statistically significant improvement in fit (van de Schoot et al., 2017). The bootstrap likelihood ratio test (BLRT) could not be inspected as it was unavailable in combination with the "type = complex" command in Mplus 8.6. In addition, entropy was inspected with higher values indicating better classification accuracy. Fourth, each solution was examined qualitatively for its substantive meaning (Berlin, Williams, et al., 2014). More specifically, the qualities of the added class were examined (i.e., intercepts and slopes for the victimization forms). After deciding for each modeling approach which models could be considered for interpretation, these considered solutions were compared across modeling approaches to examine whether a robust solution could be identified (Herle et al., 2020).

Peer-reported antecedents of the victimization trajectory classes

To examine whether the trajectory classes differed regarding peer rejection, peer acceptance, teacher-student closeness and conflict (Wave 1), the modified 3-step Bolck–Croon–Hagenaars (BCH) approach was used (Bakk et al., 2014). In 3-step approaches, associations between class membership and predictors are investigated after determining class memberships based on previously identified latent classes (see above) (Bakk et al., 2014). Different from other 3-step approaches, the modified BCH approach uses a weighted multiple group analysis in the last step to account for classification error in the latent class memberships. The used weights are the class assignment probabilities (Asparouhov & Muthén, 2021). Currently, this is the preferred method for continuous distal outcome variables in Mplus (Asparouhov & Muthén, 2021). The manual BCH approach for estimating the mean of distal continuous outcomes across latent classes while controlling for possible covariates was used (Asparouhov & Muthén, 2021). Beforehand, it was examined whether students' sex and age were predictive of class assignment and should be added as covariates. The equality of class-specific means (or intercepts when covariates were added) was tested using the Wald Chi-square test. A model in which the mean of the distal outcome was constrained across classes was compared to a model in which the mean could vary across classes.

Social-emotional outcomes of the victimization trajectory classes

As a preliminary step, multiple imputation was used to deal with the planned and unplanned missingness on the outcome variables (i.e., depressive symptoms, self-esteem). The three-form design resulted in one third of the students having planned missingness on these variables at Wave 3 (32.3%). However, as systematic rotation of forms was used, this one third of the students did complete these measures at Wave 1 and 2. Hence, the missing data for these students at Wave 3 were imputed based on the data from the previous two waves. In addition to the planned missingness, 5.7% of the students had unplanned missingness for depressive symptoms and 4.5% for self-esteem. The unplanned item nonresponse for depressive symptoms (Wave 3) ranged from 2.1% to 3.0% and for self-esteem (Wave 3) from 1.8% to 2.3%. As missingness was assumed to be at random, these unplanned missing data were imputed simultaneously with the planned missing data. The variance-covariance H1 model was used, which is the default in Mplus (Asparouhov & Muthén, 2010).

A total of 20 imputed datasets were generated (Enders, 2010). Subsequently, the values from the imputed datasets were averaged to obtain one score for each participant. To examine whether the trajectory classes differed regarding depressive symptoms and self-esteem (Wave 3), the same manual BCH approach as for the antecedents was used (Asparouhov & Muthén, 2021).

Results

Missingness

First, attrition analyses revealed that the attrition group (N = 121) did not differ from the final sample (N = 930) with regard to sex, relational victimization, peer rejection, and teacher-student closeness and conflict. However, students in the attrition group were slightly older (t(152.167) = 2.01, p = .046, g = .196, 95% CI [.006, .385]), reported less physical victimization (t(156.564) = -2.328, p = .021, g = -.202, 95% CI [-.397, -.007]), and were less accepted by peers (t(161.131) = -5.396, p < .001, g = -.480, 95% CI [-.671, -.290]). Second, wave nonresponse in the final sample was 2.0%, 4.5% and 2.6% for Wave 1 to 3, respectively. Item nonresponse for relational victimization ranged from 2.4 to 5.2% and for physical victimization from 2.6 to 5.5%. Missingness was assumed to be at random.

Descriptive and Correlational Analyses

Descriptive statistics of the study variables are presented in Table 1. Mean scores for relational and physical victimization were relatively low and showed a decreasing trend across the school year. On average, students received 2.37 nominations for peer rejection, 4.01 for peer acceptance, 1.90 for teacher-student closeness and 1.73 for teacher-student conflict. Additionally, students reported relatively low levels of depressive symptoms and relatively high levels of self-esteem. Correlations between the study variables (i.e., Wave 1 antecedents, Wave 1-3 victimization forms, Wave 3 outcomes) were examined (see Table 1). The intercorrelations of both forms of victimization at adjacent waves were high and positive (relational victimization: .59 < rs < .72; physical victimization: .55 < rs < .63) (Cohen, 1988). Also, relational and physical victimization were highly positively correlated within and across time (.50 < rs < .54). With regard to the Wave 1 antecedents, relational and physical victimization were positively correlated with peer rejection (.01 < rs < .16) and negatively with peer acceptance (-.17 < rs < -.09). Physical victimization correlated negatively with teacher-student closeness (-.11 < rs < -.09) and positively with teacher-student conflict (.04 < rs < .10).

Correlations between relational victimization and teacher-student closeness and conflict were not significant. With regard to Wave 3 outcomes, relational victimization was positively correlated with depressive symptoms (.30 < *rs* < .40) and negatively with self-esteem (-.31 < *rs* < -.20). The correlations with physical victimization were similar, albeit somewhat smaller (depressive symptoms: .29 < *rs* < .34; self-esteem; -.19 < *rs* < -.12).

Latent Growth Curve Models

The univariate models including an intercept and a linear slope had a better fit to the data than the intercept only models (relational victimization: χ^2 (3, N = 930) = 61.19, p < .001; physical victimization: χ^2 (3, N = 930) = 53.72, p < .001). The fit of the selected models was good (relational victimization: RMSEA = .038, RMSEA 90% CI = [.000, .104], SRMR = .012, CFI = .998; physical victimization: RMSEA < .001, RMSEA 90% CI = [.000, .032], SRMR = .001, CFI = 1.000). The bivariate model included intercepts and linear slopes for relational and physical victimization as well as within-time residual covariances between the victimization forms (Bollen & Curran, 2006). Model fit was good (RMSEA = .007, RMSEA 90% CI = [.000, .051], SRMR = .008, CFI = 1.000).

The intercepts and slopes for relational and physical victimization differed from zero and had significant variability (relational victimization: $M_{\text{intercept}}$ = 1.94, SE = .04, p < .001; $\text{Var}_{\text{intercept}}$ = .49, SE = .05, p < .001; M_{slope} = -.08, SE = .01, p < .001; $\text{Var}_{\text{slope}}$ = .07, SE = .01, p < .001; physical victimization: $M_{\text{intercept}}$ = 1.95, SE = .05, p < .001; $\text{Var}_{\text{intercept}}$ = .45, SE = .05, p < .001; M_{slope} = -.11, SE = .02, p < .001; $\text{Var}_{\text{slope}}$ = .04, SE = .02, p = .028). On average, students experienced less relational and less physical victimization across the school year, but interindividual differences in the initial victimization levels and the rates of change were also found. The intercept-slope covariance for each form of victimization was negative (relational: $\text{Covar}_{\text{intercept-slope}}$ = -.08, p < .001; physical: $\text{Covar}_{\text{intercept-slope}}$ = -.06, p = .004), indicating that, on average, students who experienced higher levels of relational or physical victimization at the beginning of the school year had steeper decreases in this form of victimization later on. Positive covariance was found between relational and physical victimization intercepts ($\text{Covar}_{\text{intercept-intercept}}$ = .28, p < .001), indicating that, on average, students who experienced higher initial levels of relational victimization also experienced higher initial levels of physical victimization. Additionally, positive covariance was found between relational and physical victimization slopes ($\text{Covar}_{\text{slope-slope}}$ = .04, p < .001), indicating that, on average, students who had steeper decreases in one victimization form also had steeper decreases in the other form.

Relational and Physical Victimization Trajectory Classes

Models with one to, at least, five classes were compared to identify trajectory classes of relational and physical victimization. Consistent with the selected bivariate latent growth curve model, the bivariate latent class growth models and latent growth mixture models included intercepts and linear slopes for relational and physical victimization as well as within-time residual covariances between the victimization forms. In the LCGA models, the residual variances of the latent factors (i.e., intercepts and slopes) were fixed at zero. While running the GMM models, a warning indicated that the estimated correlation for the intercept and slope of physical victimization exceeded 1. As the residual variance of the physical victimization slope was non-significant, it could be fixed at zero to solve the problem. As a result, in all GMM models, the residual variance of the physical victimization slope was fixed at zero as well. No other problems were encountered during the analyses and global maxima were obtained for all solutions.

For the LCGA models (see Table 2), none of the models had classes consisting of less than 5% of the students. Inspecting the statistics revealed that a higher number of classes was better according to BIC values, but not according to the VLMR- and adjusted LMR-likelihood ratio tests, which were non-significant at $\alpha < .05$ from the 3-class model onwards. However, *p*-values remained relatively small. Also, entropy slightly decreased with increasing numbers of classes, but remained over .80. Based on these statistics, the 2-class model could be preferred. However, model selection also includes a qualitative examination of each solution (Berlin, Williams, et al., 2014). As the inspected statistics indicated that each solution was suitable for consideration, the substantive meaning of each solution and their classes was examined. In each multiple-class solution, the first and largest class showed relatively low initial levels of both physical and relational victimization and a significant decrease in both forms over time. The second class showed higher initial relational than physical victimization. Also, in this class, physical victimization significantly decreased over time whereas relational victimization did not (except for the 5-class model). Further, in the 3-, 4- and 5-class model, a third class showed higher initial physical victimization than relational victimization. Both forms significantly decreased over time. Next, in the 4- and 5-class model, a fourth class showed relatively high initial levels of physical and relational victimization and no significant decreases over time. Finally, in the 5-class model, a fifth class showed higher initial relational than physical victimization and no significant decreases over time.

Taken together, the quantitative and qualitative examination of the LCGA solutions indicated that each solution is worth considering for further interpretation. However, based on the quantitative indicators, the 2-class model could be preferred.

With regard to the GMM approach (see Table 3), the 4- and 5-class models were not taken into consideration as there were classes consisting of less than 5% of the students. Also, for these models, *p*-values from the VLMR- and adjusted LMR- likelihood ratio tests were high. With regard to the 1- to 3-class models, a higher number of classes was better according to BIC values. Entropy was almost equal for the 2- and 3-class model. The VLMR- and adjusted LMR- likelihood ratio tests were non-significant at $\alpha < .05$ for the 3-class model, but the *p*-value remained relatively small. Based on these statistics, both a 2- and 3-class model could be selected and these models were examined for their substantive meaning. Consistent with the LCGA models, in the 2- and 3-class solution, the biggest class showed relatively low initial physical and relational victimization and a significant decrease in both forms over time. Also consistent with LCGA, the second class showed higher initial relational victimization than physical victimization and no significant decrease in relational victimization. However, inconsistent with LCGA, physical victimization did not significantly decrease in the second class of the 2-class solution. Also inconsistent with LCGA, the third class in the 3-class solution showed higher relational than physical victimization and a significant increase in relational victimization over time.

Table 2

LCGA Model Fit Indices and Parameter Estimates for Relational and Physical Victimization: 1 to 5 Classes

						BIC	Entr.	VLMR LRT	Adj. LMR LRT
1.	*N* = 930					11599.1	-	-	-
	I_{PV} = 1.95***								
	S_{PV} = -.10***								
	I_{RV} = 1.94***								
	S_{RV} = -.08***								
2.	*N* = 690 (74%)	*N* = 240 (26%)				10503.3	.88	< .001	< .001
	I_{PV} = 1.73***	I_{PV} = 2.57***							
	S_{PV} = -.10***	S_{PV} = -.12***							
	I_{RV} = 1.62***	I_{RV} = 2.86***							
	S_{RV} = -.09***	S_{RV} = -.07							
3.	*N* = 619 (67%)	*N* = 171 (18%)	*N* = 140 (15%)			10191.5	.85	.06	.06
	I_{PV} = 1.59***	I_{PV} = 2.31***	I_{PV} = 2.97***						
	S_{PV} = -.09***	S_{PV} = -.08*	S_{PV} = -.20**						
	I_{RV} = 1.60***	I_{RV} = 2.94***	I_{RV} = 2.18***						
	S_{RV} = -.09***	S_{RV} = -.03	S_{RV} = -.12*						
4.	*N* = 507 (55%)	*N* = 135 (15%)	*N* = 213 (23%)	*N* = 75 (8%)		9890.6	.83	.07	.07
	I_{PV} = 1.47***	I_{PV} = 2.02***	I_{PV} = 2.53***	I_{PV} = 3.21***					
	S_{PV} = -.08***	S_{PV} = -.13*	S_{PV} = -.18***	S_{PV} = -.03					
	I_{RV} = 1.53***	I_{RV} = 2.77***	I_{RV} = 1.95***	I_{RV} = 3.12***					
	S_{RV} = -.08***	S_{RV} = -.02	S_{RV} = -.12***	S_{RV} = -.10					
5.	*N* = 450 (48%)	*N* = 208 (22%)	*N* = 142 (15%)	*N* = 72 (8%)	*N* = 58 (6%)	9754.7	.82	.12	.13
	I_{PV} = 1.47***	I_{PV} = 1.98***	I_{PV} = 2.62***	I_{PV} = 3.22***	I_{PV} = 2.12***				
	S_{PV} = -.08***	S_{PV} = -.17***	S_{PV} = -.15**	S_{PV} = -.05	S_{PV} = -.06				
	I_{RV} = 1.45***	I_{RV} = 2.32***	I_{RV} = 1.80***	I_{RV} = 3.08***	I_{RV} = 3.21***				
	S_{RV} = -.08***	S_{RV} = -.10**	S_{RV} = -.09*	S_{RV} = -.11	S_{RV} = -.00				

Note. N = number of students in class based on most likely latent class memberships; I = intercept; S = slope; PV = physical victimization; RV = relational victimization; BIC = Bayesian information criterion; Entr. = Entropy; VLMR LRT = Vuong-Lo-Mendell-Rubin likelihood ratio test; Adj. LMR LRT = adjusted Lo-Mendell-Rubin likelihood ratio test (adjusted LMR-LRT).

* $p < .05$. ** $p < .01$. *** $p < .001$. Two-tailed testing of significance.

Table 3

GMM Model Fit Indices and Parameter Estimates for Relational and Physical Victimization: 1 to 5 Classes

						BIC	Entr.	VLMR LRT	Adj. LMR LRT
1.	*N* = 930					9802.4	-	-	-
	I_{PV} = 1.95***								
	S_{PV} = -.11***								
	I_{RV} = 1.94***								
	S_{RV} = -.08***								
2.	*N* = 744 (80%)	*N* = 186 (20%)				9635.3	.83	.02	.02
	I_{PV} = 1.82***	I_{PV} = 2.44***							
	S_{PV} = -.11***	S_{PV} = -.07							
	I_{RV} = 1.72***	I_{RV} = 2.79***							
	S_{RV} = -.12***	S_{RV} = .06							
3.	*N* = 615 (66%)	*N* = 242 (26%)	*N* = 73 (8%)			9569.4	.84	.08	.09
	I_{PV} = 1.78***	I_{PV} = 2.26***	I_{PV} = 2.28***						
	S_{PV} = -.12***	S_{PV} = -.14***	S_{PV} = .10						
	I_{RV} = 1.64***	I_{RV} = 2.40***	I_{RV} = 2.85***						
	S_{RV} = -.15***	S_{RV} = -.04	S_{RV} = .29***						
4.	*N* = 683 (73%)	*N* = 153 (16%)	*N* = 93 (10%)	*N* = 1 (.1%)		9616.2	.84	.88	.88
	I_{PV} = 1.65***	I_{PV} = 2.33***	I_{PV} = 3.25***	I_{PV} = 3.67***					
	S_{PV} = -.06*	S_{PV} = .01	S_{PV} = -.55*	S_{PV} = -2.67***					
	I_{RV} = 1.68***	I_{RV} = 2.77***	I_{RV} = 2.32***	I_{RV} = 1.00***					
	S_{RV} = -.11**	S_{RV} = .11	S_{RV} = -.21	S_{RV} = .60***					
5.	*N* = 653 (70%)	*N* = 115 (12%)	*N* = 81 (9%)	*N* = 40 (4%)	*N* = 41 (4%)	9532.1	.82	.61	.62
	I_{PV} = 1.62***	I_{PV} = 2.12***	I_{PV} = 3.27***	I_{PV} = 2.50***	I_{PV} = 3.01***				
	S_{PV} = -.05**	S_{PV} = -.05	S_{PV} = -.60**	S_{PV} = -.37***	S_{PV} = .22				
	I_{RV} = 1.61***	I_{RV} = 2.63***	I_{RV} = 2.11***	I_{RV} = 3.17***	I_{RV} = 3.14***				
	S_{RV} = -.08***	S_{RV} = .19**	S_{RV} = -.15	S_{RV} = -.72***	S_{RV} = -.10				

Note. *N* = number of students in class based on most likely latent class memberships; I = intercept; S = slope; PV = physical victimization; RV = relational victimization; BIC = Bayesian information criterion; Entr. = Entropy; VLMR LRT = Vuong-Lo-Mendell-Rubin likelihood ratio test; Adj. LMR LRT = adjusted Lo-Mendell-Rubin likelihood ratio test (adjusted LMR-LRT).

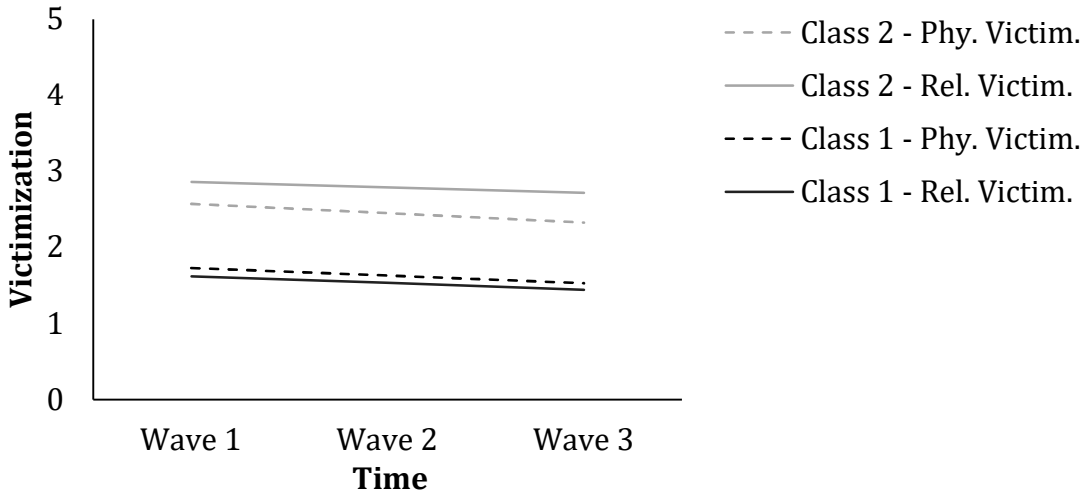
** p* < .05. *** p* < .01. **** p* < .001. Two-tailed testing of significance.

As indicated above, after deciding for each modeling approach which models could be considered for interpretation, these considered solutions were compared across modeling approaches to examine whether a robust solution could be identified (Herle et al., 2020). While for LCGA, all models could be considered (with the 2-class model being preferred based on the quantitative indicators), for GMM, only the 2- and 3-class model could be considered. Whereas the 3-class models were inconsistent, the 2-class models showed similar growth factors in both modeling approaches. Thus, across both modeling approaches, the 2-class model appeared to be the most robust solution that also performed well according to the quantitative indicators (see Figure 1 and 2). The average latent class probabilities for most likely latent class membership were all close to one (LCGA: class 1 = .98, class 2 = .94; GMM: class 1 = .96, class 2 = .91), indicating high classification accuracy for the two classes in the two modelling approaches (Frankfurt et al., 2016). Within this solution, in the first class, levels of relational and physical victimization at the beginning of the school year were lower compared to the sample means and the second class. Further, in the first class, relational and physical victimization significantly decreased across the school year. In the second class, levels of relational and physical victimization were higher compared to the sample means and the first class. Relational victimization was higher than physical victimization. For this class, no significant changes in the levels of relational victimization across the school year were found, whereas physical victimization significantly decreased, but only according to the LCGA model.

Students' sex and age predicted class membership (LCGA solution, sex: B = -.75, SE = .18, p < .001; age: B = .53 , SE = .12, p < .001; GMM solution, sex: B = -.87, SE = .26, p = .001; age: B = .46, SE = .12, p < .001) and were included as covariates in the analyses to examine how distal variables (i.e., peer-reported Wave 1 antecedents, self-reported Wave 3 outcomes) are related to the victimization trajectory classes (see below). Both class assignment probabilities and the distal variables were regressed on students' sex and age.

Figure 1

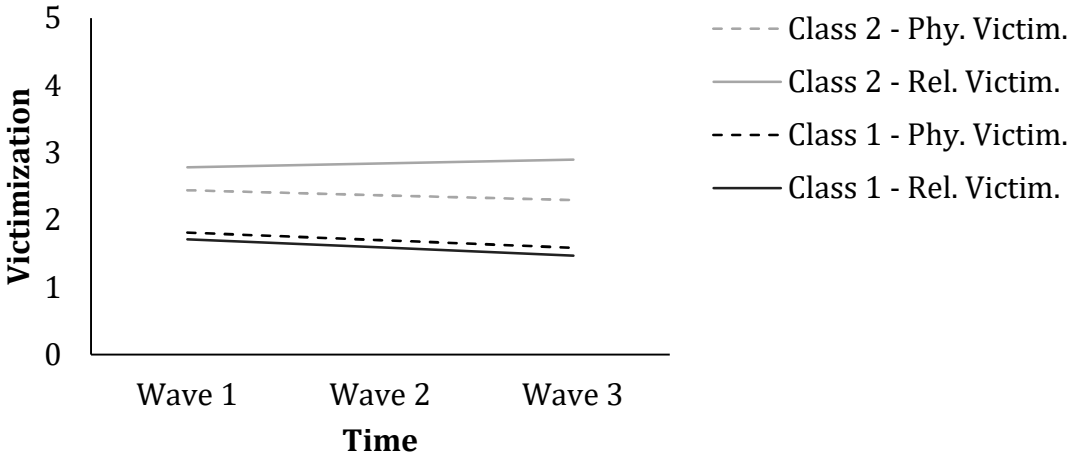
LCGA Two-Class Model



Note. Phy. Victim. = physical victimization; Rel. Victim. = relational victimization.

Figure 2

GMM Two-Class Model



Note. Phy. Victim. = physical victimization; Rel. Victim. = relational victimization.

Relationships with Peers and Teachers

In five classrooms (N = 61) participation rates were lower than 60% and in three additional classrooms (N = 20) less than 10 students participated. As a result, for these analyses, data were available for 847 students. Class-specific intercepts showing the effect of trajectory class on the distal variables beyond the effect of students' sex and age were compared using the Wald Chi-square test. The results based on the LCGA and GMM solution were similar (see Table 4). The trajectory classes differed significantly regarding Wave 1 peer rejection and acceptance, but not regarding Wave 1 teacher-student closeness and conflict. As expected, the second class demonstrated higher levels of peer rejection and lower levels of peer acceptance. These effects were small in size (Cohen, 1988).

Social-Emotional Outcomes

Also for social-emotional outcomes, the results based on the LCGA and GMM solution were similar (see Table 4). The two trajectory classes differed significantly regarding Wave 3 depressive symptoms and self-esteem. As expected, the second class had higher levels of depressive symptoms and lower levels of self-esteem. These effects were large (Cohen, 1988).

Table 4

Predictors and Outcomes by Trajectory Class

Variable	Class 1: Intercept	Class 2: Intercept	Wald χ^2 (df)	Class 1: Mean (*SD*)	Class 2: Mean (*SD*)	Hedges' *g*
LCGA						
Peer Rejection	-2.04	-1.18	13.62*** (1)	2.27 (2.34)	2.79 (2.33)	.22
Peer Acceptance	.45	-.45	22.00*** (1)	4.34 (2.36)	3.38 (2.36)	.41
Teacher-Student Closeness	2.62	2.21	3.39 (1)	1.86 (2.34)	1.82 (2.32)	.02
Teacher-Student Conflict	-.30	-.07	.61 (1)	1.89 (3.67)	1.48 (3.63)	.11
Depressive symptoms	1.75	2.15	63.47*** (1)	1.60 (.48)	2.00 (.48)	.83
Self-esteem	4.43	3.75	71.84*** (1)	3.93 (.82)	3.24 (.82)	.84
GMM						
Peer Rejection	-1.66	-.94	7.72** (1)	2.31 (2.34)	2.73 (2.34)	.18
Peer Acceptance	.24	-.72	15.92*** (1)	4.31 (2.36)	3.29 (2.36)	.43
Teacher-Student Closeness	2.52	2.08	3.21 (1)	1.86 (2.34)	1.80 (2.32)	.03
Teacher-Student Conflict	-.25	.01	.65 (1)	1.86 (3.67)	1.47 (3.63)	.11
Depressive symptoms	1.84	2.26	67.24*** (1)	1.61 (.45)	2.04 (.45)	.96
Self-esteem	4.27	3.55	65.35*** (1)	3.91 (.82)	3.16 (.82)	.91

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. Two-tailed testing of significance.

Discussion

Bullying among students is a prevalent problem that is related to a wide range of short- and long-term detrimental outcomes, especially for victims (Arseneault, 2018). Increasing evidence suggests that interindividual differences in the severity of these negative outcomes can result from differences in victimization experiences (e.g., Sheppard et al., 2019). Besides variation in victimization frequency and duration, students can be targeted in different ways (Nylund et al., 2007). By adopting a person-oriented approach, students who share a similar pattern of change in victimization over time can be grouped together and differences between these trajectory classes on possible antecedents and consequences of victimization can be examined (Frankfurt et al., 2016). Taking an ecological perspective on bullying (Thomas, 2021), variable-oriented longitudinal studies have shown that students' relationships with peers and teachers can predict victimization. Person-oriented studies can provide complementary evidence and shed light on how these classroom social relationships are related with heterogeneity among victimized students. Further, although previous research has indicated that relational victimization is more strongly related to internalizing problems than physical victimization (Casper & Card, 2017), few longitudinal studies have examined victimization trajectory classes based on victimization form. Moreover, no studies have examined links between these classes and social-emotional outcomes. The current one-year three-wave study addressed these gaps by investigating how empirically derived joint trajectory classes of physical and relational victimization were related to relationships with peers and teachers at the beginning of the school year and social-emotional outcomes at the end of the school year. This way, this study contributes to the evidence base for designing tailored interventions against bullying.

Development in Physical and Relational Victimization Throughout the School Year

Throughout the school year, substantial change in average victimization levels was found. Initial levels of relational and physical victimization were similar and decreased across the school year, with steeper decreases for students who experienced more initial victimization. The finding that victimization decreased throughout the school year is in line with studies showing that victimization peaks in early adolescence, and declines afterwards (Hymel & Swearer, 2015). However, the finding is in contrast with a previous one-year longitudinal study showing an increase in victimization within the first, third and fifth grade of elementary school (Serdiouk et al., 2016).

A possible explanation for the decrease in victimization can be situated in a possible motive for bullying others: achieving or maintaining a high social status in the peer group (Salmivalli, 2010). Peer status might change from one school year to the next due to, for instance, developmental changes in youth as well as structural changes in groups (Cillessen & Bukowski, 2018). As a result, at the beginning of a new school year, students might put more effort in achieving a favorable position in the peer group. To achieve this goal, some students might show more bullying behavior (Hawley, 2015), and relatedly, victimization in the classroom can increase.

Further, throughout the school year, both victimization forms covaried substantially. On average, students who reported to be more strongly victimized initially in one way, also reported to be more strongly victimized initially the other way. In addition, students who reported stronger decreases in one form, also reported stronger decreases in the other form. These findings are in line with previous studies showing a high correlation between these forms (Casper & Card, 2017). Nevertheless, consistent with previous studies (e.g., Crick & Grotpeter, 1998; Desjardins et al., 2013), an investigation of the construct validity of the victimization measure indicated that relational and physical victimization are two distinct concepts. Summarizing, besides showing that victimization does not remain stable throughout the year, the current study found considerable differences between students regarding within-year changes in victimization. In this way, the study pointed out the importance of investigating development of victimization with person-centered techniques.

Relational and physical victimization trajectory classes

Two person-oriented techniques have been widely used to investigate victimization trajectory classes. Whereas one technique (i.e., LCGA) does not assume that there are distinct subpopulations of individuals within a sample, the other (i.e., GMM) does assume that groups represent distinct subpopulations (Frankfurt et al., 2016). Besides this conceptual difference, these techniques have important statistical differences (Frankfurt et al., 2016). As a result, it is difficult to compare results from studies that used a different technique. Whereas all previous studies identified trajectory classes of victimized by using only one of these person-oriented techniques, the current study compared the results of both techniques (van de Schoot et al., 2017) and examined whether a robust solution could be identified (Herle et al., 2020).

Robust evidence was found for a two-class solution. The majority of students (74-80%) belonged to a trajectory class in which levels of both relational and physical victimization were relatively low and further decreased across the school year. In the second class with a smaller number of students, levels of relational and physical victimization were relatively high, with higher levels of relational than physical victimization. These levels remained generally stable. Only when the statistical analyses did not allow variance between students within classes (i.e., LCGA approach), a decrease in physical victimization across the school year was visible. Regarding the interpretation of the classes, it is important to bear in mind that they are latent. That is, these classes are not considered to be distinct groups that can be observed as such in classrooms. These classes should be looked at as a categorization of a continuum of interindividual differences in intraindividual change in victimization over time (Biggs et al., 2010). Thus, in the classroom context, there is considerable heterogeneity among students regarding victimization experiences across the school year. This heterogeneity should be looked at as a continuum of varying victimization experiences. The current study identified one way in which this continuum can be transformed into categories of different classes. However, these classes are not existing distinct groups of students in the classroom.

Two studies investigating development in general victimization across two years in the second to fifth grade of elementary school (Kaufman et al., 2018) and in the first two grades of secondary school (de Vries et al., 2021) identified a similar two-class solution. A large group of students were non-victimized or only slightly, and a small group of students experienced relatively high levels of victimization. Both studies showed that victimization decreased over time. However, it should be considered that these studies spanned two school years whereas the current study spanned one school year.

Links with Peer and Teacher-Student Relationships and Social-Emotional Outcomes

Links with peer social status as antecedent and social-emotional behaviors as consequence were in the expected direction. The group of students that experienced more victimization across the school year was, on average, less liked and more disliked by classmates at the beginning of the school year. These results confirm prior variable-oriented research (e.g., Sentse et al., 2015) and extend prior person-oriented research (e.g., Kaufman et al., 2018).

The current study showed that students with a low social status in the classroom are more likely to follow a trajectory characterized by higher levels of victimization throughout one school year in upper elementary school. Additionally, students in this trajectory reported, on average, more depressive symptoms and lower self-esteem at the end of the school year. These results confirm the dose-response relation between victimization and depressive symptoms (Moore et al., 2017) and extend it to self-esteem. Regarding the role of affective dyadic teacher-student relationships as a possible antecedent of victimization development, it was demonstrated that levels of teacher-student closeness and conflict were similar for the victimization trajectory classes. These results are not consistent with previous variable-oriented studies showing that low-quality teacher-student relationships can predict higher levels of victimization over time (e.g., Demol et al., 2020). However, they are in line with variable-oriented studies that did not provide evidence for the role of affective teacher-student relationships as antecedent of victimization (Troop-Gordon & Kopp, 2011). As the current study was the first to investigate differences between empirically derived classes of victims with regard to teacher-student relationships, future person-oriented studies are needed to replicate these findings. In addition, it is recommended that future studies also examine other dimensions of teacher-student interactions that might have more direct effects in reducing bullying and victimization (e.g., targeted preventive actions of teachers and teachers' interventions in bullying).

Regarding the victimization forms, the identified two-class model did not make it possible to examine potential differential associations of relational and physical victimization with the social antecedents and emotional consequences. However, in line with previous research (Casper & Card, 2017), the correlations showed that the negative association with the social-emotional behaviors was a little bit stronger for relational than physical victimization. Additionally, the correlations showed that the affective quality of teacher-student relationships was negatively associated with physical victimization, but not statistically significant with relational victimization. This is contrary to expectations as, based on previous evidence (Demol et al., 2020; Yoon et al., 2016), either equally strong associations or more strong associations with relational victimization were expected.

Strengths, Limitations, and Suggestions for Future Research

The current study used a person-oriented approach to investigate joint trajectory classes of relational and physical victimization across one school year and to examine differences between these classes with regard to relationships with peers and teachers and social-emotional outcomes. Strengths of the study are the large sample size, the longitudinal design that allowed to examine the temporal sequence of variables, the use of a multi-informant and multi-dimensional approach and state-of-the-art statistical techniques to find the most robust and reliable results. However, the study also had some limitations that should be considered.

First, this study distinguished between two prevalent victimization forms. However, other prevailing forms, such as victimization by cyberbullying, were not included. To get more insight into heterogeneity in victimization experiences, future studies are recommended to focus on how several forms of victimization are interrelated over time and how they are linked to social and emotional processes.

Second, social-emotional correlates of the victimization trajectories (i.e., peer social status, affective teacher-student relationships, depressive symptoms, and self-esteem) were examined at single time points as possible antecedents and consequences. Thus, no evidence was provided on how development in these correlates is intertwined with victimization throughout the school year. Additionally, both victimization and the social-emotional outcomes were measured by student self-report. As a result, shared method variance might have increased these effects. Further, all social antecedents (i.e., peer social status, affective teacher-student relationships) were measured by peer nominations. However, the differential findings for students' interactions with peers and teachers can attenuate criticism of same-informant bias. Nonetheless, adding measures by other informants (e.g., peers, teachers, parents) could yield a more comprehensive overview of victimization and social-emotional processes in future studies.

Third, victimization trajectory classes were based on frequency, duration and form, but not on intensity. However, students might also differ regarding how intense or harmful victimization is to them. These differences in felt intensity might have implications for the associated difficulties. Therefore, future studies are encouraged to incorporate this aspect in their investigation of victimization.

Fourth and last, a two-class model was identified as a robust solution based on two person-oriented techniques (i.e., LCGA and GMM). However, the analyses also indicated that more differentiation exists among victimized students. Future research could provide further insight into this heterogeneity by, for instance, using bigger samples or subsamples of victimized students.

Practical Implications

Identifying patterns of victimization development and shedding light on social factors as possible antecedents and emotional factors as possible consequences yielded several insights for educational practice. First, levels of relational and physical victimization were found to be higher in the first few months of the school year. Therefore, schools and, in particular teachers, are encouraged to put effort in promoting healthy relationships among peers and in managing social dynamics from the start of the school year on (Farmer et al., 2018). Additionally, throughout the school year, relational and physical victimization were found to covary. Thus, physically bullied students were likely to be relationally bullied as well. Moreover, the group of students that reported higher victimization levels experienced relatively more relational than physical victimization. Although victimization should be decreased in all its forms, previous research demonstrated that teachers consider relational bullying as less serious, feel less empathy for relationally victimized students and are less likely to intervene in relational bullying as compared to physical bullying (Yoon et al., 2016). In addition, although bullying victimization often happens behind teachers' back (Demaray et al., 2013), physical victimization might be more visible for teachers than relational victimization as the latter form often includes indirect attacks that are more covert in nature (e.g., spreading rumors or lies about someone) (Beran & Stewart, 2008; Stassen Berger, 2007). Thus, when physical bullying shows up, relational bullying is possibly occurring as well, perhaps even at a higher rate. Due to the high occurrence of relational victimization and its link with internalizing problems, it is important that misconceptions among teachers about relational victimization are defeated, that they are attentive for signals of different bullying forms and that schools put effort in reducing all forms of bullying victimization and supporting all victimized students.

Schools can reduce bullying and victimization by implementing effective anti-bullying programs (Gaffney et al., 2019) and specific components of these programs that have been found to be related with great effectivity (e.g., whole-school approach, anti-bullying policies and working with the victim) (Gaffney et al., 2021).

Second, one fifth to one fourth of the students belonged to the trajectory class that reported relatively higher levels of victimization. This is a clear indication of the high prevalence of bullying victimization at elementary schools and stresses the need to further decrease this harmful problem in peer relationships. In addition to implementing effective universal anti-bullying programs, it can be necessary that interventions are tailored to specific groups of victims as recent research shows that not all victims are helped by universal intervention programs (Kaufman et al., 2018). While the current study found robust evidence for two patterns of victimization development, future person-oriented studies using, for instance, victim subsamples, could provide further insight into heterogeneity among victimized students, possible antecedents and consequences of these trajectories and further strengthen the knowledge base to develop tailored interventions.

Conclusion

To reduce bullying victimization at school for all students, interventions against this alarming problem need to be tailored to specific groups of victims (Kaufman et al., 2018). The current person-oriented study aimed to increase insight into heterogeneous patterns of victimization development and their links with social antecedents and emotional consequences. Whereas peer and teacher-student relationships have been found to predict victimization, person-oriented studies can shed light on how these classroom social relationships are associated with victimization heterogeneity. Although students may not only differ regarding the duration of victimization, but also regarding the form of victimization (Nylund et al., 2007), few longitudinal studies have examined patterns in victimization development based on victimization form. The current one-year three-wave study investigated trajectory classes of physical and relational victimization throughout one school year and examined differences between these classes using a multi-informant, multi-dimensional and multi-analytical approach. Robust evidence was found for two victimization trajectory classes. The majority of students followed a trajectory in which levels of both relational and physical victimization were relatively low and further decreased across the school year.

A smaller group of students followed a trajectory characterized by relatively high, generally stable levels of relational and physical victimization (more relational than physical). The latter group was, on average, less liked and more disliked by classmates at the beginning of the school year and experienced more depressive symptoms and lower self-esteem at the end of the school year. The affective quality of dyadic teacher-student relationships at the beginning of the school year was similar for both groups. In sum, in order to reduce bullying victimization and protect the well-being of students, it is necessary to start early in the school year with efforts to foster healthy relationships among upper elementary students. These healthy relationships are, for instance, characterized by high levels of acceptance and low levels of rejection. In addition, other anti-bullying interventions are needed from the beginning of the school year, with special attention to more subtle, covert ways through which students can be victimized.

PART II

The impact of teachers' responses to bullying on students' bullying-related cognitions

Chapter 3

Student attitudes and perceptions of teacher responses to bullying: An experimental vignette study

Published manuscript:

Demol, K., Verschueren, K., Jame, M., Lazard, C., & Colpin, H. (2021). Student attitudes and perceptions of teacher responses to bullying: An experimental vignette study. *European Journal of Developmental Psychology, 18*(6), 814-830. https://doi.org/10.1080/17405629.2021.1896492

Abstract

Although teachers are key in bullying intervention, little is known about their responses to bullying and how students perceive them. This study investigated whether experimentally manipulated teacher responses in vignettes (i.e., non-response, comforting victim, correcting bully, both comforting victim and correcting bully) predict differences in student attitudes and perceptions (i.e., students' bullying attitudes, empathy towards victims, perception of teacher bullying attitudes, response evaluations). Fourth-to-sixth graders (N = 251, 44.2% boys, M_{age} = 10.86) read a bullying incident vignette that differed regarding the teacher's response, before completing questionnaires. Analyses of variance demonstrated no differences in students' bullying attitudes and empathy between conditions. The multiple response was evaluated as more appropriate than the single active responses. Correcting bully was perceived as the most appropriate single response and was associated with more perceived teacher anti-bullying attitudes, indicating that students deduced beliefs from teacher behavior. Non-response was associated with the most negative student perceptions.

Introduction

A recent UNESCO (2019) study showed that worldwide, one child in three reported being bullied at school in the last month, i.e., was the target of repeated and intentional aggression by more powerful peers (Olweus, 1993). Considering the associated difficulties, effective interventions must be identified (Arseneault, 2018). Although teachers are expected to tackle bullying, little is known about teacher responses to bullying and student perceptions of them (Brendgen & Troop-Gordon, 2015).

Social learning theory (Bandura, 1977) suggests that people learn from observing and imitating others' behavior. Further, social cognitive theory (Bandura, 1986) suggests that people think about the meaning behind others' behavior. Building on this, students are likely to observe and think about teacher behavior which, in turn, can influence their own behavior. Additionally, according to moral domain theory (Smetana, 2010; Turiel, 1983), people's understanding of moral issues such as bullying originates from their own direct experience with harm, their observations of harm caused to others, and others' communication underscoring the harm (Campaert et al., 2017; Thornberg et al., 2017). Based on these theories, students are likely to observe and think about teachers' management of harmful situations such as bullying (Bandura, 1977, 1986) which can contribute to their understanding of bullying (Campaert et al., 2017). Therefore, through their responses to bullying, teachers can model acceptable behavior and set expectations for students' mutual interactions (e.g., Yoon & Bauman, 2014). For instance, by responding actively, teachers show that bullying is not tolerated. This, in turn, is expected to decrease bullying. Contrarily, by ignoring bullying, teachers may provide the signal that it is accepted and this may reinforce the behavior (Van der Zanden et al., 2015).

In line with this theorizing, studies found links between teacher responses to bullying, on the one hand, and bullying, on the other (e.g., Campaert et al., 2017; Veenstra et al., 2014; Wachs et al., 2018). However, studies investigating whether and how teacher responses predict student attitudes and perceptions regarding bullying are scarce. That is striking since these attitudes and perceptions may operate as mechanisms between teacher responses and student behavior. This vignette study aims to fill this gap by investigating whether experimental manipulation of teacher responses to bullying predicts differences in student attitudes and perceptions.

Student Attitudes and Perceptions

Students' attitudes and perceptions regarding bullying are linked with their bullying behaviors. First, bullying attitudes, specifically "moral beliefs regarding the appropriateness or inappropriateness of bullying and related behaviors" (Salmivalli & Voeten, 2004, p. 248) have been found to predict bullying (e.g., Salmivalli & Voeten, 2004). Referring to moral domain theory (Smetana, 2010; Turiel, 1983) and goal-framing theory (Lindenberg, 2013), teachers can be expected to play a role in students' bullying attitudes. First, as described above, teachers' bullying management can be relevant for students' understanding of bullying (Campaert et al., 2017). Second, goal-framing theory (Lindenberg, 2013) suggests that, in order to affect behavior, goals have to be activated. Bullying has been found to be associated with goals to achieve and maintain high status in the peer group (Sijtsema et al., 2009). To inhibit activation of such goals, goal-framing theory suggests that an overarching goal to behave socially appropriately has to be activated in students. For bullying, the "normative goal" that this behavior is not acceptable can be activated when significant others stand for this norm. In classrooms, teachers can be significant others when students see them as authority figures who stand up against bullying (Veenstra et al., 2014). Thus, building on goal-framing theory, when teachers take an active stance against bullying, they may help inhibit goals that encourage bullying and strengthen students' anti-bullying attitudes (Veenstra et al., 2014). Conversely, when teachers do not react, they may convey the impression that bullying is not a problem and thereby undermine anti-bullying attitudes.

Second, students' empathy toward victims has been found to predict defending (Nickerson et al., 2015) which, in turn, is related to less bullying (Saarento, Boulton, et al., 2015). Moreover, research indicated that students make sense of teacher responses in terms of their own morality and that this, in turn, predicts the level of bullying (Menesini, 2019). Based on social cognitive theory (Bandura, 1986) and moral domain theory (Turiel, 1983), active responses, especially those involving victim support, may reveal teachers' empathy which can increase students' empathy toward victims. Conversely, non-responding teachers do not show empathy toward victims which can decrease students' empathy toward them.

Third, studies showed that when students perceive stronger anti-bullying attitudes among teachers, they demonstrated lower bullying later on (Saarento, Boulton, et al., 2015). Based on social cognitive theory (Bandura, 1986) and goal-framing theory (Veenstra et al., 2014), students are expected to perceive stronger anti-bullying attitudes in teachers using active responses, especially when directed to bullies, as this explicitly shows disapproval. Conversely, when teachers do not respond, students may think that they have less negative bullying attitudes.

Finally, this study examined students' evaluation of teacher responses. Although no literature was found, given that most students have attitudes opposed to bullying (e.g., Salmivalli, 2010), students are expected to judge active responses as more appropriate than non-response. Regarding active responses, responses directed to bullies are expected to be evaluated more appropriate as this shows more explicit disapproval.

Teacher Responses to Bullying

When teachers are confronted with bullying, they can respond in multiple ways (Campaert et al., 2017). Responses may differ according to the target (e.g., bully, victim, both) and scholars distinguished supportive and controlling responses (Campaert et al., 2017; Wachs et al., 2018). Moreover, as teachers sometimes do not respond, non-response is a possible response (Campaert et al., 2017).

Inspired by this conceptualization, this study focused on four immediate teacher responses, i.e., (1) non-response, (2) comforting victim, (3) correcting bully and (4) both comforting victim and correcting bully. Non-response was contrasted with all three active responses to investigate the effect of responding at all. A response directed to the bully (correcting) respectively victim (comforting) was chosen to examine differences in effects regarding the target. Further, the active responses were combined to investigate effects of single versus multiple responses (Burger et al., 2015).

Current Study

This vignette study aimed to investigate whether four experimentally manipulated teacher responses to bullying, i.e., non-response, comforting victim, correcting bully, and both comforting victim and correcting bully, predict differences in students' bullying attitudes, empathy toward victims, perception of teacher bullying attitudes, and evaluation of teacher responses. Based on social learning, social cognitive (Bandura, 1977, 1986), moral domain (Turiel, 1983) and goal-framing theory (Veenstra et al., 2014) and the studies above, the following hypotheses were formulated.

First, we expected that when teachers do not respond, students would report less negative bullying attitudes and less empathy toward victims, perceive teachers to have less negative bullying attitudes and evaluate the response as less appropriate, compared to the active responses. Second, we hypothesized stronger effects from responses directed to bullies (i.e., correcting) compared to only comforting victims, except for students' empathy toward victims. For the latter, stronger effects were expected from responses directed to victims (i.e., comforting). Finally, we assumed that the multiple response would be evaluated as more appropriate than the single active responses.

Method

Sample

Fourth-to-sixth graders of three Flemish elementary schools (18 classes) were asked to participate. Written parental permission was obtained for 251 students (71%). Due to absences, data were collected from 248 students (44.2% boys, M_{age} = 10.86, SD_{age} = 0.89). Of the students, 33.5%, 35.1%, and 31.5% were in Grade 4, 5, and 6, respectively. For all students except one, Dutch was either the only or one of the home languages.

Procedure

Prior to data collection, ethical approval was acquired from the ethical review board of KU Leuven. A between-subjects 4x2 design (teacher response x gender of the story's victim and bully) with random assignment within classes was used. First, researchers explained bullying by reading aloud a definition (cf. Olweus, 1993). Students could reread this description at any time. Second, students read a vignette about a bullying incident that only differed in the teacher's response and gender of the bully and victim. The responses were (1) non-response, (2) comforting victim, (3) correcting bully and (4) both comforting victim and correcting bully. The bully's and victim's gender was manipulated to counteract possible gender effects. Both were either boys or girls. Mixed-gender versions were not developed because that would cause lower power and same gender bullying occurs more frequently (Baldry, 2004). The teacher's gender was not mentioned in the vignette. Third, after reading the vignette, students completed a first set of questionnaires measuring the outcome variables (student attitudes and perceptions). Fourth, after handing in the vignette and the first set of questionnaires, students completed three manipulation checks (described below) in a second set of questionnaires. Finally, researchers gave a debriefing.

Vignettes

The vignettes were developed for this study, inspired by Bauman and Del Rio (2006). They were the same in all conditions, except for the teacher's response and the gender of the bully and victim. First, students had to imagine having changed schools. Then, it was stated that, in their new class, one classmate had been bullied by another since the beginning of the school year. Next, a bullying incident between these classmates at the playground during break was described. The incident met Olweus' (1993) definition, and comprised verbal, physical, and relational bullying (Bauman & Del Rio, 2006). Then, it was stated that the teacher of their new class was supervising at the playground and had seen what happened. Next, the teacher's response to the incident was presented. In condition 1, the teacher approached another group of students and asked which game they were playing. In condition 2, the teacher comforted the victim. In condition 3, the teacher told the bully that bullying is not accepted and that they will have a conversation to decide how the bully can make up with the victim. In condition 4, the teacher first comforted the victim and then corrected the bully as in condition 2 and 3 respectively.

Measures

Student Attitudes and Perceptions

Students' bullying attitudes were measured by the validated questionnaire of Salmivalli and Voeten (2004), consisting of 10 items (5 reverse coded) measured on a 5-point scale (1 = *not true at all* to 5 = *completely true*) (e.g., "Bullying makes the victim feel bad"). Cronbach's alpha (.67) was slightly lower than the .75 reported by Salmivalli and Voeten (2004). A CFA in Mplus 8 (Muthén & Muthén, 1998-2017) indicated good fit of the one-factor model ($\chi 2$ (33) = 48.27, p = .04; RMSEA = .04, RMSEA 90% CI = [.01-.07], SRMR = .05, CFI = .94) (Kline, 2005). Standardized loadings ranged from .311 to .521. For each student, an average score was calculated. Higher scores reflect stronger anti-bullying attitudes.

Students' empathy toward victims was measured with a Dutch adaptation (Veenstra et al., 2020) of the Empathy scale of Kärnä et al. (2011). Previous studies provided support for the factor structure (e.g., Kärnä et al., 2011; Nocentini & Menesini, 2016) and for the convergent validity (e.g., Salmivalli et al., 2011). The 5 items were applied to the vignette (e.g., "If I see that *name victim* feels sad, I would want to comfort *him/her*") and measured on a 4-point scale (1 = *(almost) never* to 4 = *(almost) always*). Cronbach's alpha was .67.

A CFA indicated good fit of the one-factor model (χ^2 (4) = 2.07, p = .72; RMSEA < .01, RMSEA 90% CI = [.00-.07], SRMR = .02, CFI = 1.00). Standardized loadings ranged from .340 to .468. For each student, an average score was calculated. Higher scores reflect more empathy.

Students' perception of teacher bullying attitudes was measured by adapting an item from Saarento et al. (2013). Previous studies provided support for the convergent validity as it was found to longitudinally predict bullying and victimization (e.g., Saarento, Boulton, et al., 2015). The item was applied to the vignette: "What do you think the teacher in the story thinks of bullying?" and was responded on a 5-point scale (1 = *good* to 5 = *totally wrong*).

Students' evaluation of the teacher's response was measured by an item developed for this study, i.e., "I think the teacher responded to the bullying incident in a good way". Students responded on a 4-point scale (1 = *not true* to 4 = *true*).

Manipulation Checks

Three items checked whether the participants (1) perceived the incident as bullying ("In the story, a student was bullied by a classmate", true/not true), (2) identified the correct character as the victim and bully ("In the story, *name victim* was bullied by *name bully*", true/not true) and (3) identified the correct teacher response ("How did the teacher react to what happened in the story? Choose one of the four teacher responses.", options corresponded to the responses in the vignettes).

Statistical Analyses

Preliminary Analyses

First, participants (N = 248) were almost equally distributed over conditions (teacher response: N_1 = 60, N_2 = 63, N_3 = 63; N_4 = 62; characters' gender: N_{boys} = 123, N_{girls} = 125). Pearson's χ^2 tests showed no significant differences between conditions regarding grade (χ^2 (6) = 2.67, p = .85) and gender (χ^2 (3) = .75, p = .86).

Second, participants who had one or more missing responses on the manipulation checks (2%), and/or did not perceive the incident as bullying (2.4%), and/or misidentified the victim and bully (1.2%) were excluded from all further analyses (N = 12). Further, more participants (19%) misidentified the teacher's response (especially the single responses were confused with the multiple response). Participants were excluded from the analyses depending on the hypotheses (Table 1).

For the analyses regarding the response evaluation, all participants who misidentified the response were excluded as the hypotheses predict differences between all responses. For the analyses of the other outcomes, less participants were excluded as we did not expect differences between all responses. For instance, regarding attitudes, participants who confused response 3 and 4 were not excluded as no differences were expected between those responses.

Table 1

Planned Comparison Hypotheses: Expected Differences in Effects of Teacher Responses on Student Attitudes and Perceptions

Contrast	Bullying attitudes	Empathy toward victims	Perc. of teacher bullying attitudes	Response evaluation
1. Non-resp. vs. active resp. (1 vs. 2, 3, 4)	↓	↓	↓	↓
2. Comfort victim vs. correct bully (2 vs. 3)	↓	↑	↓	↓
3. Comfort victim vs. correct bully (w./w.out comfort victim) (2 vs. 3, 4)	↓	-	↓	↓
4. Correct bully vs. comfort victim (w./w.out correct bully) (3 vs. 2, 4)	-	↓	-	-
5. Single vs. multiple resp. (2, 3 vs. 4)	-	-	-	↓
Total number of excluded participants	43	40	43	56

Note. Perc. = Perception, resp. = response, 1 = non-response, 2 = comforting victim, 3 = correcting bully, 4 = comforting victim + correcting bully.

Main Analyses

IBM SPSS Statistics 26 was used to examine whether experimentally manipulated teacher responses in vignettes predict differences in students' (1) bullying attitudes, (2) empathy toward victims, (3) perception of teacher bullying attitudes and (4) evaluation of teacher responses. As students were nested in classes, we estimated intraclass correlations (resp. < .01, .04, < .01, .07) and design effects (resp. 1.01, 1.39, 1.01, 1.66) using Mplus 8. Multilevel modeling was not needed as little variance was explained by class and the effects of dependence on standard error estimates were small (Peugh, 2010). One-way independent analysis of variance (ANOVA) was used.

Outliers within conditions were identified and analyses were executed with and without extreme outliers ($| z | > 3.29$) (Table 2) (Field, 2017). When there were no differences in results, only the results from analyses with outliers were reported. As a sensitivity analysis concerning possible effects of heterogeneity of variance, parameter estimates with and without robust standard errors (HC4) were inspected (Field, 2017). When there were no differences in results, only the results from analyses without robust standard errors were reported.

First, the effects of background variables (i.e., grade, gender) and gender of story characters on the outcomes were examined. If the effect was significant, the variable was included in further analyses as a control variable. Second, the effect of teacher responses on the outcomes was examined. If the effect was significant, planned comparisons were executed to test the hypotheses (Field, 2017). Hypotheses concerning five planned comparisons were formulated (Table 1). Regarding contrast 1, non-response was expected to predict less negative bullying attitudes and less empathy toward victims, to be evaluated as less appropriate and associated with students perceiving the teacher as having less negative bullying attitudes compared to the active responses. Regarding contrast 2 and 3, higher scores were expected from responses directed to bullies except for empathy toward victims. Regarding contrast 4, more empathy was expected when the response was directed to the victim. Regarding contrast 5, a more favorable evaluation of multiple response was expected. Bootstrapping was used in the planned comparison analyses as the scores were not completely normally distributed within conditions and group sizes were not equal (Field, 2017). Further, the results of the contrasts not assuming equal variances were inspected and we controlled for multiple testing by Bonferroni correction (Field, 2017).

Table 2

Descriptive Statistics of Dependent Variables Over and Within Conditions

Condition	Total		Non-response		Comfort victim		Correct bully		Comfort victim + correct bully	
Variable	*N*	*M* (*SD*)	*N*	*M* (*SD*)	*N*	*M* (*SD*)	*N (Out.)*	*M* (*SD*)	*N (Out.)*	*M* (*SD*)
1. Bullying attitudes	208	4.62 (.37)	53	4.58 (.40)	48	4.70 (.32)	56	4.60 (.42)	51 (1)	4.61 (.32)
2. Empathy toward victims	211	3.11 (.57)	53	3.24 (.54)	57	3.12 (.59)	50	3.07 (.55)	51	3.01 (.57)
3. Perc. of teacher bullying attitudes	208	4.12 (1.23)	53	2.57 (.99)	48	4.33 (.91)	56 (1)	4.80 (.65)	51 (1)	4.80 (.66)
4. Response evaluation	194	2.78 (1.18)	53	1.53 (1.10)	48	2.75 (.81)	49 (1)	3.53 (.71)	44	3.48 (.63)

Note. Perc. = Perception, *Out.* = number of outliers.

Results

Table 2 displays the descriptive statistics, over and within conditions. Participants' gender significantly predicted their bullying attitudes ($F(1, 203) = 4.99$, $p = .027$, $\omega^2 < .01$ (negligible) (Kirk, 1996); $M_{girls} = 4.66$, $SE_{girls} = .32$, $M_{boys} = 4.55$, $SE_{boys} = .43$) and empathy ($F(1, 206) = 21.54$, $p < .001$, $\omega^2 < .01$ (negligible); $M_{girls} = 3.26$, $SE_{girls} = .54$, $M_{boys} = 2.90$, $SE_{boys} = .55$) in the analyses with outliers. Hence, gender was included in the analyses of these outcomes. No other significant effects of the control variables were observed in the analyses with and without outliers.

Regarding students' bullying attitudes and empathy toward victims, no significant differences between conditions appeared. However, a significant effect of teacher responses was found for students' perception of teacher attitudes and response evaluation (resp. $F(3, 204) = 89.98$, $p < .001$, $\omega^2 = .05$ (medium); $F(3, 190) = 61.79$, $p < .001$, $\omega^2 = .07$ (large)). Planned comparisons revealed that less negative bullying attitudes were perceived for the teacher in the non-response condition compared to the active response conditions ($t(73.72) = 6.22$, $p = .001$, $r = .85$ (large) (Cohen, 1988)). Further, less negative bullying attitudes were perceived for the teacher in the comforting victim condition compared to the correcting bully conditions (with and without comforting victim) (resp. $t(83.86) = 2.876$, $p = .004$, $r = .30$ (medium); $t(70.14) = 3.17$, $p = .005$, $r = .35$ (medium)). Next, students in the non-response condition considered this response less appropriate compared to the active response conditions ($t(69.28) = 5.17$, $p = .001$, $r = .79$ (large)). Also, students considered the response less appropriate in the comforting victim condition compared to the correcting bully conditions (with and without comforting victim) (resp. $t(92.80) = .78$, $p = .001$, $r = .46$ (medium); $t(80.60) = 1.51$, $p = .001$, $r = .52$ (large)). The single active responses were considered less appropriate than the multiple response ($t(99.24) = .67$, $p = .004$, $r = .27$ (medium)). As 11 tests were carried out (4 ANOVA, 7 contrasts), the Bonferroni correction resulted in an alpha of .005. Each reported effect remained significant at this level of significance.

Discussion

Studies investigating the effects of teacher responses to bullying on students' attitudes and perceptions regarding bullying are scarce. This is remarkable since student attitudes and perceptions may explain the link between teacher responses and bullying behavior (e.g., Campaert et al., 2017). This experimental study used vignettes to provide insight in whether different teacher responses (i.e., non-response, comforting victim, correcting bully, comforting victim and correcting bully) predict differences in student attitudes and perceptions.

Building on goal-framing theory, Veenstra et al. (2014) stated that when teachers clearly stand up against bullying, they can strengthen students' anti-bullying attitudes. Similar to previous studies, students' attitudes were strongly opposed to bullying (e.g., Salmivalli, 2010). However, in contrast with the hypothesis, they were not stronger after active response. Inspired by social cognitive theory (Bandura, 1977, 1986) and available evidence (Menesini, 2019), active responses, especially those involving comfort to victim, were expected to be associated with higher empathy toward victims. Overall, students felt empathy for the victim, but this was not stronger when the teacher had comforted the victim.

How can these findings be explained? Students' strong anti-bullying attitudes and high empathy in all conditions are in line with studies showing that most students have strong anti-bullying attitudes (e.g., Salmivalli, 2010), judge bullying as much more wrong than conventional transgressions (e.g., swearing) and justify their moral judgment of bullying by referring to the harm caused to victims (e.g., Thornberg et al., 2017). As a result, possibly, there was little room to affect students' attitudes and empathy due to ceiling effects. Additionally, whereas students' attitudes and empathy can be influenced by their actual teachers when they consistently respond to bullying, especially in the context of other preventive interventions at the class and school level (e.g., anti-bullying policy, curricula) (National Academies of Sciences, Engineering, and Medicine, 2016), the story's teacher may have been less able to affect students' attitudes. The vignette showed only one response to one incident by a teacher about whom students have no other information. As a result, the vignette may not have been sufficient in demonstrating teachers' roles and their abilities to shape students' attitudes.

As expected based on social cognitive theory (Bandura, 1986), goal-framing theory (Veenstra et al., 2014) and available evidence (Saarento, Boulton, et al., 2015), in the non-response condition, students perceived less negative bullying attitudes from the teacher, and mostly had the impression that the teacher did not matter about bullying. After active response, students perceived more anti-bullying attitudes with, as expected, stronger effects when the teacher corrected the bully, compared to only comforted the victim. Thus, by correcting the bully, it seems that the teacher showed disapproval of bullying more strongly.

In line with the hypotheses and previous research (e.g., Laupa & Turiel, 1986; Weston & Turiel, 1980), non-response was judged to be the least appropriate, correcting the bully to be the most appropriate. Also, the combination of comforting and correcting was evaluated as more appropriate than the single responses.

To conclude, first, this study showed that students can think of an imaginary teacher, can assess teacher responses to bullying and even can deduce teacher beliefs from behavior. Second, teacher non-response was considered as inappropriate and students got the impression that the teacher did not care about the bullying. Third, a response directed to the bully (correcting) had a stronger effect on students' perceptions than a response directed to the victim only (comforting). Students evaluated correcting the bully as more appropriate and perceived to a stronger degree that the teacher was opposed to bullying. The multiple response was judged to be more appropriate than the single responses.

Strengths, Limitations, and Suggestions for Future Research

A major strength of this vignette study is its experimental design, allowing to manipulate teacher responses and investigate differences between responses regarding students' attitudes and perceptions. However, the study also had some limitations generating ideas for future research.

First, each vignette described one out of four teacher responses to one incident. In reality, it is important that teachers flexibly respond to bullying with a variety of strategies (Burger et al., 2015). Also, it is important that the findings are not generalized to responses that are, for instance, focused on the same target but different in form (e.g., working with the victim). Future studies could focus on other responses (e.g., involving others), investigate responses in a more differentiated way (e.g., different responses targeting the bully), or describe one teacher responding to multiple incidents.

Second, this study assessed students' *hypothetical* attitudes and perceptions. It is unclear whether students perceive actual bullying similarly. However, the vignettes allowed us to let students consider varied preselected teacher responses when doing so in actuality is neither possible nor ethical. Future studies should include credibility and reality checks. If students consider the incident and responses as credible and realistic, their attitudes and perceptions are more likely to reflect real life attitudes and perceptions.

Third, although participants were almost equally distributed over conditions, within classes, some conditions were slightly over- and underrepresented. As a result, class-related effects were possible (e.g., influence of actual teachers). Further, students' answers may be influenced by individual factors, such as personal definitions of bullying, own bullying experiences and their ability to imagine. Although these possible influences were minimized by randomly assigning students to conditions, it would have been stronger to include individual factors as moderators.

Fourth, future studies may focus on constructs that are more closely related to teacher responses, such as students' ideas of the effectiveness of the response and willingness to report bullying to this teacher.

Lastly, this study used single items to measure students' perceptions. To enhance validity, future studies are recommended to use multiple-item measures.

Practical Implications

Based on the findings, teachers are encouraged to be aware that students can observe and evaluate their responses to bullying and also deduce beliefs regarding teachers' bullying attitudes from these responses. When teachers do not respond, students can get the impression that the teacher does not care about the bullying. This, in turn, might predict more bullying (Saarento, Boulton, et al., 2015), but also more negative outcomes for victims. For instance, victims might be more reluctant to seek help from teachers whom they perceive to have less negative bullying attitudes (Blomqvist et al., 2020). Contrarily, when teachers actively respond and especially when they use responses in which bullies are corrected, students can perceive stronger anti-bullying attitudes from teachers. This, in turn, has been shown to be related with less bullying (Saarento, Boulton, et al., 2015).

Chapter 4

Perceived teacher responses to bullying influence students' social cognitions

Published manuscript:

Demol, K., Verschueren, K., Salmivalli, C., & Colpin, H. (2020). Perceived teacher responses to bullying influence students' social cognitions. *Frontiers in Psychology, 11*. https://doi.org/10.3389/fpsyg.2020.592582

Abstract

Teachers' responses to bullying incidents are key in bullying intervention at school. Scholars have suggested that teacher responses can predict student cognitions that are associated with their bullying behaviors. However, little is known about whether and how teacher responses affect these cognitions. Therefore, the current study investigated the effects of four immediate teacher responses on four bullying-related student cognitions, using an experimental vignette design. Additionally, it was examined whether students' own participant role behaviors in actual bullying moderated these effects. The investigated teacher responses were non-response, comforting the victim, correcting the bully, and a combination of comforting the victim and correcting the bully. The investigated student cognitions were perceived teacher attitudes towards bullying, perceived teacher moral disengagement regarding bullying, student willingness to report bullying to the teacher and student expectations regarding bullying participant role behaviors in the classroom. Fourth-to-sixth grade students (N=910; 47% boys; M_{age} = 11.04 years, SD = .91) read a vignette describing a hypothetical teacher's response to a same bullying incident, following random assignment to one of eight conditions (i.e., four teacher responses x two genders of bully and victim in the vignette). Afterwards, students completed questionnaires about their social cognitions and manipulation checks. ANOVA demonstrated that students perceived stronger teacher anti-bullying attitudes and less teacher moral disengagement when the hypothetical teacher displayed an active response. These effects were even stronger when the teacher corrected the bully compared to when only the victim was comforted. Further, students were more willing to report bullying when the teacher corrected the bully than when the teacher only comforted the victim. Finally, students expected less pro-bullying behaviors, more defending and less victimization in the vignette's classroom following active teacher response compared to non-response. The effects of teacher responses on student cognitions were not moderated by students' own participant roles in bullying. Taken together, these findings emphasize the importance of active teacher responses to bullying, and especially, responses that clearly show that bullying is not tolerated. Teachers are encouraged to be aware that students can deduce beliefs from teacher responses which can, in turn, affect bullying processes in the classroom.

Introduction

Bullying among students at school is a persistent problem predicting various difficulties for victims (Arseneault, 2018). Although prevalence rates vary, several large-scale international studies have demonstrated that bullying affects the lives of students worldwide. For instance, in the latest report of the Health Behavior in School-aged Children (HBSC) survey of the World Health Organization (WHO), overall, 10% of youth indicated that they had been repeatedly bullied at school during the past months (Inchley et al., 2020). Bullying has mostly been defined as repeated and intentional aggressive behavior towards others who have difficulties defending themselves (Olweus, 1993). Further, it has been recognized as a group process (Salmivalli et al., 1996) embedded in social contexts such as classrooms (e.g., Saarento, Garandeau, et al., 2015). Victims often suffer from a wide range of health and psychosocial problems, both in the short and long run (Moore et al., 2017). Also, they have a higher risk to develop poor socioeconomic outcomes throughout the life span (e.g., Arseneault, 2018; Wolke & Lereya, 2015). Clearly, research on the risk and protective factors of bullying and victimization is critical.

Teachers play an important role in reducing bullying (Brendgen & Troop-Gordon, 2015). They are the responsible adults in class and they are expected to secure a safe learning environment and deal effectively with any negative behaviors, including bullying (Kochenderfer-Ladd & Pelletier, 2008). A limited number of mostly observational studies have reported associations between teacher responses to bullying and the levels of bullying and victimization in classrooms (e.g., Campaert et al., 2017; Troop-Gordon & Ladd, 2015). However, to date, it remains largely unclear how exactly teacher responses may impact bullying. Scholars have pointed to student cognitions as possible intervening mechanisms (Menesini, 2019; Troop-Gordon & Quenette, 2010), but, thus far, few studies have examined effects of teacher responses on student cognitions. This study addresses this gap by investigating how teacher responses to bullying affect student social cognitions, using an experimental design.

Effects of Teacher Responses to Bullying on Students' Social Cognitions

When teachers are confronted with bullying among their students, they can intervene in multiple ways (Campaert et al., 2017; Wachs et al., 2018). Campaert et al. (2017) distinguished five responses in their conceptualization of teacher responses, more specifically a relational and supportive response (i.e., support to victim), a confronting response (i.e., disciplinary sanction for the bully), a response that involves both the bully and victim (i.e., mediation) and the whole class (i.e., group discussion). Additionally, Campaert et al. (2017) distinguished non-response as previous research showed that sometimes teachers do not respond to bullying.

Based on socio-cognitive theory (Bandura, 1986), students are expected to cognitively process teacher responses to bullying and look for the meaning behind these responses. Consequently, students may take different cues from teacher responses which may, in turn, affect their bullying-related behaviors. Although scholars have brought attention to different bullying-related student cognitions that could be impacted by teacher responses, so far, only a small number of mostly observational studies have examined this (Menesini, 2019; Troop-Gordon & Quenette, 2010). To fill this gap, the current study experimentally investigates the effects of different teacher responses to bullying on a comprehensive set of student social cognitions that are expected to be explanatory mechanisms in the association between teacher responses and bullying. These cognitions comprise (1) perceived teacher attitudes towards bullying, (2) perceived teacher moral disengagement regarding bullying, (3) students' willingness to report bullying to the teacher and (4) students' expectations regarding classmates' participant role behaviors in bullying.

First, students may take cues regarding teacher attitudes towards bullying. By their responses to bullying, teachers can communicate what they consider appropriate and inappropriate behavior (Veenstra et al., 2014; Van der Zanden et al., 2015). Based on goal-framing theory (Lindenberg, 2013), goals related with bullying behavior (e.g., achieving and maintaining high status in the peer group) are expected to be inhibited when an overarching goal to behave socially appropriately is activated. The "normative goal" that bullying is not acceptable can be activated when significant others stand for this norm. Teachers can be this significant other when students see them as authority figures who clearly stand up against bullying (Veenstra et al., 2014). Consequently, when teachers actively respond to bullying, they can promote the norm that bullying is not tolerated.

Students may adjust to this norm making them less likely to bully again (Bandura, 1977; Van der Zanden et al., 2015). Conversely, when teachers do not respond to bullying or only passively, they might signal that bullying is accepted which can result in more bullying (Van der Zanden et al., 2015). Indeed, longitudinal studies have shown that teachers' efforts to intervene in bullying contributed negatively to the perceived acceptability of bullying in the classroom, and lower perceived acceptability, in turn, predicted lower bullying levels (Saarento, Boulton, et al., 2015). Referring to social cognitive theory (Bandura, 1986) and goal-framing theory (Veenstra et al., 2014), students are expected to perceive stronger anti-bullying attitudes in teachers who actively respond to bullying. Accordingly, weaker anti-bullying attitudes might be perceived when teachers do not respond.

Second, students may take cues of teacher moral disengagement regarding bullying. The mechanism of moral disengagement (Bandura et al., 1996) has been used to explain how people justify aggressive behavior and bullying (e.g., meta-analysis by Gini et al., 2014). A cross-sectional study indicated that teacher responses to bullying affect students' own levels of moral disengagement regarding bullying which, in turn, predicted the level of bullying (Campaert et al., 2017). Based on their findings, Campaert et al. (2017) stated that students may be less inclined to justify bullying when they understand from reasoning on teacher responses that bullying is unacceptable harmful behavior. However, to our knowledge, no previous study has investigated whether students take cues regarding moral disengagement of teachers based on their responses. In line with perceived teacher attitudes, students might perceive less moral disengagement regarding bullying from teachers who actively respond. Conversely, when teachers do not respond, students might think that this is due to teachers justifying bullying in some way.

Third, teacher responses to bullying may affect students' willingness to report the bullying to teachers. Studies have found that students' willingness to report bullying is predicted by teachers' helpfulness in resolving past bullying episodes (Aceves et al., 2010), by students' expectations regarding how teachers would respond to bullying incidents (Cortes & Kochenderfer-Ladd, 2014) and by student-perceived teacher attitudes towards bullying (Blomqvist et al., 2020). For instance, by ignoring bullying, teachers express a lack of concern and give students the message that they cannot expect any assistance (Yoon & Bauman, 2014). Also, when teachers do not respond to bullying, less negative teacher attitudes towards bullying can be perceived (Veenstra et al., 2014).

As a result, it is expected that students would be less willing to report bullying to non-responding teachers. Contrarily, it is expected that students would be more willing to report bullying to teachers who actively respond.

Fourth, teacher responses may impact students' expectations regarding classmates' participant role behaviors in bullying. In previous research, six participant roles that students can have in the group process of bullying have been identified: besides being victimized themselves, students may bully others, assist the bullies, reinforce the bullies' behaviors, defend and support the victimized peers, or remain non-involved outsiders (Salmivalli et al., 1996). Such responses are affected by individual as well as contextual factors (Salmivalli et al., 1996). Based on social learning theory (Bandura, 1977), teachers are expected to be role models for students. By their responses to bullying incidents, teachers can set expectations for students' behavior and the relational climate in class (Yoon & Bauman, 2014). For instance, when teachers do not respond after witnessing bullying, they may model insensitive and uncaring behavior (Yoon & Bauman, 2014) and students might expect fellow students to neither stand up to the bully nor support the victim. However, when teachers actively respond to bullying, teachers may model sensitive behavior (Van der Zanden et al., 2015) and students might expect less pro-bullying behaviors (i.e., bullying, assisting, reinforcing) and less victimization in the classroom. In addition, students might expect more fellow students to defend victims and less fellow students to stay outsiders.

While researchers have referred to student social cognitions that could be predicted by teacher responses (e.g., Troop-Gordon & Quenette, 2010), to date, only one study has tested this experimentally (Demol et al., 2021). This vignette study in the fourth to sixth grade of elementary school investigated whether responses of an hypothetical teacher to a bullying incident affected students' own bullying attitudes, their empathy towards victims, their ideas of the teacher's bullying attitudes and their evaluations of teacher responses. Students' own bullying attitudes and empathy towards victims were not impacted by teacher responses. However, students' ideas of the teacher's attitudes towards bullying and their evaluations of the teacher responses differed among the teacher responses. A combination of confronting the bully and supporting the victim was evaluated as the most appropriate response.

Further, when the bully was confronted, students perceived more anti-bullying attitudes in the teacher compared to when the victim was supported. Students perceived the least strong anti-bullying attitudes when the teacher did not respond and non-response was also judged to be the least appropriate response.

Although there is no previous research available, individual characteristics of students can be expected to moderate the effect of teacher responses on their cognitions. For instance, students' own typical responses in bullying situations (their participant role behaviors) may predict their perceptions of teacher responses. It is possible that for relatively higher levels of victimization and defending, the effect of teacher response is stronger. Students who are more victimized or who defend more can be expected to be more tuned to teacher responses and interpret them more strongly. As a result, their cognitions can be expected to be more strongly affected by teacher responses. For instance, teacher's non-response may yield even less willingness to report bullying to the teacher. Conversely, teacher's active responses may yield even more willingness to report bullying. Contrarily, for relatively higher levels of pro-bullying behaviors (i.e., bullying, assisting, reinforcing), the effect of teacher response may be less strong as these behaviors may be related to lower caring about how teachers respond to bullying.

Current Study

Scholars have suggested that teachers' responses to bullying incidents may impact their students' social cognitions related with bullying processes (Menesini, 2019; Troop-Gordon & Quenette, 2010). However, to date, (experimental) research investigating the effects of teacher responses on students' social cognitions is very scarce. The current experimental vignette study aims at further unravelling how teacher responses can impact bullying. This study investigates the effects of four teacher responses on four student cognitions that are expected to be explanatory mechanisms in the association between teacher responses and bullying.

Inspired by the work of Campaert et al. (2017), this study focuses on four immediate teacher responses to bullying, i.e., Non-response, Comforting the Victim, Correcting the Bully and, a combination of Comforting the Victim and Correcting the Bully. Further, building on available evidence, this study focuses on four student cognitions: (1) perceived teacher attitudes towards bullying, (2) perceived teacher moral disengagement regarding bullying, (3) student willingness to report bullying to the teacher and (4) student expectations regarding participant role behaviors in the classroom.

Building on social cognitive theory (Bandura, 1986) and goal-framing theory (Veenstra et al., 2014), it is expected that when teachers actively respond to bullying (i.e., by Comforting the Victim, Correcting the Bully, or combining Comforting the Victim and Correcting the Bully) students will perceive stronger anti-bullying attitudes and less moral disengagement in the teacher. Also, it is hypothesized that active teacher responses predict more student willingness to report bullying to the teacher. Further, students are hypothesized to expect less victimization, more defending, less pro-bullying behaviors and less outsider behaviors in the classroom following active response. Non-response is hypothesized to have a negative effect, i.e., predict less strong perceived teacher anti-bullying attitudes and more teacher moral disengagement, less student willingness to report bullying, more expected victimization, less expected defending, more expected pro-bullying behaviors and more expected outsider behaviors. Further, based on theory (Bandura, 1986; Veenstra et al., 2014) and the findings of Demol et al. (2021), teachers are expected to show more disapproval of bullying when responses are directed to bullies. Therefore, perceived teacher anti-bullying attitudes are expected to be stronger and perceived moral disengagement to be lower when the teacher corrects the bully (with or without comforting the victim). Also, students willingness to report bullying to teachers might be higher when teachers directed responses to bullies as this more explicitly shows that they tried to stop the bullying (Blomqvist et al., 2020; Veenstra et al., 2014). Other differences between the active responses (i.e., Comforting the Victim, Correcting the Bully, and both Comforting the Victim and Correcting the Bully) will be explored as theory and research regarding this topic are very limited.

Finally, this study will explore whether and how students' own levels of different participant role behaviors in actual bullying moderate the effect of teacher responses on their cognitions. As there is no previous research available, it is difficult to formulate hypotheses. However, it can be tentatively expected that for relatively higher levels of victimization and defending, the effect of teacher response will be stronger. Contrarily, for relatively higher levels of pro-bullying behaviors (i.e., bullying, assisting, reinforcing), the effect of teacher response may be less strong.

Materials and Methods

Sample

The data of this study are part of the Teachers4Victims project that investigates the role of teachers in bullying and victimization in the fourth to sixth grade of elementary school by means of a longitudinal and experimental study. Ethical approval for the project was acquired from The Social and Societal Ethics Committee (SMEC) of KU Leuven. The current study uses data from the third wave of the longitudinal study, and the experimental study (conducted about two weeks after the third wave). The experimental data were collected from 910 students (55 classes, 11 elementary schools, 47% boys, M_{age} = 11.04 years, *SD* = .91, range: 9.27-13.95) with active parental consent (consent rate: 81%). Of these students, 31.2% were in Grade 4, 35.7% in Grade 5, and 33.1% in Grade 6. Most students were born in Belgium (92.1%) and spoke Dutch at home (86.8%). The other students were born in several other countries of which most in the Netherlands, Poland, Romania and Spain. Most other languages spoken at home were French, Arabic, English and Turkish. Of the 910 students that participated to the experimental study, 890 students also participated to the third wave of the longitudinal study.

Procedure

Master and doctoral students at the faculty of Psychology and Educational Sciences of KU Leuven visited the schools to collect the data. The third wave of the longitudinal study took place about two weeks before the experimental study (May 2019). At the beginning of both data collections, the researchers explained bullying by reading aloud a description based on Olweus' (1993) definition. Students were asked to follow by simultaneously reading the description on their own copy in silence. Students could reread the description at any time during data collection. At the third wave of the longitudinal study, students individually completed questionnaires about, for instance, participant role behaviors in bullying. At the experimental study, students first read a vignette with a story about a bullying incident that only differed regarding the teacher's response to it and the gender of the hypothetical bully and victim. A between-subjects 4x2 design (teacher response x gender bully and victim) with random assignment within classes was used (112 to 116 students in each condition).

After reading the story, students completed questionnaires about the story. Afterwards, they responded to questions for manipulation checks and questions about the credibility and recognizability of the story. At the end, a debriefing was given by the researchers. At both data collections, students could ask questions to the researchers at any time.

Vignettes

The vignettes, including the instructions, were similar to those developed by Demol et al. (2021) inspired by Bauman and Del Rio (2006), with the exception that the description of the actual bullying incident was somewhat shortened. Eight versions of the vignette (4 teacher responses x 2 gender bully and victim) were created and each participant read one vignette. The vignettes only differed regarding the teacher response (4: Non-response, Comforting Victim, Correcting Bully, Comforting Victim and Correcting Bully) and the gender of the bully and victim (2: both either boys or girls). The bully and victim's gender were manipulated to counteract for possible gender effects. Mixed-gender versions were not developed as more versions would result in lower power and same gender bullying occurs more frequently (Baldry, 2004). The gender of the teacher could not be deduced from the story.

The vignette started with the instruction that students had to imagine having moved to a new school. Then, it was stated that, since the beginning of the school year, one classmate from the new class had been bullied by another. Next, a bullying situation between these classmates at the playground during a break was described. The bullying met Olweus' (1993) definition, and consisted of verbal, physical and relational bullying (Bauman & Del Rio, 2006):

> "Imagine that you have changed schools. You have been in a new class since the beginning of this school year. *Name victim* and *name bully* are two students from your new class. Since the beginning of the school year, *name victim* has been bullied by *name bully*. Today you see the next thing happen during playtime. *Name bully* tells *name victim* that *he/she* cannot play along with the group. This makes *name victim* sad and *he/she* gets tears in *his/her* eyes. *Name bully* sees this and says: "What a cry baby you are!". Before *name victim* can run away, *name bully* gives *him/her* a push and shouts: "Go cry a little harder!"."

Then, the vignette stated that the teacher of their new class was supervising the playground and had seen everything that happened. Next, the teacher's response to the incident was presented. In the Non-response condition, it was stated that the teacher did not respond to what happened. The teacher approached another group of students and asked them which game they were playing. In the active response conditions, the teacher either called *name victim* and comforted *him/her* (Comforting the Victim) or called *name bully* and made it clear to *him/her* that bullying is not allowed (Correcting the Bully). The teacher said that there will soon be a conversation in which will be decided what the bullying student must do to make up with *name victim.* In the last condition, the teacher first comforted the victim and then corrected the bully as in the Comforting the Victim and Correcting the Bully conditions, respectively.

Measures

Students' social cognitions

Perceived teacher bullying attitudes. Students' ideas of the hypothetical teacher's bullying attitudes were measured by two validated questionnaires that were adapted to fit with the purpose of this study. First, the perceived general attitude of the hypothetical teacher towards bullying was measured by applying the item from Saarento et al. (2013) to the story: "What do you think the teacher in the story thinks of bullying?". Students responded on a 5-point scale (1 = *good* to 5 = *totally wrong*). Support for the construct validity of the original item has been provided by previous studies (e.g., Saarento, Boulton, et al., 2015). Second, the validated attitude questionnaire of Salmivalli and Voeten (2004) was adapted to measure students' ideas of the hypothetical teacher's bullying attitudes instead of students' own bullying attitudes. Prior to data collection, three items were omitted as they fitted less with the professional role of teachers (i.e., "Bullying may be fun sometimes."; "Bullying is stupid."; "It is funny when someone ridicules a classmate over and over again."). The revised scale consisted of 7 items (2 reverse coded) measured on a 4-point scale (1 = *not true* to 4 = *true*) (e.g., "The teacher from the story thinks that joining in bullying is a wrong thing to do."; "The teacher from the story thinks that bullying makes the victim feel bad.").

A confirmatory factor analysis (CFA) supported the one-factor structure of the scale. Following current guidelines (Hu & Bentler, 1999; Kline, 2005; Weston & Gore, 2006), model fit was evaluated by the Chi-square test, Root Mean Square Error of Approximation (RMSEA) (including the 90% confidence interval), the Standardized Root Mean Square Residual (SRMR), the Comparative Fit Index (CFI) and the Tucker-Lewis index (TLI). Indices showed good model fit ($\chi 2$ (14) = 51.32, $p < .01$; RMSEA = .07, RMSEA 90% CI = [.05-.08], SRMR = .03, CFI = .97; TLI = .95). Standardized loadings ranged from .44-.85. Cronbach's alpha was .88. For each student, an average score was calculated. Higher scores reflect stronger perceived anti-bullying attitudes in the teacher.

Perceived teacher moral disengagement regarding bullying. Students' ideas of the hypothetical teacher's moral disengagement regarding bullying were measured by adapting the questionnaire of Thornberg and Jungert (2013) to make students report about the hypothetical teacher instead of about themselves. The scale consisted of six items (e.g., "Bullying is okay in certain cases."; "Bullying isn't so bad… something you have to put up with.") and measured to what extent students perceived that the hypothetical teacher reasoned in ways that justify bullying, blame the victim and undermine the seriousness of bullying (Thornberg & Jungert, 2013). Students responded on a 4-point scale (1 = *not true* to 4 = *true*). A CFA confirmed the one-factor structure of the scale. Indices showed good model fit (χ^2 (9) = 31.05, $p < .01$; RMSEA = .06, RMSEA 90% CI = [.04-.09], SRMR = .02, CFI = .98; TLI = .97). Standardized loadings ranged from .67-.91. Cronbach's alpha was .94. For each student, an average score was calculated. Higher scores reflect stronger perceived teacher moral disengagement.

Willingness to report bullying to the teacher. Students' willingness to report bullying to the hypothetical teacher was measured by one item developed for the purpose of this study: "When I witness bullying, I would tell the teacher from the story about this.". Students responded on 4-point scale (1 = *not true* to 4 = *true*).

Expectations regarding participant role behaviors in bullying. Students' ideas regarding participant role behaviors in bullying in the vignette's class were measured by six items developed for the purpose of this study. Five items were based on the participant role questionnaire of Salmivalli and Voeten (2004) (i.e., bully, reinforcer, assistant, defender and outsider) (e.g., "In the class of the story, other students will bully."; "In the class of the story, students will stand up for *name victim* (for example by comforting *him/her* or by telling *name bully* to stop bullying).").

One item was added to measure victimization (i.e., "In the class of the story, other students will be bullied."). Students responded on 4-point scale (1 = *not true* to 4 = *true*). An exploratory factor analysis was executed to explore whether the pro-bullying items (i.e., bully, reinforcer, assistant) could be taken together. Factor loadings were high (.70, .73, and .86, respectively). Additionally, the intercorrelations ranged from .51 to .63 and Cronbach's alpha was .80. Thus, based on students' scores on the bully, reinforcer and assistant role, for each student, an average score representing their expectations regarding pro-bullying behavior was calculated. Higher scores reflect higher expectations regarding the participant role behaviors (i.e., pro-bullying behavior, defending, outsider behavior and victimization) in the vignette's class.

Students' own participant role behaviors in actual bullying

Data regarding students' own levels of different participant role behaviors in actual bullying were collected in the third wave of the longitudinal study. Peer nominations were used and five items were developed based on the participant role questionnaire of Salmivalli and Voeten (2004) (i.e., bully, reinforcer, assistant, defender and outsider). Each item combined the descriptions of the participant role behaviors as formulated by Salmivalli and Voeten (2004) (e.g., "Which classmates bully other students at school? These are classmates who either start bullying, make others join in the bullying, always find new ways of harassing someone, or do several of these actions."). As in the study of Kärnä et al. (2010), a question to measure victimization was added: "Which classmates are bullied at school by other students?". An unlimited number of nominations was allowed (Marks et al., 2013), except for self-nominations. To ensure reliability, at least 60% of the classmates had to participate in the peer nomination procedure (Marks et al., 2013). For this reason, four classes were excluded from the analyses. Proportion scores were calculated by dividing the number of received nominations by the total number of possible nominations. An exploratory factor analysis was executed to explore whether the pro-bullying participant roles (i.e., bully, reinforcer, assistant) could be taken together. Factor loadings were high (.87, .84, and .82, respectively), the intercorrelations ranged from .67 to .73 and Cronbach's alpha was .88. Thus, for the pro-bullying participant role behaviors, an average proportion score was calculated for each student.

Manipulation, credibility and recognizability checks

After completing the questionnaires measuring social cognitions and handing in the vignette, students completed three manipulation checks in a second set of questionnaires. The items measured whether students (1) perceived the situation as a bullying incident between classmates ("In the story, a student was bullied by a classmate.", true/not true), (2) identified the correct character as the victim and bully ("In the story, *name victim* was bullied by *name bully*.", true/not true) and (3) correctly identified the teacher response ("How did the teacher from the story respond to what had happened in the story? Choose one of the four teacher responses.", options corresponded to the responses in the vignettes).

After completing the manipulation checks, students completed two credibility and two recognizability checks. The credibility checks measured whether students perceived the bullying incident and the teacher's response as credible: "The bullying from the story could happen the same way in real life."; "A real teacher could respond to bullying the same way as the teacher from the story.". Response options were "*Yes, that is possible*" and "*No, that is not possible*" (coded as 1 and 0, respectively). The recognizability checks measured whether students were familiar with the bullying incident and the teacher's response: "I have already seen bullying in real life that resembles the bullying from the story."; "I have already seen the teacher's response from the story (or a similar response) with a real teacher.". Students could respond with "*yes*" or "*no*" (coded as 1 and 0, respectively).

Statistical Analyses

Preliminary analyses

First, the distribution of students across conditions was inspected. Students (N = 910) were almost equally distributed across conditions (teacher response: N_1 = 228, N_2 = 227, N_3 = 228; N_4 = 227; gender of bully and victim: N_{boys} = 456, N_{girls} = 454) and Pearson's χ^2 tests revealed no significant differences between conditions regarding students' grade (χ^2 (6) = .58, p = .997) and gender (χ^2 (3) = .63, p = .890).

Second, students' responses to the manipulation checks were inspected. Students were excluded from all analyses when they did not answer correctly to the manipulation checks or had one or more missing values on these checks. Almost all students perceived the incident as bullying and correctly identified the victim and bully (97.4% and 95.7%, respectively).

However, less students correctly identified the teacher's response (84.4%). In particular, students confused the single responses (Comforting Victim, Correcting Bully) with the combined response (Comforting Victim and Correcting Bully). As a result, 186 of the 910 students (20.4%) were excluded from all analyses.

Third, in the remaining sample of students who were not excluded from the analyses based on their responses to the manipulation checks (N = 724), students who possibly provided unreliable responses were identified using two indicators. To begin with, students of which their actual teachers had indicated that they had language difficulties (N = 79) were identified as having possibly provided unreliable responses. Next, students who did not indicate that they read the instructions and the vignette thoroughly (N = 12) were identified as having possibly provided unreliable responses. As five students met both criteria, in the end, a total of 86 students (11.9%) who possibly gave unreliable responses were identified. The total sample comprised 724 students and the subsample (i.e., the total sample without students who possibly provided unreliable responses) 638 students. All further analyses were executed on the total sample and subsample. In case of similar results, only the results from the analyses on the subsample are reported. Differences in results are reported in "Sensitivity Analyses".

Fourth, the responses to the credibility and recognizability checks were inspected. Across conditions, almost all students reported that the bullying incident and teacher's response were credible (95.9% and 90.9%, respectively). One third of the students (34.3%) were familiar with the bullying from the story and 44.4% of students were familiar with the teacher's response. Table 1 presents the means and standard deviations across and within conditions. Analyses of variance (ANOVA) indicated that students in all eight conditions (4 teacher's response x 2 gender victim and bully) perceived the incident as equally credible and recognizable (resp. $F(7, 637) = 1.02$, $p = .42$; $F(7, 635) = 1.55$, $p = .15$). However, significant differences between conditions appeared regarding the perceived credibility and recognizability of the teacher's response (resp. $F(7, 636) = 14.12$, $p < .001$; $F(7, 636) = 14.90$, $p < .001$). Post hoc comparisons with the Games-Howell procedure were conducted to observe which conditions significantly differed from each other regarding students' scores on the perceived credibility and recognizability of the teacher's response. Overall, students almost always reported significant lower credibility and recognizability scores in the non-response conditions as compared to the active response conditions (see Table 2 and 3). No other significant differences appeared.

Table 1

Means and Standard Deviations of Credibility and Recognizability Checks Across and Within Conditions

Condition	Total				Non-response				Comforting Victim				Correcting Bully				Comforting Victim + Correcting Bully			
	boys		girls		boys		girls		boys		girls		boys		girls		boys		girls	
Variable	*N*	*M* (*SD*)	*N*	*M* (*SD*)	*N*	*M* (*SD*)	*N*	*M* (*SD*)	*N*	*M* (*SD*)	*N*	*M* (*SD*)	*N*	*M* (*SD*)	*N*	*M* (*SD*)	*N*	*M* (*SD*)	*N*	*M* (*SD*)
1. Credibility of bullying incident[a]	308	.95 (.22)	33	.97 (.18)	85	.93 (.26)	91	.93 (.25)	82	.98 (.16)	85	.98 (.15)	69	.94 (.24)	75	.97 (.16)	72	.96 (.20)	79	.99 (.11)
2. Credibility of teacher response[b]	307	.93 (.26)	33	.90 (.30)	84	.81 (.40)	91	.69 (.46)	82	.95 (.22)	85	.95 (.21)	69	.99 (.12)	75	.99 (.12)	72	.97 (.17)	79	.99 (.11)
3. Recognizability of bullying incident[a]	306	.35 (.48)	33	.34 (.47)	84	.29 (.45)	91	.29 (.45)	82	.43 (.50)	85	.38 (.49)	68	.31 (.47)	75	.27 (.45)	72	.38 (.49)	79	.43 (.50)
4. Recognizability of teacher response[b]	307	.50 (.50)	33	.40 (.49)	85	.16 (.37)	91	.15 (.36)	82	.57 (.50)	85	.47 (.50)	68	.69 (.47)	75	.49 (.50)	72	.61 (.49)	79	.51 (.50)

Note. [a] ANOVA showed no significant differences between conditions. [b] ANOVA showed significant differences between conditions and post hoc comparisons were executed (see Table 2 and 3).

Table 2

Post Hoc Comparisons of Credibility of the Teacher's Response across Conditions

		Non-response - boys	Non-response - girls
		M = .81	M = .69
Comforting Victim – boys	M = .95	ΔM = -.14, SE = .05	ΔM = -.26**, SE = .05
Comforting Victim – girls	M = .95	ΔM = -.14, SE = .05	ΔM = -.26**, SE = .05
Correcting Bully – boys	M = .99	ΔM = -.18*, SE = .05	ΔM = -.29**, SE = .05
Correcting Bully – girls	M = .99	ΔM = -.18*, SE = .05	ΔM = -.29**, SE = .05
Comforting Victim + Correcting Bully – boys	M = .97	ΔM = -.16, SE = .05	ΔM = -.28**, SE = .05
Comforting Victim + Correcting Bully – girls	M = .99	ΔM = -.18*, SE = .05	ΔM = -.30**, SE = .05

Note. Mean differences regarding the credibility of the teacher's response between the non-response conditions and the active response conditions are presented. Other post hoc comparisons revealed no significant differences.

* p < .010. ** p < .001.

Table 3

Post Hoc Comparisons of Recognizability of the Teacher's Response across Conditions

		Non-response - boys	Non-response - girls
		M = .16	M = .15
Comforting Victim – boys	M = .57	ΔM = -.41**, SE = .07	ΔM = -.42**, SE = .07
Comforting Victim – girls	M = .47	ΔM = -.31**, SE = .07	ΔM = -.32**, SE = .07
Correcting Bully – boys	M = .69	ΔM = -.53**, SE = .07	ΔM = -.54**, SE = .07
Correcting Bully – girls	M = .49	ΔM = -.33**, SE = .07	ΔM = -.34**, SE = .07
Comforting Victim + Correcting Bully – boys	M = .61	ΔM = -.45**, SE = .07	ΔM = -.46**, SE = .07
Comforting Victim + Correcting Bully – girls	M = .51	ΔM = -.34**, SE = .07	ΔM = -.35**, SE = .07

Note. Mean differences regarding the recognizability of the teacher's response between the non-response conditions and the active response conditions are presented. Other post hoc comparisons revealed no significant differences.

** $p < .001$.

Main analyses

IBM SPSS Statistics 26 was used to examine the effects of students' perceptions of teacher responses to bullying on their social cognitions. Mplus 8 (Muthén & Muthén, 1998-2017) was used to conduct the factor analyses (see 2.3 Measures). In the CFA's, maximum likelihood estimation with robust standard errors (MLR estimator) combined with the "complex analysis" feature was used to deal with item-level missingness, non-normality and non-independence of the observations (Muthén & Muthén, 1998-2017; Newman, 2014). Mplus 8 was also used to estimate the intraclass correlations (ICCs) and design effects at the level of the classroom. These statistics showed that for all outcomes little variance was explained by class (range ICCs: < .01-.02) and that the effects of dependence on standard error estimates were small (range design effects: 1.00-1.25) (Peugh, 2010). Therefore, multilevel modelling was not needed (Peugh, 2010) and analysis of covariance (ANCOVA) could be used.

In step 1 of the analyses, the effects of relevant background variables (i.e., students' age, gender) and gender of bully and victim on the outcomes were examined. Variables that significantly predicted the respective outcomes were added as control variables to the models of these outcomes in steps 2 and 3. In step 2, the effect of teacher responses on the outcomes was examined while controlling for the identified control variables. If the effect of teacher responses was significant, either planned or post hoc comparisons were executed depending on whether or not hypotheses had been formulated prior to the analyses. Regarding the planned comparisons, bootstrapping was used and the results of the contrasts not assuming equal variances were inspected (Field, 2017). For the effect size, Cohen's *d* for unequal-n design was calculated (Rosnow et al., 2000) with *d* = .20, .50 and .80 representing a small, medium and large effect, respectively. Regarding the post hoc comparisons, the Games-Howell procedure with significance level .01 was used as the sample sizes and the variances were not equal in the different conditions. In step 3, the interactions between teacher responses and students' own levels of participant role behaviors in bullying were examined while controlling for their main effects and the identified control variables. To control for multiple testing in the ANCOVA and planned comparison analyses, Bonferroni correction was used (Field, 2017). As 26 tests were carried out (step 2: 8 ANCOVA, 10 planned comparisons; step 3: 8 ANCOVA), the correction resulted in an alpha of .002.

All analyses were executed on the total sample and the subsample (i.e., without students who possibly provided unreliable responses). As the results regarding the validity and reliability of the measures, the credibility and recognizability checks and the descriptives were similar, only the results of the analyses on the subsample are reported. However, some differences in results concerning the main analyses appeared and are reported (see Sensitivity Analyses). Also, as heterogeneity of variance could have affected the results, parameter estimates with robust standard errors (HC4) were inspected for the analyses on the subsample and the total sample (Field, 2017). All significant effects remained significant when robust standard errors were used.

Results

Table 4 displays the descriptive statistics of the dependent variables, across and within conditions. Extreme outliers ($| z | > 3.29$) within conditions were identified (see Table 4) (Field, 2017). As the amount of extreme outliers was limited, they were not excluded from the analyses.

Control Variables

ANOVA revealed that, in general, girls were more willing to report bullying to the hypothetical teacher ($F(1, 631) = 7.01$, $p = .008$; $M_{girls} = 3.74$, $SE = .56$, $M_{boys} = 3.61$, $SE = .71$). Also, girls generally expected more outsider behaviors in the vignette's classroom ($F(1, 630) = 8.58$, $p = .004$; $M_{girls} = 2.54$, $SE = .93$, $M_{boys} = 2.32$, $SE = .91$). Boys, on the other hand, expected more pro-bullying behaviors and victimization in the vignette's classroom (respectively, $F(1, 633) = 5.83$, $p = .016$; $M_{girls} = 1.83$, $SE = .74$, $M_{boys} = 1.98$, $SE = .79$; $F(1, 629) = 4.77$, $p = .029$; $M_{girls} = 1.91$, $SE = .90$, $M_{boys} = 2.08$, $SE = .97$). Further, with increasing age, more pro-bullying behaviors and less defending were expected in the vignette's classroom ($F(1, 633) = 14.14$, $p < .001$; $F(1, 632) = 6.64$, $p = .01$). Finally, more defending was expected in the vignette's classroom when the hypothetical bully and victim were girls ($F(1, 632) = 4.38$, $p = .037$; $M_{hypo.girls} = 2.90$, $SE = .94$, $M_{hypo.boys} = 3.04$, $SE = .90$). No other significant effects at alpha ≤ .05 were observed regarding the control variables. The variables that were found to significantly predict the respective outcomes were included in further analyses of these outcomes as a control variable.

Effects of Teacher Responses

First, *perceived teacher bullying attitudes* and *perceived teacher moral disengagement* were significantly affected by the teacher's response to bullying (general attitude: $F(3, 610) = 712.05$, $p < .001$, $\eta_p^2 = .78$; attitudes: $F(3, 634) = 321.73$, $p < .001$, $\eta_p^2 = .60$; moral disengagement: $F(3, 633) = 625.54$, $p < .001$, $\eta_p^2 = .75$). Planned comparisons revealed that weaker anti-bullying attitudes and more moral disengagement were perceived for the teacher in the Non-response Condition compared to the active response conditions (either Correcting the Bully, Comforting the Victim, or a combination of Correcting the Bully and Comforting the Victim) (general attitude: $t(270.89) = 43.52$, $p = .001$, $d = 4.17$; attitudes: $t(233.22) = 25.84$, $p = .001$, $d = 2.68$; moral disengagement: $t(195.84) = -31.19$, $p = .001$, $d = -3.53$). The sizes of these effects were very large. Further, planned comparisons revealed that the teacher's general attitude towards bullying was perceived to be less negative in the Comforting the Victim Condition compared to the Correcting the Bully Conditions (with and without Comforting the Victim) ($t(221.15) = 9.03$, $p = .001$, $d = 1.03$). Additionally, more moral disengagement was perceived in the Comforting the Victim Condition compared to the Correcting the Bully Conditions (with and without Comforting the Victim) ($t(238.82) = -4.72$, $p = .001$, $d = -.52$). These effects were large and medium in size. No significant differences regarding perceived teacher bullying attitudes and perceived teacher moral disengagement were observed between only Correcting the Bully and the combined response of Correcting the Bully and Comforting the Victim.

Second, *students' willingness to report bullying to the teacher* was significantly affected by the teacher's response ($F(3, 631) = 5.30$, $p = .001$, $\eta_p^2 = .03$). Planned comparisons showed no significant differences between the Non-response Condition and the active response conditions (either Correcting, Comforting, or Both). However, in the Correcting the Bully Conditions (with and without Comforting the Victim), students were more willing to report bullying to the teacher compared to students in the Comforting the Victim Condition ($t(237.39) = 3.48$, $p = .002$, $d = .38$). This effect was small in size. No significant difference was observed between only Correcting the Bully and the combined response of Correcting the Bully and Comforting the Victim.

Third, *students' expectations regarding pro-bullying behaviors*, *defending* and *victimization* in the vignette's class were predicted by the teacher's response (pro-bullying: $F(3, 631) = 53.24$, $p < .001$, $\eta_p^2 = .20$; defending: $F(3, 630) = 12.56$, $p < .001$, $\eta_p^2 = .06$; victimization: $F(3, 629) = 19.94$, $p < .001$, $\eta_p^2 = .09$).

Students' expectations regarding outsider behaviors in the vignette's classroom were not significantly predicted by the teacher's response. Planned comparison revealed that less pro-bullying behaviors, more defending and less victimization were expected in the active response conditions compared to the Non-response Condition (pro-bullying: $t(273.24) = -11.24$, $p = .001$, $d = -1.08$; defending: $t(294.22) = 5.72$, $p = .001$, $d = .53$; victimization: $t(266.57) = -6.56$, $p = .001$, $d = -.64$). These effects were medium to large. Further, post hoc comparisons with the Games-Howell procedure revealed that less pro-bullying behaviors were expected in the condition where the teacher both Comforted the Victim and Corrected the Bully compared to the condition in which only the Victim was Comforted ($\Delta M = -.27$, $SE = .07$, $p = .002$, 99% CI = [-.49,-.04]). Regarding *students' expectations for defending* and *victimization*, post hoc comparisons with the Games-Howell procedure revealed no significant differences between the active responses.

No interaction effects between the teacher's response and students' own participant role behaviors in bullying were significant at the Bonferonni corrected alpha level ($\alpha = .002$).

Sensitivity Analyses

When the results based on the total sample were compared with the results based on the subsample, two differences were observed. First, in the total sample, the gender of the bully and victim did not significantly affect students' expectations regarding defending in the vignette's classroom ($F(1, 716) = 3.82$, $p = .051$; $M_{\text{hypo.girls}} = 2.88$, $SE = .95$, $M_{\text{hypo.boys}} = 3.00$, $SE = .95$). Second, in the total sample, students did not expect significantly (at alpha .002) less pro-bullying behaviors in the condition where the teacher both Comforted the Victim and Corrected the Bully compared to the condition in which only the Victim was Comforted ($\Delta M = -.25$, $SE = .07$, $p = .003$, 99% CI = [-.47,-.03]).

Table 4

Descriptive Statistics of Dependent Variables Across and Within Conditions

Condition	Total		Non-response		Comforting Victim		Correcting Bully		Comforting Victim + Correcting Bully	
Variable	*N*	*M* (*SD*)	*N* *(Out.)*	*M* (*SD*)	*N* *(Out.)*	*M* (*SD*)	*N* *(Out.)*	*M* (*SD*)	*N* *(Out.)*	*M* (*SD*)
1. General attitude of teacher	614	3.89 (1.25)	171 (4)	2.16[a] (.64)	161 (1)	4.19[b; c] (.75)	135	4.77[b; d] (.42)	147 (1)	4.77[b; d] (.44)
2. Attitudes of teacher	638	3.22 (.76)	176	2.27[a] (.63)	167 (2)	3.52[b] (.44)	144 (1)	3.59[b] (.41)	151 (2)	3.65[b] (.37)
3. Moral disengagement of teacher	637	1.59 (.80)	175	2.71[a] (.64)	167 (1)	1.26[b; c] (.34)	144 (4)	1.12[b; d] (.20)	151 (4)	1.12[b; d] (.22)
4. Willingness to report bullying	636	3.68 (.64)	175 (4)	3.69 (.66)	166	3.52[a] (.80)	144	3.74[b] (.53)	151 (3)	3.79[b] (.46)

Table 4 Continued

Condition	Total		Non-response		Comforting Victim		Correcting Bully		Comforting Victim + Correcting Bully	
Variable	*N*	*M* (*SD*)	*N* *(Out.)*	*M* (*SD*)	*N* *(Out.)*	*M* (*SD*)	*N* *(Out.)*	*M* (*SD*)	*N* *(Out.)*	*M* (*SD*)
5. Pro-bullying behaviors	638	1.90 (.77)	176	2.43[a] (.77)	167	1.85[b; c] (.73)	144 (1)	1.65[b] (.64)	151 (1)	1.58[b; d] (.56)
6. Defending	637	2.97 (.92)	176	2.62[a] (.95)	167	3.02[b] (.85)	144	3.06[b] (.93)	150	3.21[b] (.85)
7. Victimization	634	1.99 (.93)	175	2.39[a] (1.03)	165	1.99[b] (.87)	144	1.74[b] (.82)	150	1.75[b] (.82)
8. Outsider behaviors	635	2.44 (.93)	175	2.39 (.96)	166	2.43 (.90)	143	2.47 (.98)	151	2.48 (.87)

Note. For each outcome, superscript lowercase letters a, b, c, d, show which means significantly differ from each other based on planned or post hoc comparisons. 1 = perceived general attitude towards bullying of the hypothetical teacher; 2 = perceived attitudes towards bullying of the hypothetical teacher; 3 = perceived moral disengagement regarding bullying of the hypothetical teacher; 4 = willingness to report bullying to the hypothetical teacher; 5 = expectations regarding pro-bullying behaviors in the vignette's class; 6 = expectations regarding defending in the vignette's class; 7 = expectations regarding victimization in the vignette's class; 8 = expectations regarding outsider behaviors in the vignette's class; Out. = outliers.

Discussion

Bullying affects students worldwide and is associated with a wide range of short- and long-term difficulties, especially for victims (Arseneault, 2018). As bullying is often embedded in classrooms, teachers are considered to be key figures in bullying intervention (Brendgen & Troop-Gordon, 2015). A limited number of studies have shown that by their responses to bullying incidents, teachers can affect bullying levels in their classrooms (e.g., Campaert et al., 2017; Van der Zanden et al., 2015). To get further insight in how teacher responses predict bullying, scholars have pointed to different student social cognitions related with bullying processes that could be impacted by teacher responses (Troop-Gordon and Quenette, 2010; Menesini, 2019). However, thus far, only a few studies, of which most are correlational, have examined effects of teacher responses on student cognitions. This study aimed to fill this gap and to provide insight in whether and how teacher responses to bullying influence students' cognitions, which, in turn, can be assumed to explain students' bullying-related behaviors. Experimental vignettes were used to investigate the effects of four teacher responses to a same bullying incident (Non-response, Comforting Victim, Correcting Bully, and a combination of Comforting Victim and Correcting Bully) on four student social cognitions: (1) perceived teacher attitudes towards bullying, (2) perceived teacher moral disengagement regarding bullying, (3) student willingness to report bullying to the teacher, and (4) expectations regarding bullying participant role behaviors in the vignette's classroom.

Based on socio-cognitive theory (Bandura, 1986), students were expected to cognitively process teacher responses to bullying and to take different cues from them. First, students were expected to make interpretations regarding the *teacher's attitudes towards bullying*. Building on theory and previous research (Demol et al., 2021; Van der Zanden et al., 2015; Veenstra et al., 2014), it was hypothesized that students would perceive stronger anti-bullying attitudes when the hypothetical teacher actively responded to the bullying. Further, it was hypothesized that even stronger anti-bullying attitudes would be perceived when the teacher corrected the bully. The results confirmed the hypotheses and provided further support for previous findings. Our findings suggest that when teachers actively respond to bullying and especially when they confront bullies, students perceive stronger teacher anti-bullying attitudes. Conversely, when teachers do not respond, students may get the impression that teachers condone bullying or that they do not care about it.

Based on social learning theory (Bandura, 1977), perceived teacher attitudes can be assumed to inform students about teachers' expectations regarding acceptable behavior in class which may predict students' own behavior. This is in line with previous research showing that students' perceptions of teachers' bullying attitudes were longitudinally related with bullying levels (Saarento, Boulton, et al., 2015) and concurrently with victimization levels (Cortes & Kochenderfer-Ladd, 2014; Saarento et al., 2013). Additionally, weaker teacher anti-bullying attitudes as perceived by victims might be associated with more victimization as victims are less inclined to seek help from these teachers (Blomqvist et al., 2020).

A second cue that students were expected to take concerned *teacher's moral disengagement regarding bullying*. No previous studies were available, but based on the expectations regarding perceived teacher attitudes, students were expected to perceive less moral disengagement in the hypothetical teacher who actively responded. This effect was also expected to be stronger when the bully was corrected. These hypotheses were confirmed and complement the findings of Campaert et al. (2017) who showed that teacher responses are predictive for students' own levels of moral disengagement in bullying. Based on social learning theory (Bandura, 1977), it can be expected that when students perceive from teacher responses that teachers justify bullying, blame victims, or undermine the seriousness of bullying, students could reason about bullying the same way. This is problematic as research has shown students' moral disengagement regarding bullying is significantly related with aggressive behavior (Gini et al., 2014). Instead, when students understand moral principles and know that there is no valid justification for bullying, they can be protected from bullying (Zych et al., 2017). Therefore, teachers should model behavior that promotes social, emotional and moral competencies in students (Zych et al., 2017).

Third, based on previous research (e.g., Aceves et al., 2010; Blomqvist et al., 2020), students' willingness to report bullying to the hypothetical teacher was expected to be higher when the teacher actively responded to the bullying. This effect was also expected to be stronger when the teacher corrected the bully (Veenstra et al., 2014; Blomqvist et al., 2020). We found that students' willingness to report bullying to the teacher was high in all four conditions. It seems that most students, as bystanders, considered it as their duty to report bullying to teachers, regardless of the teacher's response in the vignette.

It is a positive finding that students' telling about bullying was high as this has been found to be an important predictor of teacher involvement in bullying (Novick & Isaacs, 2010) and as classrooms with higher willingness to report bullying have lower levels of victimization (Cortes and Kochenderfer-Ladd, 2014). However, students' responses to this outcome might have been influenced by social desirability as the social norm is to stand up in case of aggression. Although, unexpectedly, willingness to report bullying was not higher when the teacher actively responded compared to non-response, differences between the active responses confirmed that students would be more willing to report bullying when the teacher corrected the bully than when only the victim was comforted. When teachers confront bullies, they explicitly show that they try to stop bullying (Veenstra et al., 2014) and that might be key for students willing to report. However, it is important to consider that bystanders' intentions to report bullying were investigated. Findings could be different for victims. For instance, fear of retaliation, which could be particularly pronounced in victims, could predict less willingness to report bullying to teachers especially when they direct responses to bullies (Yoon & Barton, 2008).

The fourth and last investigated cognition was *students' expectations regarding participant role behaviors in bullying in the vignette's class*. Based on previous research, Yoon and Bauman (2014) argued that by their responses to bullying, teachers can set expectations for potential bullies, victims and other students' future behaviors and the relational climate in class. Therefore, it was hypothesized that when the teacher actively responded, students would expect less pro-bullying behaviors, more defending, less victimization, and less outsider behaviors. Due to the unavailability of previous research, differences between the active responses were explored. In line with the hypotheses, students expected less pro-bullying behaviors, more defending and less victimization in the classroom when the teacher actively responded. For outsider behaviors, there were no significant differences between any responses. Further, there were no significant differences between the active responses regarding expectations for defending and victimization. Less pro-bullying behaviors were expected when the teacher both comforted the victim and corrected the bully versus when only the victim was comforted, but this difference was not significant in the analyses on the total sample.

Together these findings indicate that students do think that active teacher responses have beneficial effects on bullying processes in classrooms. Students do expect less bullying, more defending and less victimization following active teacher responses.

This is in line with the findings from Campaert et al. (2017) showing that non-response predicted higher bullying and victimization, and disciplinary sanctions and victim support predicted less bullying and victimization respectively.

Finally, it was explored whether students' own levels of different participant role behaviors moderated the effect of teacher responses on their cognitions. Due to the unavailability of previous research, it was only tentatively expected that for relatively higher levels of victimization and defending, the effect of teacher response would be stronger. For relatively higher levels of pro-bullying behaviors (i.e., bullying, assisting, reinforcing), the effect of teacher response was expected to be less strong. These expectations were not confirmed. Although, in this study, no moderating effects of students' own bullying participant role behaviors on their cognitions were found, it is possible that students' cognitions about actual teacher responses are affected by individual characteristics such as their bullying-related behaviors and beliefs.

To conclude, first, the results of the current study are in line with social cognitive (Bandura, 1986) and goal-framing theory (Veenstra et al., 2014) and confirm findings by Demol et al. (2021) showing that students can deduce beliefs from an imaginary teacher's behavior. Second, in the current study, non-response was also found to have important effects on students' beliefs indicating that it should actually be considered as a response. Our findings indicate that students believe that a non-responding teacher thinks less negatively about bullying and justifies it more. In addition, our study suggests that students believe that non-response, compared to active responses, would have adverse effects on bullying processes in the classroom (i.e., more bullying and victimization, less defending). Third, a confronting response directed to the bully (correcting) had a stronger effect on students' cognitions than a supporting response directed to the victim (comforting). Students perceived even stronger anti-bullying attitudes and even less moral disengagement when the teacher corrected the bully. Further, when the teacher corrected the bully, students were more willing to report bullying to the teacher. Overall, this study found clear evidence for effects of teacher responses on student perceptions about the teacher and about classroom dynamics. However, evidence regarding effects on students themselves, more specifically on their willingness to report bullying, was less clear.

Strengths, Limitations, and Suggestions for Future Research

The current study used experimental vignettes to investigate whether and how teacher responses to bullying influence different bullying-related student cognitions in a large sample of upper elementary school students. The design, including the use of a vignette, permitted to manipulate teacher responses without interfering in reality and to draw causal conclusions. The statistical analyses took into account several characteristics of the data (e.g., Cohen's *d* for unequal-n design, post hoc comparisons with Games-Howell procedure), controlled for multiple testing and sensitivity analyses largely confirmed the findings. However, the study also has a number of limitations that are worth noticing.

First, as hypothetical stories were used, students' cognitions should also be interpreted as hypothetical reactions. It is not certain that students' cognitions following actual bullying and actual teacher responses would be similar. This study included credibility and recognizability checks to verify whether the bullying incident and teacher's response were credible and recognizable for students. If so, the likelihood that the cognitions would reflect real life cognitions would be higher. Almost all students perceived the bullying incident as credible, but the teacher's non-response was perceived to be less credible than the active responses. Additionally, non-response was less recognizable to the students. As a result, students' cognitions following non-response could be less realistic. Although the use of experimental vignettes has several merits, observational studies, preferably longitudinal, are needed to confirm findings in actual classrooms.

Second, as students were randomly assigned to conditions, the risks that individual- and class-level factors influenced the findings were reduced. However, in future research, it could be interesting to investigate main and moderating effects of these factors on students' cognitions (e.g., students' own attitudes toward bullying, classroom bullying levels, actual teacher's responses to bullying).

Third, although the investigated teacher responses were carefully selected based on previous studies, the study is limited in that only four different immediate teacher responses were investigated. The results of this study should be interpreted in relation to these specific responses and should not be generalized to other responses. Future studies could focus on other responses (e.g., involving others, mediation) or investigate responses in a more differentiated way (e.g., different responses targeting the bully; see Garandeau et al., 2016).

Practical Implications

First, it is important for teachers to realize that students can deduce beliefs from their observations of teacher responses to bullying. These beliefs or student cognitions, in turn, can affect bullying processes in the classroom for better or worse. For instance, when students perceive from teachers' non-response that their teachers do not disapprove of bullying, they can be more likely to engage in bullying (Saarento et al., 2013).

Second, the present findings further emphasize the importance of active teacher responses to bullying and especially responses that explicitly show that bullying is not tolerated. Teacher responses are an important part of bullying intervention (Yoon & Bauman, 2014). However, previous research has indicated that sometimes teachers do not intervene and that they are often ill-prepared to effectively deal with bullying (Yoon & Bauman, 2014). Teacher training could focus on several aspects that have been found to increase chances of teacher intervention such as recognizing bullying situations and teacher's self-efficacy beliefs (for an overview, see Newman et al., 2010).

DISCUSSION

Bullying is a persistent and prevalent problem in elementary schools worldwide that poses a major threat to the well-being of victimized students in the short and long run (Arseneault, 2018). Being the target of intentional, repeated aggressive acts by one or more powerful peers (Olweus, 1993) not only increases the risk of mental (e.g., Schoeler et al., 2018) and physical health problems (e.g., Vaillancourt, 2018), but is also related to social relationship problems and lower wealth in adulthood (Wolke & Lereya, 2015). Clearly, identifying risk and protective factors of bullying and victimization is critical.

Whereas in the past decades, the role of peers in bullying and victimization has been widely investigated, researchers devoted limited attention to the role of teachers (Yoon et al., 2020). To fill several gaps in the literature, we conducted four studies in the upper three grades of elementary schools in Flanders. In Part I of this dissertation, two longitudinal studies focused on the role of students' relationships with peers and teachers in victimization experiences across the school year. In Chapter 1, the transactional associations among peer rejection, teacher-student relationships, and relational and physical victimization, respectively, were examined. In Chapter 2, differences between empirically derived trajectory classes of victimization regarding peer social status, teacher-student relationships, and social-emotional outcomes were investigated. In Part II, two experimental studies focused on teachers' responses to bullying. In Chapter 3 and 4, we examined whether and how perceived teacher responses to a hypothetical bullying incident affected several student bullying-related cognitions. We conclude this dissertation by presenting an overview of the main findings and suggesting avenues for future research. Furthermore, this concluding chapter reviews the primary strengths and limitations of the studies and discusses implications for educational practice. We end this dissertation by presenting a final conclusion.

The Multifaceted Role of Teachers in Bullying Victimization: Overview of Findings and New Avenues for Research

Inspired by the conceptual model of Gest and Rodkin (2011), we investigated two ways through which teachers can affect bullying processes in the classroom: by their relationships with students (Part I) and by their responses to bullying incidents (Part II). In this section, we summarize the main findings regarding these two facets of teachers' role in bullying victimization and we present avenues for future research in this field.

Facet I: Affective Teacher-Student Relationships and the Interplay with Peer Relationships

This dissertation adopted a socio-ecological perspective on bullying (Thomas, 2021) and built on research demonstrating that, especially, interactions of students with members of their most immediate social environments predict the likelihood of being bullied (Cook et al., 2010; Zych et al., 2017). In classrooms, students interact simultaneously with peers and teachers, and relationships with these two interaction partners play a role in bullying processes (Brendgen & Troop-Gordon, 2015). However, most studies examined the role of relationships with either peers or teachers in victimization. Additionally, no previous studies investigated how relationships with teachers are affected by victimization. In this dissertation, we investigated how the quality of relationships with classmates and teachers functions as an antecedent of relational and physical bullying victimization, both independently (Chapter 2) and jointly (Chapter 1). In addition, we investigated how relational and physical victimization predict the quality of students' relationships with classmates and teachers (Chapter 1).

The predictive role of affective teacher-student relationships and peer social status for victimization

In Chapter 1 and 2, we examined the links between victimization and initial or prior levels of affective teacher-student relationships and peer social status. Teacher-student relationship quality was conceptualized within an extended attachment framework (Verschueren & Koomen, 2012). In Chapter 1, the degree of closeness and support in teacher-student relationships was assessed. In Chapter 2, the dimensions of closeness and conflict in teacher-student relationships were measured. Peer social status was operationalized as the degree to which students are disliked (Chapter 1, Chapter 2) or liked by the peer group (Chapter 2).

In Chapter 1, as expected, more peer rejection at the beginning of the school year predicted more relational and physical victimization at the middle of the school year. This was not confirmed in the second half of the school year. Thus, partial evidence was found for the idea that students who are more disliked by peers have higher chances to become victimized, for instance, because they may receive less support from the peer group and be easier targets for bullies (Hodges & Perry, 1999).

Additionally, more supportive teacher-student relationships predicted less relational and physical victimization throughout the school year. These findings are in line with expectations based on social learning theory (Bandura, 1977) and attachment theory (Bowlby, 1969; Verschueren & Koomen, 2012). For instance, when teachers have supportive relationships with students, they may model positive relational skills (Hendrickx et al., 2016). Further, students may rely more on teachers in times of stress when they experience close relationships with them. They may be more willing to report bullying to teachers, enabling teachers to notice victimization sooner and intervene more quickly (e.g., Eliot et al., 2010; Reavis et al., 2010).

Our results are in line with findings from a recent meta-analysis. Ten Bokkel et al. (under review) showed that, in general, low-quality dyadic teacher-student relationships are linked to higher levels of bullying victimization later on. This effect was found while controlling for the stability of victimization and its concurrent association with teacher-student relationships at Wave 1. In Chapter 1, the longitudinal link between teacher-student relationships and bullying victimization was also found while controlling for the effects of peer relationships. Summarizing, in Chapter 1, we demonstrated that peer rejection and teacher-student relationships have unique, additive effects on relational and physical victimization throughout the school year, meaning that each contribute to the development of victimization on top of the other.

In Chapter 2, we demonstrated that the group of students that experienced relatively higher levels of victimization across the school year generally had a lower status in the peer group at the beginning of the school year (i.e., higher levels of peer rejection, lower levels of peer acceptance) compared to the group of students that experienced lower levels of victimization across the school year. Thus, the evidence of Chapter 2 is also in line with the idea that being more disliked by peers may increase the likelihood of being victimized. Unexpectedly, there were no differences between the victimization groups regarding initial levels of teacher-student closeness and conflict. Thus, in Chapter 2, no support was found for the hypothesis that conflict in teacher-student relationships is a risk factor for victimization and closeness a protective factor.

Summarizing, the findings from Chapter 1 and 2 point to the same direction regarding peer social status. Regarding teacher-student relationships, however, the findings seem non-consistent. To compare the evidence from Chapter 1 and Chapter 2 in more depth, first, the analytical techniques that were used are briefly described.

In Chapter 1, a variable-oriented approach was used to get insight into relations among variables, more specifically, into the relations among peer relationships, teacher-student relationships, and bullying victimization. In Chapter 2, a person-oriented approach was used to get insight into relations among individuals and differences between subgroups of individuals on a number of variables. More specifically, Chapter 2 provided insight into how students are alike or different from each other regarding victimization experiences across the school year and how the identified subgroups of students differ regarding social antecedents. In general, the complementary analytical techniques in Chapter 1 and 2 showed that lower social status in the classroom is linked with more victimization. This is consistent with previous research (e.g., Serdiouk et al., 2015). Concerning teacher-student relationships, less supportive relationships with teachers earlier in the school year predicted higher levels of victimization later in the school year in Chapter 1. However, no differences in teacher-student closeness and conflict at the beginning of the school year were found between the identified victimization groups in Chapter 2. Thus, although we expected a positive link between low-quality teacher-student relationships and victimization, the results in Chapter 2 were not in line with this hypothesis. The group of students experiencing relatively higher levels of victimization did not have more conflict or less closeness in the relationship with the teacher at the beginning of the school year. There are a number of possible explanations for these inconsistent findings.

First, the findings in Chapter 1 and 2 might be non-consistent due to methodological differences between the studies. For instance, the investigated qualities of teacher-student relationships were not completely similar and a different type of informant was used. In Chapter 1, teacher-student relationship quality was measured by *students' self-report* of their *own liking of the teacher* and of *more general teacher-student interactions* (e.g., "I like the teacher", "The teacher likes to teach this class"). The scale did not only measure an affective dyadic component in teacher-student relationships, but also the degree of support from the teacher towards the class in general. In Chapter 2, the positive teacher-student relationship dimension was measured by *peer perceptions* of who *the teacher* likes the most (i.e., "Which classmates does your teacher like the most?"). A recent meta-analysis showed that associations between affective teacher-student relationships and victimization are stronger when the same informant is used (Ten Bokkel et al., under review).

As, in Chapter 1, both teacher-student relationship quality and victimization were measured by student self-report, shared method variance might have increased the effects. However, this shared-method bias can be expected to be especially present in the cross-sectional associations, and these associations were controlled for in the examination of the longitudinal associations. Additionally, it is possible that peer perceptions of teacher-student relationship quality (Chapter 2) differ from students' own perceptions (Chapter 1). For instance, in a sample of academically at-risk students in the second and third grade, Wu et al. (2010) investigated the consistency of student, peer, and teacher report about teacher-student relationship quality. For half of the students, self-report and peer report were congruent. For the other half, the perceptions of students themselves and those of peers were incongruent. Additionally, peer report of teacher-student support correlated negatively with students' self-report of teacher-student conflict, but the correlation with students' self-report of teacher-student support was negligible (Li et al., 2012; Wu et al., 2010). Thus, research indicates that students' own perceptions of teacher-student relationships might differ from peer perceptions. However, more research is needed to examine the convergence between these measures in upper elementary school.

Besides assuming that methodological aspects might explain the differences in results, an alternative explanation is that, in Chapter 2, possible differences in teacher-student relationship quality between victimization patterns were missed as only two patterns were identified and examined. It is possible that more diverse patterns in victimization development differ regarding teacher-student relationship quality. Future studies using, for instance, subsamples of victims, can investigate whether more patterns in victimization development can be identified and whether these patterns are differentially associated with social antecedents such as affective teacher-student relationships.

As a general conclusion, the larger body of research (Ten Bokkel et al., under review) and Chapter 1 show that teacher-student relationships play a role in victimization levels. The effects were small in size, but they were obtained while using conservative analytical techniques.

The predictive role of victimization for affective teacher-student relationships and peer social status

In addition to investigating whether relationships with classmates and teachers function as an antecedent of victimization, Chapter 1 provided insight into the predictive role of victimization for the quality of these relationships. Regarding relationships with classmates, our study confirmed earlier findings by showing that higher levels of victimization earlier in the school year predicted more peer rejection later in the school year (e.g., Hodges & Perry, 1999). Thus, we found evidence for the idea that peers may distance themselves from victims (Salmivalli & Peets, 2009; Sentse et al., 2015). Regarding relationships with teachers, higher levels of victimization at the beginning of the school year predicted less supportive teacher-student relationships at the middle of the school year. Thus, support was found for the idea that social stigmas associated with victimization may reduce teachers' sympathy for and support to these students (Juvonen & Graham, 2014). This finding is unfortunate as high-quality teacher-student relationships can, for instance, attenuate negative outcomes related with being victimized (e.g., Averdijk et al., 2014; Sulkowski & Simmons, 2017; Troop-Gordon & Kuntz, 2013).

Due to a strong focus on teachers as socializing agents (Farmer et al., 2011), the effects of bullying victimization on teacher-student relationships have rarely been investigated. We found that higher levels of victimization predicted less supportive teacher-student relationships, but only in the first half of the school year. For peer rejection, we found no such effect on teacher-student relationship quality. Furthermore, a recent study investigating transactional associations among teacher-student closeness, teacher-student conflict, and victimization did not find evidence for the effect of victimization on teacher-student relationship quality (Ten Bokkel et al., 2021). More studies investigating whether and how bullying victimization affects teacher-student relationships are needed. If future studies confirm that bullying victimization increases the risk of low-quality teacher-student relationships, this insight should be translated to educational practice to make teachers aware of this process.

Are there differences between the bullying victimization forms?

In Chapter 1 and 2, we distinguished between relational and physical bullying victimization for two reasons. First, the confirmatory factor analyses in Chapter 1 and 2 (two different samples) indicated that relational and physical victimization can be considered as two distinct concepts. Second, available evidence suggests that their social correlates may differ (Bauman & Del Rio, 2006; Goldstein & Tisak, 2010). To get insight into the possible differential correlates of relational and physical victimization, the transactional associations with peer and teacher-student relationships were investigated for the victimization forms separately (Chapter 1). Additionally, victimization trajectory classes were identified based on development in relational and physical victimization (Chapter 2). Although distinguishing between these victimization forms was built on two empirical arguments, in general, our findings indicated that relational and physical victimization follow a similar developmental course and are similarly related to relationships with peers and teachers.

Relational and physical victimization were found to covary substantially over time (Chapter 2). On average, students who reported at the start of the school year to be more strongly victimized in one way, also reported to be more strongly victimized in the other way. Additionally, students who reported stronger decreases in one form, also reported stronger decreases in the other form. Further, in Chapter 2, two victimization trajectory classes were identified. The class to which the majority of students belonged, showed relatively low levels of both relational and physical victimization. The class to which the other students belonged, showed relatively high levels of both victimization forms, with somewhat higher levels of relational as compared to physical victimization. This solution did not permit to examine differences between the victimization forms as the two classes were complementary regarding the level of victimization, but not regarding the victimization form. For instance, we did not identify classes in which relational victimization was more common than physical victimization versus classes in which physical victimization was more common than relational victimization. Nonetheless, the results in Chapter 1 did not point to differences between relational and physical victimization regarding social correlates, as the associations with peer and teacher-student relationships were almost similar for both forms.

Avenues for future research

Building on the socio-ecological framework of bullying (Thomas, 2021), the goal of part I of this dissertation was to improve our understanding about the role of the classroom relational context in victimization processes, more specifically, the role of relationships with classmates and teachers. While conducting the studies and reflecting on the findings, we identified several avenues for future research.

First, in Chapter 1 and 2, peer social status was operationalized by using emotional criteria (i.e., peer rejection, peer acceptance). These criteria measure students' personal evaluations of peers in terms of their likeability (Cillessen & Bukowski, 2018). Future studies might also include reputational criteria, such as popularity (i.e., visibility, prestige, or dominance in the peer group) (de Bruyn et al., 2010). Rather than personal evaluations, these criteria measure perceived behaviors or reputations in the peer group (Cillessen & Bukowski, 2018). For instance, higher perceived popularity (i.e., peer nominations of who is popular in the classroom) has been found to be related with lower victimization, especially for students with lower levels of acceptance (de Bruyn et al., 2010).

Second, we focused on the affective quality of teacher-student relationships (Chapter 1, Chapter 2) and the dimensions of closeness and conflict (Chapter 2) to operationalize teacher-student relationships. Future studies might also include the underexamined dimension of dependency which reflects the degree to which students show overreliance on teachers, and the extent to which they cling to teachers and are possessive of them (Verschueren & Koomen, 2020). For instance, scholars have argued that teacher-student dependency might increase the risk for victimization because students miss opportunities to learn to cope independently with peer conflicts (Troop-Gordon & Kopp, 2011). Additionally, students who are overly dependent on teachers might be perceived as weak or insecure by classmates, making them prototypical targets for bullies (Troop-Gordon & Kopp, 2011). Further, in Chapter 1 and 2, one type of informant on teacher-student relationship quality was used: either students themselves (Chapter 1) or peers (Chapter 2). The perspective of the teacher was not included, even though teachers can have different views on the quality of the relationships with their students (Pianta et al., 2003). Additionally, teacher-student interactions at the individual or classroom level can be observed to obtain a more objective picture. Thus, future studies could include multiple, other dimensions of teacher-student relationships as well as perceptions of students, peers, teachers, and external observers.

Third, to further deepen our understanding of how classroom social relationships predict victimization, future studies can examine possible explanatory mechanisms. For instance, future studies may investigate whether mechanisms based on social learning theory and attachment theory (e.g., modeling, teacher's sensitivity, students' emotional security) mediate the association between (earlier) teacher-student relationships and victimization.

Fourth, future studies could focus on other risk factors for victimization within the class and larger school environment, but also within other immediate environments of students (Hong & Espelage, 2012). For instance, consistent links between victimization and domestic violence, abuse/neglect and parental mental health have been found (for a meta-analysis, see Nocentini et al., 2019). Regarding the larger school context, for instance, school climate has been found to be a significant predictor of bullying and victimization (Cook et al., 2010; Thapa et al., 2013). Additionally, the broader literature indicates that teachers can impact victimization levels in other ways than by their affective relationships with students. For instance, in their review on classroom and school factors that contribute to bullying and victimization, Saarento, Garandeau, et al. (2015) highlight the role of teacher interventions in bullying, teacher attitudes towards bullying and students' perceptions of these attitudes in decreasing the risk of victimization.

Facet II: Teacher Responses to Bullying

To improve our understanding of the role of teachers in bullying victimization, this dissertation not only focused on the quality of teacher-student relationships, but also on teachers' responses to bullying incidents. More specifically, in Chapter 3 and 4, we experimentally investigated the effects of teacher responses to a hypothetical bullying incident on several student bullying-related cognitions.

Perceived teacher responses to hypothetical bullying: Effects on student cognitions

In the scarce research examining links between teacher responses to bullying and classroom levels of bullying and victimization, scholars pointed to several bullying-related cognitions of students that could be impacted by teacher responses and that may mediate the link between teacher responses and bullying processes in the classroom (e.g., Campaert et al., 2017; Menesini, 2019; Van der Zanden et al., 2015).

However, few studies actually examined associations between teacher responses and students' bullying-related cognitions (e.g., Campaert et al., 2017). Additionally, as these studies were correlational in nature, they did not provide causal evidence.

To get further insight into whether teacher responses influence students' bullying-related cognitions, we conducted two experimental studies. In these studies, we focused on four types of teacher responses to a same hypothetical bullying incident: "Non-response", "Comforting the victim", "Correcting the bully" and "a combination of Comforting the victim and Correcting the bully". Additionally, we focused on three categories of student cognitions: cognitions related to students' own attitudes and behavior (Chapter 3, Chapter 4), cognitions related to the hypothetical teacher and the response to bullying (Chapter 3, Chapter 4) and cognitions related to the peers in the hypothetical classroom (Chapter 4). First, the findings from Chapter 3 and 4 will be summarized and integrated within these three categories of cognitions. Afterwards, avenues for future research in the larger area of teacher responses to bullying will be discussed.

Cognitions related to students' own attitudes and behavior. The first category of cognitions included students' own attitudes towards bullying (Chapter 3), students' empathy towards victims (Chapter 3) and students' willingness to report bullying to the teacher (Chapter 4). On each of these cognitions, we expected stronger effects of the active teacher responses (i.e., "Comforting the victim", "Correcting the bully", "both Comforting the victim and Correcting the bully") compared to Non-response. These hypotheses were not confirmed. We found that, regardless of the teacher's response, students reported to hold strong negative attitudes towards bullying, to feel strong empathy for the victim and to be willing to report bullying to the teacher. Although willingness to report bullying was not higher following an active teacher response compared to Non-response, we found that students were more willing to report bullying when the teacher had corrected the bully compared to when the teacher only comforted the victim. This is in line with the idea that by correcting bullies, teachers more clearly show that they disapprove of bullying, which, in turn, has been found to predict higher willingness to report bullying to the teacher later on (Blomqvist et al., 2020).

An overall conclusion that can be drawn from these results is that teacher responses to bullying as operationalized in our studies had limited effects on students' behavioral intentions (i.e., willingness to report bullying) and no effects on students' personal cognitions (i.e., own attitudes and empathy). Besides the possibility of ceiling effects for students' attitudes and empathy, it is also possible that these personal cognitions are difficult to affect and that the vignette and manipulation may not have been sufficient. The vignette showed only one response to one bullying incident by a teacher about whom students had no other information. Actual teachers, on the other hand, might be able to influence these student cognitions when they consistently intervene in bullying, especially in the context of other preventive interventions at the class and school level (e.g., anti-bullying policy, curricula) (National Academies of Sciences, Engineering, and Medicine, 2016). Future studies are needed to investigate this.

Cognitions related to the teacher and the response to bullying. The second category of student cognitions pertained to the hypothetical teacher and the response to the hypothetical bullying incident. These cognitions included students' judgement about the response (Chapter 3), perceived teacher attitudes towards bullying (Chapter 3, Chapter 4) and perceived teacher moral disengagement regarding bullying (Chapter 4). For each of these cognitions, we expected stronger effects of the active teacher responses compared to Non-response. Additionally, we hypothesized that "Correcting the bully" would have even stronger effects than "Comforting the victim". We found support for these hypotheses.

First, we found that students considered the teacher's non-response as more inappropriate and that they got the impression that the hypothetical teacher cared less about the bullying and justified it more, compared to when the teacher responded actively. Additionally, as expected, a confronting response directed to the bully (Correcting) had stronger effects on students' cognitions than a supporting response directed to the victim (Comforting). For instance, students evaluated "Correcting the bully" as more appropriate and perceived even stronger anti-bullying attitudes and even less moral disengagement when the hypothetical teacher used this response as compared to "Comforting the victim". Finally, we found that the multiple response was judged to be more appropriate than the single active responses.

To conclude, these findings demonstrated that students were able to asses teacher responses from a hypothetical teacher and that they could deduce teacher beliefs from behavior. More specifically, we found clear evidence for effects of teacher responses on student cognitions about the hypothetical teacher and the response. These findings are important as earlier studies have shown that when students perceived strong anti-bullying attitudes in teachers, they demonstrated lower bullying later on (Saarento, Boulton, et al., 2015). Additionally, support was found for the robustness of the findings concerning perceived teacher bullying attitudes. More specifically, the results related to perceived teacher bullying attitudes in Chapter 3 were replicated with a larger sample in Chapter 4. Furthermore, similar results were found for perceived teacher moral disengagement in bullying, a construct related to bullying attitudes that has not been previously examined with regard to teachers.

Cognitions related to the classroom. The third category of student cognitions pertained to the behavior of classmates, more specifically, students' expectations regarding bullying participant role behaviors by peers in the vignette's classroom (Chapter 4). Previous research identified six participant roles that students can have in the group process of bullying: they can be victimized themselves, actively bully others, reinforce bullies' behavior, assist bullies, defend victimized peers or remain non-involved outsiders (Salmivalli et al., 1996). We hypothesized that when the teacher used an active response, students would expect less victimization, less pro-bullying behaviors (i.e., bullying, reinforcing, assisting), more defending and less outsider behaviors in the classroom. These hypotheses were confirmed except for outsider behaviors. We demonstrated that students assume that active teacher responses have beneficial effects on bullying processes in classrooms (i.e., less pro-bullying behaviors, less victimization, more defending) compared to teacher's non-response. Thus, we showed that, by their responses to bullying, teachers can set expectations for students' behavior.

Avenues for future research

Since research on the role of teachers in bullying has been only recently initiated (Yoon et al., 2020), current evidence about how teachers' responses to bullying predict bullying processes and outcomes for victims is limited (Colpin et al., 2021). The goal of Part II of this dissertation was to shed light on how teacher responses to bullying may impact bullying processes in classrooms.

In Chapter 3 and 4, we adopted an experimental design to investigate whether teacher responses to a hypothetical bullying incident influence student cognitions related to their own attitudes and behavior, the hypothetical teacher and the response, and the peers in the hypothetical classroom. In turn, these student cognitions are assumed to explain students' actual bullying-related behaviors. While reviewing the literature, we identified several avenues for future research on teacher responses to bullying.

First, our experimental studies provided insight into the effects of a limited number of teacher responses to a hypothetical bullying incident. Additionally, the few existing instruments to measure real teachers' responses to actual bullying incidents (i.e., Campaert et al., 2017; Troop-Gordon & Ladd, 2015; Wachs et al., 2019) do not capture all possible responses. For instance, a blind spot in the current dissertation and in previous research is that active teacher responses that may be inappropriate, or harmful, were not examined (e.g., blaming victims, telling victims to not complain about it). Furthermore, the instruments to measure real teachers' responses to actual bullying may lack other appropriate responses. In accordance with these ideas, Bauman et al. (2021) encouraged researchers to construct more comprehensive questionnaires to measure teachers' responses by reconsidering the existing measures and by setting up qualitative investigations to get eyes on the broad array of possible teacher responses.

Second, we investigated the effects of three discrete responses from teachers (i.e., Non-response, Comforting the victim, Correcting the bully) and one combined response (i.e., both Comforting and Correcting) towards a single hypothetical bullying incident. Additionally, to date, a few cross-sectional studies have investigated how single responses from teachers link with bullying and victimization (Campaert et al., 2017; Troop-Gordon & Ladd, 2015; Wachs et al., 2019). However, the finding that many teachers tend to use multiple strategies when responding to bullying (e.g., Bayram Özdemir et al., 2021; Burger et al., 2015) suggests that investigating discrete responses might not provide a complete picture. Therefore, our understanding of how teacher responses contribute to bullying processes may be improved by examining patterns of how teachers respond to bullying overall and by linking these profiles of teacher responses with bullying processes.

Third, we did not examine moderating effects of individual and class-level factors on the association between teacher responses and student cognitions, except for students' own levels of different participant role behaviors in actual bullying. In Chapter 4, we tentatively expected stronger effects from teacher responses on the cognitions of students who were more victimized or showed more defending behavior. For instance, these students might be even more willing to report bullying when the teacher actively responded compared to students who were less victimized or showed less defending behavior. Students showing relatively higher levels of pro-bullying behaviors (i.e., bullying, assisting, reinforcing) may care less about how teachers respond to bullying and we tentatively expected less strong effects from teacher responses on their cognitions. These hypotheses were not confirmed. Future experimental (but also observational) studies can investigate the moderating effects of several individual and class-level factors (e.g., students' own bullying attitudes, classroom bullying levels, actual teacher's responses to bullying) on students' cognitions to get further insight into this complex reality.

Fourth, whereas in this dissertation, we investigated students' perceptions and cognitions of an imaginary teacher's response to a hypothetical bullying incident, future studies are needed to confirm findings in real classrooms. Researchers could set up intervention studies to examine the effects of teacher responses on students' cognitions and bullying processes. In the intervention condition, teachers can receive training on how to effectively respond to bullying in a specific way (e.g., combining a supportive response towards victims and a correcting response towards bullies). In the control condition, teachers do not receive any training on teacher responses during the study, but they can be trained after the study has finished. The cognitions of students in the intervention and control condition, measured at a pretest and posttest, can be compared. This design will be more ecologically valid compared to the experimental design in Chapter 3 and 4, while internal validity is retained. Alternatively, in observational studies, preferably with a longitudinal design, effects of real teachers' responses to actual bullying incidents earlier in the school year on classroom levels of bullying and victimization later in the school year can be examined. Moreover, the assumed mediating role of student cognitions (e.g., perceived teacher attitudes, willingness to report bullying to the teacher) in the association between teacher responses and levels of bullying and victimization can be examined longitudinally.

A last avenue for future research is to further examine if and how teacher responses mitigate negative effects of victimization on social-emotional adjustment. Building on attachment theory (Bowlby, 1969) and evidence showing that teachers can be ad hoc attachment figures for students (Verschueren & Koomen, 2012), it can be expected that more active teacher responses may elicit victimized students to view the teacher as empathetic and accepting, and the complementary perception that they are not at fault (Troop-Gordon & Quenette, 2010). This can promote feelings of emotional security, thereby protecting them from internalizing problems. Contrarily, more passive teacher responses or non-responses may be perceived as a sign that the teacher is not willing to help (Kochenderfer & Ladd, 1996) and may be associated with decreased feelings of support, thereby reinforcing internalizing problems. In the scarce research, a number of more passive teacher responses (i.e., suggesting victims to assert themselves, to cope independently and to avoid bullies) were found to exacerbate links between victimization and internalizing problems concurrently (Troop-Gordon & Quenette, 2010). Longitudinally, more active teacher responses (i.e., contacting parents, separating bullies and victims) were found to buffer links between victimization and symptoms of depression and anxiety, while no moderating effects of passive responses were found (Troop-Gordon et al., 2021). Although some evidence regarding the moderating effect of teacher responses is available, more research is needed.

Additional Findings

An additional aim of the current dissertation was to shed light on how heterogeneity in victimization experiences is related to social-emotional outcomes (Chapter 2). As indicated above, the identified victimization trajectory classes (2-class solution) did not permit to examine differences between the victimization forms. We found that the group of students who were relatively more bullied across the school year reported more depressive symptoms and lower self-esteem at the end of the school year, compared to the group of students that experienced lower levels of bullying victimization across the school year. Thus, this dissertation found support for the dose-response relation between victimization and depressive symptoms based on empirically derived victimization trajectory classes (Moore et al., 2017). Additionally, this dissertation was the first to add evidence about the link between heterogeneous patterns of victimization development and self-esteem.

By using two person-oriented techniques (i.e., Latent Class Growth Analyses and Growth Mixture Modeling), the trajectory class solution can be considered as robust. However, the analyses also demonstrated that more differentiation in victimization exists. Future studies could use larger samples or subsamples of victimized students to get further insight into this heterogeneity and the links with potential outcomes.

Strengths and Limitations of the Studies

As for strengths, first, this dissertation increased knowledge about the understudied and largely undiscovered multifaceted role of teachers in victimization. For instance, we shed light on the *simultaneous* contribution of relationships with classmates and teachers to victimization (Chapter 1) and we used a person-oriented approach to unravel how the quality of these classroom-based relationships is related to *heterogeneity* in victimization experiences over time (Chapter 2). Additionally, we demonstrated how teacher responses to a hypothetical bullying incident influence several student cognitions, a previously unexplored area of research (Chapter 3, Chapter 4). A second strength pertains to the designs of the studies. In Chapter 1 and 2, the longitudinal design allowed to investigate within-classroom dynamics in actual classrooms across one school year. The design provided insight into the direction of effects, but did not permit to draw causal conclusions. In Chapter 3 and 4, the experimental design allowed to ethically manipulate teacher responses and to get insight into causal processes. A third strength of the studies is the use of state-of-the-art analytical techniques adapted to the specifics of the data and sensitivity analyses to test the robustness of results. Moreover, all analyses were transparently reported in the chapters.

Although several large samples were involved in this dissertation, a first limitation is the use of convenience sampling. In future studies, other sampling techniques (e.g., stratified sampling, random sampling) can be used to further investigate our findings and to give insight into their generalizability. Additionally, in the longitudinal studies (Chapter 1, Chapter 2), a number of students were absent at one or more waves or dropped-out from the study during data collection. In Chapter 2, attrition analyses indicated that the attrition group differed from the final sample on two study variables. As a result, this missingness could have affected the results.

Second, even though we made students familiar with our definition of bullying beforehand, it is possible that students kept their own definitions of bullying in mind while completing the questionnaires. This might have negatively affected the validity of our measures related to bullying processes. Additionally, there has been some debate in the literature regarding how to define bullying. In accordance with the majority of scholars, our studies built on the definition of Olweus (1993) stating that bullying is repeated and intentional aggressive behavior that occurs within power-imbalanced relationships. However, the definition of Olweus (1993) is not without problems according to Volk et al. (2017). In the definition proposed by Volk et al. (2017) issues with the aspects of intentionality and repetition in the definition of Olweus (1993) are addressed. Volk et al. (2017) defined bullying as "aggressive, goal-directed behavior that harms another individual within the context of a power imbalance." (Volk et al., 2017, p. 35). The "goal-directedness" in this definition replaces the aspect of intentionality from Olweus' definition (1993), and makes it more concrete. Regarding the aspect of repetition, Volk et al. (2017) stated that repetition in itself is not a necessary criterion for bullying, but that it is the caused harm, as perceived by the victim, that is a determining factor for bullying. This aspect of harm is included in most current definitions of bullying and is regarded to as a complex ecological outcome, that does not only result from the frequency of bullying, but also from, for instance, the intensity of the bullying, the resilience of the victim and the support that victims get from their environment (Volk et al., 2017). Although this project started from the definition of Olweus (1993), our conceptualization of bullying is also largely in line with the definition of Volk et al. (2017). Yet, one way in which our definition does differ from Volks' (2017) definition is the emphasis on the repetition of the aggressive behavior in order to be considered as bullying.

Third, the current dissertation did not examine online or cybervictimization. There is a significant overlap between traditional and online victimization (e.g., Gini et al., 2018; Waasdorp & Bradshaw, 2015) and both types of victimization share several characteristics. However, they are also clearly different on several aspects (Menesini, 2012). For instance, students can be attacked online every time and everywhere (Menesini, 2012) and a large audience can be quickly reached (Elledge et al., 2013). In addition, online attacks can be anonymous and, in cyberbullying, bullies and bystanders are less aware of the consequences of the behavior and victim's distress (Elledge et al., 2013; Menesini, 2012).

Cyberbullying can be difficult for teachers to detect as it takes place in an online environment where they are not present (Nappa et al., 2020). Additionally, identifying the perpetrators can be more difficult due to the anonymity. Future studies could include cybervictimization in addition to traditional victimization and investigate associations with classroom relationships and teachers' responses to bullying to get a more complete picture of the problem of bullying.

Fourth, this dissertation investigated bullying processes by focusing on students' interactions with members in the classroom context (i.e., classmates, the classroom teacher). In Flemish elementary schools, students spend most of their time in classrooms with, mostly, the same teacher and classmates. However, they might also frequently interact with other peers and teachers at school, and these interactions could also affect bullying processes. Although we acknowledged that bullying processes can cross classroom borders, teacher-student and peer relationships were only investigated within classrooms. For instance, students' social status in the classroom (Chapter 1, Chapter 2) and their relationship with the classroom teacher were measured using within-classroom nominations (Chapter 2). In future studies, peer nominations could be administered within grades. This is especially relevant when working with older students (Cillessen & Bukowski, 2018). Additionally, this dissertation focused on the classroom teacher, but relationships of students with other teachers or other school staff (e.g., remedial teachers, school counselors, principals) and their responses to bullying are also relevant in understanding bullying processes and tackling this problem.

Implications for Educational Practice

Considering the possibly damaging impact of bullying on the well-being of victims and others involved, bullying should be prevented and decreased as much as possible, and victimized students should receive the support they need (Arseneault, 2018). One piece of the puzzle is targeting students' interactions with classmates and teachers, more specifically, the quality of students' relationships with these classroom interaction partners as well as these interaction partners' responses to bullying incidents. The findings in this dissertation as well as the wider body of knowledge on these topics have several implications for educational practice.

First of all, a positive relational climate among peers, characterized by high levels of liking and low levels of disliking, should be promoted in the classroom to reduce levels of victimization (see Chapter 1 and 2). Teachers need to be aware of the connection between peer social status and bullying victimization and need to know how to affect this kind of peer social dynamic (Farmer et al., 2018). As teachers' attunement to students' social status is limited, teacher training can aim at helping teachers to better understand the peer ecology and inform them about how to impact aspects of classroom peer ecologies (Hoffman et al., 2015). However, more research is needed to identify effective strategies for teachers to promote positive peer relations (Yoon et al., 2020). One possible intervention to improve students' social integration in the classroom is having more positive interactions in public with students who have a marginal social position in the classroom (Hendrickx et al., 2020).

Second, high-quality teacher-student relationships, characterized by high levels of support and closeness should be established and maintained to reduce victimization (see Chapter 1). In a recent meta-analysis, Kincade et al. (2020) identified 44 common practices across 12 effective universal interventions to improve teacher-student relationship quality (e.g., Establish-Maintain-Restore, BRIDGE program, Banking Time). Kincade et al. (2020) showed that the most effective programs had higher proportions of direct-proactive practices in which teachers proactively target their relationships with students, such as by effectively using praise, having more frequent positive than negative interactions with students, and spending time with individual students.

Third, when teachers actively respond to bullying incidents, especially when confronting bullies, beneficial effects on bullying processes in classrooms can be expected (see Chapter 3 and 4). However, teachers are not always well prepared to effectively intervene in bullying (van Verseveld et al., 2021) and sometimes teachers do not respond to bullying incidents (Yoon et al., 2020). Implementing effective universal anti-bullying programs, especially programs with a component targeting teachers, can improve teachers' responses to bullying (Verseveld et al., 2019). However, only a minority of the programs have components directly aimed at supporting teachers (Verseveld et al., 2019).

Additionally, to make teachers more likely to respond to bullying, they need training on their schools' anti-bullying policy, with a strong focus on how to handle bullying incidents (Waasdorp et al., 2021). However, to develop these trainings, much more research is needed to get insight into which teacher responses are most effective in which circumstances (Bauman et al., 2021; Newman et al., 2010).

To conclude this section on practical implications, we refer back to the introductory chapter. At the beginning of this doctoral dissertation, we mentioned that the goal is to contribute to knowledge for bullying prevention and intervention to help students who are confronted with bullying. Therefore, at the end of each chapter, we presented several implications for educational practice and, in this section, we gave an overview of the practical implications based on the overall findings of this dissertation. Additionally, during the doctoral period, we presented our findings in study days for scientists and practitioners, in blog posts and in a research report for educators and parents. We hope that the studies in this dissertation continue to reach practitioners, such as school psychologists, who can further translate the findings into practice and implement them in their work.

Conclusion

Children's right to be protected from all forms of violence is seriously threatened by the problem of bullying in schools (Greene, 2006; UN General Assembly, 1989). Given that bullying victimization is associated with a wide range of detrimental outcomes, it is crucial to identify risk and protective factors of this harmful problem in students' peer relations (Arseneault, 2018). In this dissertation, we focused on the classroom context and we contributed to knowledge about the underexamined and largely undiscovered multifaceted role of teachers in bullying prevention and intervention. On the one hand, we investigated the quality of students' relationships with classroom interaction partners as antecedent and consequence of bullying victimization. On the other, we examined influences of perceived teacher responses to hypothetical bullying on students' bullying-related cognitions. We demonstrated that relationships with classmates and teachers uniquely contribute to the development of bullying victimization across the school year (Chapter 1). We showed that lower social status in the classroom is linked with more bullying victimization over time (Chapter 1, Chapter 2).

Additionally, we showed that low-quality teacher-student relationships earlier in the school year predicted more victimization later that year (Chapter 1). However, in the person-oriented study (Chapter 2), we found that the group of students' experiencing relatively more victimization across the school year had similar levels of closeness and conflict in their relationship with the teacher compared to the group of students who experienced relatively less victimization over time. Furthermore, not only teachers' relationships with students were found to matter, but also teachers' responses to bullying incidents (Chapter 3, Chapter 4). Especially active responses in which teachers confront bullies had strong effects on students' bullying-related cognitions and, hence, can be expected to have beneficial effects on bullying processes in classrooms (Chapter 3, Chapter 4). In general, we can conclude that important puzzle pieces to prevent and reduce bullying among students are: ensuring positive relationships in the classroom environment and improving teachers' capacities to respond effectively to bullying incidents. Finally, further research on the multifaceted role of teachers in bullying processes is needed to promote the well-being of children at school.

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