# Cyberbullying

## Risk and Protective Factors, Consequences and Prevention

[Cyberbullying –
Risiko- und Schutzfaktoren, Folgen und Prävention]

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# Abstract

The aim of the present dissertation was to contribute to existing knowledge on cyberbullying in adolescence regarding definitional criteria, potential risk factors, consequences of cyberbullying victimization and perpetration and to evaluate a preventive intervention based on these results. The research questions were: (a) How are cyberbullying behaviors and definitional criteria perceived by adolescents and which term do they use for these behaviors?; (b) Are cognitive and affective empathy as well as different subtypes of aggression risk factors for cyberbullying perpetration and victimization?; (c) Are depressiveness, loneliness, social withdrawal, psychopathological symptoms and different subtypes of aggression potential consequences of being a victim or perpetrator of cyberbullying? and (d) Can a preventive intervention implemented in a classroom context and targeting cognitive and affective empathy, among others, successfully reduce cyberbullying?

Five successive studies with different foci were used to investigate the research questions. Study 1 examined different definitional criteria and behavior types and asked students about the term they would use to describe these behaviors. 70 adolescents in 9 focus groups in three European countries indicated that country-specific terms are needed to describe cyberbullying. The behavior type of impersonation was not perceived as a cyberbullying act. Further, the results of this study showed that the definition criteria interact, but cyber-specific criteria are not decisive for the definition. Repetition and intention as well as the impact on the victim were perceived as important aspects. The study showed that the criteria of previously proposed definitions are applicable, but that they should be broadened to include the impact on the victim. For Germany, this study was a first indication that using the term “Cybermobbing” is adequate when working with adolescents.

Study 2 examined differences in cognitive and affective empathy as well as relational aggression with regard to different involvement groups (cyberbullies and cybervictims vs. non-involved students) in a cross-sectional design. 71 students provided data which showed that perpetrators and victims of cyberbullying exhibited significantly lower levels of affective empathy and higher levels of relational aggression than non-involved students. The results indicate that a lack of affective empathy and increased levels of relational aggression might be risk factors for cyberbullying victimization and perpetration.

Study 3 used data from 77 students in a short-term longitudinal design to investigate whether cognitive and affective empathy predicted cyberbullying perpetration and victimization and whether perpetration and victimization predicted psychopathological symptoms and social withdrawal. Only perpetration was predicted by a lack of affective empathy. Cognitive empathy levels predicted neither perpetration nor victimization. Neither social withdrawal nor psychopathological symptoms were predicted by either perpetration or victimization. These results indicate that a lack of affective empathy might be a risk factor for cyberbullying perpetration, but social withdrawal and psychopathological symptoms are possibly not consequences of cyberbullying perpetration or victimization, at least not in the short term.

Study 4 used cross-sectional data from 412 students and short-term longitudinal data from 223 students to examine differences in and prediction of depressiveness, loneliness, instrumental aggression and reactive aggression. No differences were found for depressiveness and loneliness between the involvement groups (cyberbullies, cybervictims and cyberbully-victims vs. non-involved students) at t1. All involvement groups showed higher levels of instrumental aggression than non-involved students and both perpetrator groups were more reactively aggressive. Regression models differed by gender. Female cyberbullying victims were more depressive, and reactively and

instrumentally aggressive at t2. Female cyberbullying perpetrators were more reactively aggressive whereas female cyberbully-victims showed decreases in reactive aggression at t2. Male cybervictims did not show changes in any of the variables. Male cyberbullies showed decreases in depressiveness while male cyberbully-victims showed increases in loneliness. The results indicate that the consequences of cyberbullying differ by gender and for perpetrators and victims and bully-victims. Aggression seemed to be an important consequence for all involvement groups and the study results suggest a strong need for action to prevent cyberbullying perpetration and victimization from escalating further.

Study 5 analyzed the long-term effects of two versions of a cyberbullying preventive intervention targeting cognitive and affective empathy, and cyberbullying directly. Data from 722 students showed differential changes in the two intervention groups and one control group. The program was able to reduce cyberbullying and increase cognitive and affective empathy and moreover showed stronger effects for the longer version. The results indicate that reducing cyberbullying by focusing on cognitive and affective empathy in the school context is possible. This study provides empirical support for one of the first theoretically-based and evaluated programs against cyberbullying nationally and internationally.

Overall, the results of the present dissertation contribute to the current knowledge on cyberbullying by providing information on students' perception of specific behaviors and definitional aspects, by identifying potential risk factors and consequences of cyberbullying and by introducing an effective preventive intervention based on these previous findings. The studies fill some of the gaps of previous cyberbullying research and are of special value because they include longitudinal data. They also provide suggestions for future research directions and topics.

# Zusammenfassung

Ziel der vorliegenden Dissertation war es, zum Wissen über Cybermobbing in der Adoleszenz hinsichtlich Definitionskriterien, möglichen Risikofaktoren, Folgen von Cybermobbing-Opferschaft und -Täterschaft beizutragen und eine auf diesen Ergebnissen basierende präventive Intervention zu evaluieren. Die Forschungsfragen waren: (a) Wie werden Cybermobbing-Verhaltensweisen und -Definitionskriterien von Jugendlichen wahrgenommen und welchen Begriff verwenden sie für diese Verhaltensweisen?; (b) Stellen kognitive und affektive Empathie sowie verschiedene Subtypen von Aggression Risikofaktoren für Täterschaft und Opferschaft bei Cybermobbing dar?; (c) Sind Depressivität, Einsamkeit, sozialer Rückzug, psychopathologische Symptome und verschiedene Subtypen von Aggression mögliche Folgen von Cybermobbing-Täterschaft oder -Opferschaft? und (d) Kann eine präventive Intervention, die im Klassenkontext umgesetzt wird und, unter anderem, auf kognitive und affektive Empathie abzielt Cybermobbing effektiv verringern?

Fünf aufeinander folgende Studien mit unterschiedlichen Schwerpunkten dienten der Untersuchung der Forschungsfragen. Studie 1 untersuchte verschiedene Definitionskriterien und Verhaltensweisen und befragte Schüler danach, mit welchem Begriff sie diese Verhaltensweisen beschreiben würden. Aus den Antworten von 70 Jugendlichen aus 9 Fokusgruppen in drei europäischen Ländern wurde deutlich, dass länderspezifische Begriffe notwendig sind um Cybermobbing zu beschreiben. Das Verhalten „Identitätsdiebstahl“ wurde nicht als Cybermobbinghandlung wahrgenommen. Darüber hinaus zeigten die Ergebnisse dieser Studie, dass die Definitionskriterien miteinander interagieren, die cyberspezifischen Kriterien jedoch für die Definition nicht entscheidend sind. Wiederholung und Absicht sowie die Auswirkungen auf das Opfer wurden als wichtige Merkmale betrachtet. Die Studie zeigte, dass die Kriterien aus bislang vorgeschlagenen Definitionen zutreffend sind, dass

sie aber um die Auswirkungen auf das Opfer erweitert werden sollten. In Bezug auf Deutschland ist diese Studie ein erster Hinweis darauf, dass die Verwendung des Begriffs „Cybermobbing“ in der Arbeit mit Jugendlichen angemessen ist.

Studie 2 untersuchte mit Hilfe eines Querschnittdesigns Unterschiede in der kognitiven und affektiven Empathie sowie in der relationalen Aggression in Bezug auf unterschiedliche Beteiligungsgruppen (Cybertäter und Cyberopfer vs. nicht-involvierte Schüler). Daten waren verfügbar von 71 Schülern und sie zeigten, dass Täter und Opfer von Cybermobbing signifikant niedrigere Werte von affektiver Empathie und signifikant höhere Werte auf der Skala zur relationalen Aggression aufwiesen als nicht-involvierte Schüler. Die Ergebnisse deuten darauf hin, dass ein Mangel an affektiver Empathie und hohe Werte relationaler Aggression mögliche Risikofaktoren für Opferschaft und Täterschaft bei Cybermobbing darstellen.

Studie 3 verwendete Kurzzeitlängsschnittdaten von 77 Schülern und erforschte, ob kognitive und affektive Empathie die Täterschaft und Opferschaft bei Cybermobbing vorhersagte und ob Täter- und Opferschaft psychopathologische Symptome und sozialen Rückzug vorhersagen konnten. Nur die Täterschaft wurde durch einen Mangel an affektiver Empathie vorhergesagt. Das Ausmaß an kognitiver Empathie sagte weder Täter- noch Opferschaft vorher. Ebenso wurden weder sozialer Rückzug noch psychopathologische Symptome durch Täter- oder Opferschaft vorhergesagt. Diese Ergebnisse deuten darauf hin, dass ein Mangel an affektiver Empathie ein Risiko für die Täterschaft bei Cybermobbing sein könnte. Sozialer Rückzug und psychopathologische Symptome sind jedoch möglicherweise keine Folgen von Täter- oder Opferschaft, zumindest nicht auf kurze Sicht.

Studie 4 verwendete Querschnittsdaten von 412 Schülern und Kurzzeitlängsschnittdaten von 223 Schülern um Unterschiede in und die Vorhersage von Depressivität, Einsamkeit, instrumenteller Aggression und reaktiver Aggression zu

untersuchen. Es wurden keine Unterschiede für Depressivität und Einsamkeit zwischen den beteiligten Gruppen (Cybertäter, Cyberopfer und Cybertäter-Opfer vs. nicht-involvierte Schüler) zu t1 gefunden. Alle involvierten Gruppen wiesen höhere Werte instrumenteller Aggression auf als nicht-involvierte Schüler und beide Tätergruppen waren zudem stärker reaktiv aggressiv. Die Regressionsmodelle zeigten Geschlechterunterschiede. Weiblich Cyberopfer waren zu t2 depressiver und stärker reaktiv und instrumentell aggressiv. Weibliche Cybertäter waren stärker reaktiv aggressiv während weibliche Cybertäter-Opfer eine Abnahme in reaktiver Aggression zu t2 zeigten. Männliche Cyberopfer zeigten keine Veränderung auf irgendeiner der Variablen. Männliche Cybertäter zeigten eine Abnahme der Depressivität während männliche Cybertäter-Opfer eine Zunahme der Einsamkeit zeigten. Die Ergebnisse deuten darauf hin, dass die Folgen von Cybermobbing nach Geschlecht variieren sowie nach Täter, Opfer und Täter-Oper. Aggression schien eine wichtige Folge für alle beteiligten Gruppen zu sein und die Ergebnisse weisen auf ein großes Handlungsbedürfnis zur Prävention von Cybermobbing-Täterschaft und –Opferschaft hin um eine weitere Eskalation zu verhindern.

Studie 5 analysierte die Langzeiteffekte zweier Versionen einer präventiven Intervention gegen Cybermobbing, die auf kognitive und affektive Empathie und direkt auf Cybermobbing abzielt. Daten von 722 Schülern zeigten differentielle Veränderungen in den beiden Interventionsgruppen und der einen Kontrollgruppe. Das Programm konnte Cybermobbing reduzieren und kognitive und affektive Empathie steigern. Darüber hinaus zeigte die längere Version die besseren Effekte. Die Ergebnisse zeigen, dass es möglich ist, Cybermobbing durch die Förderung von kognitiver und affektiver Empathie im Schulkontext zu reduzieren. Die Studie bietet eine empirische Untermauerung eines der national und international ersten, theoretisch fundierten und evaluierten Programme gegen Cybermobbing.

Insgesamt tragen die Ergebnisse der vorliegenden Dissertation zum aktuellen Wissensstand über Cybermobbing bei, indem sie Kenntnisse über die Wahrnehmung von Schülern bezüglich spezifischen Verhaltensweisen und definitorischen Merkmalen liefert, mögliche Risikofaktoren und Folgen von Cybermobbing identifiziert und eine wirksamkeitsnachgewiesene präventive Intervention vorstellt, die auf diesen bisherigen Befunden aufbaut. Die Studien füllen einige Lücken der bisherigen Cybermobbingforschung und sind aufgrund des Einbezugs von Längsschnittdaten von besonderem Wert. Zudem liefern sie Anregungen für zukünftige Forschungsrichtungen und -themen.

# 1 Introduction

During the last years, a new phenomenon has received growing media attention with popular and quality newspaper articles increasing over time since its first emergence in 2004 (Jäger, Arbinger, & Lissmann, 2010; Vandebosch, Simulioniene, Marczak, Vermeulen, & Bonetti, in press). Due to lack of a clear a concept and similarities to an already known kind of aggression named bullying, which was extended in its scope to include the use of new media, this phenomenon was called cyberbullying. Prominent cases of cyberbullying among adolescents reported in the media are those of

- Megan Meier (13 years old, USA), who killed herself in 2006 after a boy whom she had established an online friendship with turned on her, taunted and insulted her, shared her messages with others and set her peers against her. Later it turned out that this boy had never existed, but was a fake identity used by the mother of a former friend (Pokin, 2007);
- Amanda Todd (15 years old, Canada), who killed herself in 2012 after a chat partner circulated a picture of her being topless on the internet. Her schoolmates teased and taunted her as a result. Before her death, Todd posted a moving video on YouTube telling the world about her ordeal. She has since become a symbol against cyberbullying (Mitic, 2012);
- Winsie Hau (15 years old, Netherlands), who was killed by a 15 year old boy acting on "orders" of her former best friend. Winsie had allegedly spread rumors about her on Facebook (Spiegel Online, 2012).

The list can be continued, including also boys' names.

All of these cases have received media coverage only after the affected adolescents or young adults committed either suicide or murder. But as the present dissertation will show, suicide and murder are neither the only nor the most prevalent

consequences of cyberbullying (Cassidy, Faucher, & Jackson, 2013). Other detrimental effects such as depression and anxiety are more common, but unfold mostly in private. However, these consequences can also greatly negatively influence the healthy development of children, youths and young adults by damaging their social relationships and functioning, especially in a time when these are of essential importance (cf. Brechwald & Prinstein, 2011). In the present dissertation I therefore focus on the developmental stage of adolescence.

Cyberbullying describes deliberate (repeated) aggressive acts using modern information and communication technology against others who cannot easily defend themselves. The present dissertation addresses a range of questions concerning cyberbullying: its definition correlates, risk and protective factors, consequences and potential prevention approaches. To this end, it draws on multiple samples from different studies and uses different statistical methods.

My research on cyberbullying started at the end of 2006 when the phenomenon was still widely unknown in the German public as well as among German policy-makers. The first scientific studies from Germany were published in 2007 (Jäger, Fischer, Riebel, & Fluck, 2007; Jäger et al., 2010). During the same year, I started a pilot study which resulted in a publication on correlates of cyberbullying (Study 2 of this dissertation) and was published in the Zeitschrift für Psychologie/Journal of Psychology as a short report in 2009. In 2008, the European Science Foundation (ESF) approved a European networking action on the specific topic of cyberbullying (COST Action IS0801 "Cyberbullying: coping with negative and enhancing positive uses of new technologies, in relationships in educational settings"[1]) for the timeframe of 2008-2012. This network resulted in joint research projects and publications such as a focus groups study on students' definition of cyberbullying across different European

[1] For more information see https://sites.google.com/site/costis0801/

countries (Study 1 of this dissertation) conducted in 2010 and published in the same year in the Australian Journal of Guidance and Counseling, quantitative analyses of definitional aspects across six European countries (Menesini et al., 2012c) and a systematic review of cyberbullying assessment instruments (Berne et al., 2013). In the meantime, I collaborated with the researchers of the fairplayer.manual evaluation study of our unit and was able to include a cyberbullying measure in its data assessment waves from 2008 to 2010. This data provided the basis for another publication on longitudinal associations between cyberbullying, empathy and potential negative outcomes (Study 3) which is currently under review at the International Journal of Developmental Science as a short report. Also through the COST Action IS0801, the European Cyberbullying Intervention Project (ECIP)[2] was developed as collaboration between research groups from Italy, Spain, Poland, Greece, the UK and Germany. The project lasted from April 2010 to March 2012 and consisted of a three-wave evaluation study in which I was involved in the development, design, implementation and evaluation of a comprehensive cyberbullying prevention program (Medienhelden) as leading author. Longitudinal data from the control group was used for basic research on the outcomes of cyberbullying (Study 4) and was published in Emotional and Behavioural Difficulties in 2012. Longitudinal data from the whole sample was used to analyze the effectiveness of this novel prevention program (Study 5) and is currently under review at Contemporary Educational Psychology.

The present dissertation therefore represents a research program with progressively more detailed and advanced research questions as the research field itself advanced while the dissertation was written. The knowledge from preceding studies and analyses was used to develop the subsequent research questions. Except for Study 1, I am first and leading author of all the included studies and publications. Study 1

[2] More information on this project can be found at www.bullyingandcyber.net/en/ecip/project

represents a collective effort in which each of the first three authors was responsible for analyzing the national data and contributing the results description of their respective countries and all three were equally involved in writing the introduction, the methods section and the discussion. The materials for the focus groups were developed by Annalaura Nocentini and Ersilia Menesini from the University of Florence, Italy.

The dissertation is structured as follows: The theoretical background provides background information on the phenomenon “cyberbullying” as well as on the specific topics of the different studies. Specifically, these are *definitional issues* around the term of cyberbullying including an explanation of the conceptual overlap between cyberbullying and traditional bullying. Further, to illustrate the relevance of the present dissertation and to put the covered issue into perspective prevalence rates are discussed. The theoretical introduction also presents the current knowledge about *risk and protective factors* followed by findings on potential *detrimental outcomes* of cyberbullying. Subsequently, known approaches to *intervention and prevention* are reviewed before the five empirical studies are presented. Study 1 investigates the validity of the scholarly definition of cyberbullying in the target group and to identify the most adequate term to use when presenting adolescents instruments that assess the phenomenon. Study 2 examines the association between cyberbullying and empathy, perspective-taking, social intelligence, and relational aggression and identifies starting points for future prevention strategies. Study 3 replicates the results concerning empathy and perspective-taking in a different sample while at the same time investigating potential outcomes such as withdrawal and psychopathological symptoms in victims and perpetrators of cyberbullying using longitudinal data. Study 4 is dedicated to emotional and behavioral problems operationalized as depressiveness, loneliness and different aggression types as potential outcomes of cyberbullying, again using longitudinal data. Study 5 presents an evaluation of a prevention program aiming

at the promotion of empathy and perspective-taking, among others, to reduce and prevent cyberbullying. Finally, the general discussion summarizes the key findings of the five dissertation studies and discusses them with regard to the current knowledge and findings of cyberbullying research. This part is structured according to the main topics "definition", "risk and protective factors", "outcomes" and "prevention". Strengths and limitations of the presented studies are discussed before the dissertation closes with an outlook on future directions of, and research questions and challenges for the research field.

The Studies 1 through 5 have been included in the form they were published or are currently under review explaining the different journal-specific citation rules implemented. The only modifications refer to inserting tables and figures in the pending manuscript where they are intended to be rather than at the end, the way they are usually submitted to journals and publishers.

In this dissertation the terms cybervictimization and cyberbullying victimization are synonymously used to describe the process of being victimized through cyberbullying. Cybervictimization might also be understood as a wider term which comprises other negative cyber experiences such as "sexting" or sexual harassment as well. Within the frame of the present dissertation, however, the term solely refers to the experience of being a victim of cyberbullying. The same applies to the use of the terms "cyberbullying" and "cyberbullying perpetration", which are also used as synonyms.

# 2 Theoretical background

The annual, representative media survey among German 12- to 19-year-olds (JIM-Study; MPFS, 2012) reports for the year 2012, that households with teens between 12 and 19 years old were fully equipped with computers or notebooks (i.e. 100%) and nearly fully equipped with cell phones (98%). 98% of these households were connected to the internet. Almost all (96%) of the participating adolescents had their own cell phone, 47% a so-called smart phone (such as an iPhone). 87% of youth between 12 and 19 years had access to the internet from their bedroom and 68% used it on a daily basis. The age of internet beginners is constantly decreasing. In 2010, it was averagely 9 years in Europe (10 years in Germany) according to a random stratified study with more than 25,000 children and adolescent internet users between 9 and 16 years of age from 25 different European countries (Livingstone, Haddon, Görzig, & Ólafsson, 2011b). Only 13% of 12- to 19-year-olds do not have a profile in an online social network such as Facebook (MPFS, 2012). This shows how much electronic communication has become part of adolescents' lives and has moreover gained great importance for their social lives (Williams & Guerra, 2007). Kowalski, Limber, and Agatston (2012, p. 3f) compare taking away adolescents' communication devices to death or at least to social death. Given the frequent use and misuse of electronic communication devices among adolescents, it does not surprise that many youngsters have already encountered negative experiences and risks in this context of disembodied communication. One of these risks is cyberbullying.

Cyberbullying negatively affects adolescents' social relationships on- and offline by disrupting them (Spears, Slee, Owens, & Johnson, 2009). Peers play an important role in the acquisition of, for example, norms about emotion expression. Peer relationships as well as friendships foster the development of emotion regulation strategies in order to maintain these relationships. Friends moreover provide social

support for adolescents (cf. Salisch, 2001), especially at a time when peer reputation reaches the peak of its importance (LaFontana & Cillessen, 2010) and parents understanding of the emotional states of their adolescent child is limited as they do not evaluate stimuli and situations the same way their child does (Salisch, 2001). Popular children have been shown to exhibit more positive social behavior whereas rejected children show deficits in this and other domains. Rejected children are also more socially withdrawn (Newcomb, Bukowski, & Pattee, 1993). Types of peer rejection like cyberbullying therefore excludes the affected youth from important opportunities to learn, try out and develop emotional and social skills. Thus, one main focus of my dissertation is on the role of social and emotional skills, more specifically empathy and perspective-taking.

## 2.1 Definitional issues

There is no consistent, precise or short definition of cyberbullying. Since the first beginnings of research on this topic, quite a number of definitions and operationalizations have been developed. This might be due to the fact that a number of studies across the globe were conducted simultaneously while at the same time there was no previous knowledge to build on. Thus, cyberbullying research mainly developed from traditional bullying research (Smith, 2010) and the most widely accepted definitions today build on the definition of traditional school bullying and expand this to include technical devices, for example:

- Cyberbullying is “an aggressive, intentional act carried out by a group or individual, using electronic forms of contact, repeatedly and over time against a victim who cannot easily defend him or herself” (Smith et al., 2008, p. 376);

- "Cyberbullying involves the use of information and communication technologies to support deliberate, repeated, and hostile [behavior] by an individual or group, that is intended to harm others" (Belsey, 2005, p. 3); and
- "Cyberbullying is willful and repeated harm inflicted through the use of computers, cell phones and other electronic devices" (Hinduja & Patchin, 2009, p. 5).

These definitions highlight the three central criteria also used for the definition of traditional school bullying by Olweus (1993): *intent to harm*, *repetition* and *power imbalance*. These criteria and potential additional criteria specifically referring to the technological context will be discussed in detail in Study 1. However, for a short introduction, it may suffice to explain that to classify a person as affected by bullying, according to the traditional definition, he or she needs to be targeted on purpose and needs to experience this behavior regularly for some time (typical at least "two or three times a month" or - more restrictive - at least "once a week"). At the same time, the bullied person needs to exhibit some sort of inferiority compared to the perpetrator such as being physically weaker or being verbally less competent (Scheithauer, Hayer, & Petermann, 2003). To what extent these criteria are applicable to the cyberbullying context and whether context-specific criteria (e.g., anonymity, extent of publicity) are necessary is discussed in Study 1. Generally, the present definitions of cyberbullying are still being controversially discussed among scholars. Kowalski et al. even speak of "confusion" (2012, p. 59) stemming from the great variety of methods (e.g., text messages, rumors, pictures and videos) through which cyberbullying can take place, of the characteristics of the target groups and the direct but also indirect nature of cyberbullying. Also, the understanding of the term "bullying" differs between eras, cultures and age groups (Smith & Monks, 2008). Given that cyberbullying consistently changes as technology evolves either a definition can only be of temporary nature or a

very general definition must be used. In his research synthesis of cyberbullying publications until mid-2009, Tokunaga (2010, p. 278) extracted the commonalities of different definitions to present a unifying definition: "Cyberbullying is any behavior performed through electronic or digital media by individuals or groups that repeatedly communicates hostile or aggressive messages intended to inflict harm or discomfort on others". To take into account additional characteristics that have been discussed in cyberbullying research and to clarify the concept further, he suggests adding the supplement "In cyberbullying experiences, the identity of the bully may or may not be known. Cyberbullying can occur through electronically mediated communication at school; however, cyberbullying behaviors commonly occur outside of school as well" (Tokunaga, 2010, p. 278).

Research that has examined students' perceptions and definitions of cyberbullying shows that the traditional criteria are valid for students' perceptions of cyberbullying situations. This is especially true for *power imbalance* (operationalized as stress and helplessness of the victim) and *intentionality* (Menesini et al., 2012c). Cyber-specific characteristics also interact with the traditional criteria, but in the way, that an absence of these is perceived as more crucial, e.g. an incident is more likely perceived as cyberbullying if it is *intentional* and *non-anonymous*.

Kuhlmann, Pieschl, and Porsch (2013, p. 2785) suggest a different approach to defining cyberbullying similar to the diagnosis of psychological disorders by regarding aspects which are perceived as most distressing and using them as cognitive criteria. They found that proximal (i.e. victim-related) criteria – *number* of incidents (traditional criterion of repetition), *type* of incident and *publicity* of the incident – are perceived as more relevant for judging the severity of a cyberbullying act than distal (i.e. mainly perpetrator-related) factors such as *motive* (traditional criterion of intentionality), *status* (traditional criterion of power imbalance) and *medium*. As cyberbullying has previously

been defined from the bully's perspective, the authors recommend adapting the cyberbullying definition to include more of the affected person's perspective as is done in the diagnosis of psychological disorders. Kuhlmann et al.'s (2013) results further provide an empirical base for the discussion on the distinction between cyberbullying and traditional bullying. Their results show that the severity of an incident is judged also on the grounds of cyber-specific criteria and cannot solely be explained by bullying-specific characteristics. Claims to treat cyberbullying as a subtype of bullying (e.g., Olweus, 2012b) therefore ignore the specificity of cyberbullying incidents.

As the definition of Smith et al. (2008) was (at the time the present studies were conducted) and still is the most widely and accepted definition for cyberbullying, most of the studies of this dissertation follow this definition if not stated otherwise. As was shown before, this definition may not represent the construct exhaustively, but it does so sufficiently to build first knowledge on. In the discussion I propose an alternative definition based on the results of Study 1 and further analyses which are not part of this dissertation.

**Types of cyberbullying**

There are different approaches to categorizing cyberbullying behavior. It is possible to distinguish behaviors according to the *medium* used (e.g., text bullying vs. chat room bullying, or internet vs. cell phone; Ortega, Elipe, Mora-Merchán, Calmaestra, & Vega, 2009; Smith et al., 2008). The most prominent typology, however, consists of *behavioral categories* (see Table 1) and was established by Nancy Willard (2007). This categorization was extended by Kowalski and colleagues (2008; 2012) to include happy slapping videos and sexting. *Flaming* cannot be viewed as cyberbullying in a strict sense since it describes short, heated arguments between two parties which insult each other on a basis of equal strength. The category *harassment* is used for insults and

threats, often sent to the target privately. *Denigration* is the use of rumors, defamation and altered material to spread information about a person that is untrue and damages his or her reputation. *Impersonation* describes the act of using someone else's profile, number or account to pretend to be that person and to act in that person's name. In *outing and trickery* a person is tricked into disclosing secrets or confidential information which is then shared with others without their consent. Another cyberbullying behavior is supposed to be the *exclusion* of others from online groups or digital communications and interactions. *Cyberstalking* finally describes a combination of the behaviors above with the target fearing for its own safety or the safety of others severely. This form often results from disappointed romantic feelings of a former partner. The additional category of *happy slapping* is used for physical attacks which are video-recorded (often with cell phones) and later distributed, for example, via internet. Finally, *sexting* refers to sending nude or partly nude pictures (cf. Kowalski et al., 2012; Willard, 2007). However, this classification is not empirically-based, but was derived from theoretical assumptions and professional experience. Willard (2007) grants that the categories might not be mutually exclusive. Attempts to replicate these categories empirically have shown just that: Factor analyses of a questionnaire assessing behaviors according to Willard's categories revealed only three instead of the expected seven factors. These three factors were termed "traditional bullying in a new context" (e.g., insulting or threatening messages), "relational cyberbullying" (e.g., telling secrets or destroying friendships) and "technically sophisticated cyberbullying" (e.g., hijacking a profile or "photoshopping" pictures) (Schultze-Krumbholz & Scheithauer, 2009b). Riebel and Jäger (2009) used Willard's categories to classify qualitative accounts of cyberbullying experiences and found that 97.1% of the cases were satisfactorily and therefore exhaustively represented by this taxonomy (with the exception of cyberstalking which was excluded due to

theoretical reasons). However, not all categories were equally distinctive as harassment alone comprised 70% of the cases.

Table 1: Selected approaches to classifying cyberbullying types

| Willard (2007) | Aftab (n.d.) | Spears et al. (2009) | Smith et al. (2008) |
|---|---|---|---|
| • Flaming<br>• Harassment<br>• Denigration<br>• Impersonation<br>• Outing and trickery<br>• Exclusion<br>• Cyberstalking<br>• Happy Slapping (Kowalski et al., 2008)<br>• Sexting (Kowalski et al., 2012) | • Direct<br>• Public<br>• By proxy | • Covert<br>• Overt | • Phone calls<br>• Text messages<br>• Picture/video<br>• E-mails<br>• Chat room<br>• Instant messages<br>• Websites |

There have also been approaches to categorize cyberbullying according to the technical devices and communication channels used (e.g., Smith et al., 2008). These classifications by communication mode have not proven useful, however, because they would have to be constantly revised along with developments in communication technology. For example, smart phones dissolve the boundaries between internet and cell phones. But other taxonomies have also been proposed. Aftab (n.d.), for example, subdivides into *direct*, *public* and cyberbullying *by proxy*. Direct cyberbullying refers to harassing the victim privately while public cyberbullying describes attacks through posting things online in order to publicly humiliate the victim. The most unusual aspect of this taxonomy is the category of cyberbullying by proxy because it takes into account that others are knowingly or unknowingly drawn into bullying someone as in the

example of the so-called “notify” wars (cf. Aftab, n.d.). A victim is provoked and when he or she “fights back”, the messages are reported to the service provider. After a certain number of reports, the account of the victim is closed down and the respective person is excluded from that online community by others (most often adults) who thereby support the cyberbully involuntarily.

Spears et al. (2009) make a similar distinction with the exception of cyberbullying by proxy. They refer to covert cyberbullying as an indirect form which affects the social and relational level by manipulating relationships. Overt cyberbullying on the other hand is more outright in the way that the victim is aware of it and the perpetrator not trying to hide his or her identity, for example when taking pictures or videos of the victim. This classification was derived empirically by using qualitative accounts from adolescents.

This review of existing taxonomies shows that cyberbullying and its channels and modes are still not fully understood. Also, there is a myriad of possible behaviors which should be reduced into categories on an empirical basis or existing taxonomies should be replicated empirically. In Study 1, a further categorization is proposed.

**Cyberbullying and traditional school bullying**

Controversy is also going on among cyberbullying researchers regarding the question whether cyberbullying should be viewed as an independent construct or simply an extension of traditional bullying (e.g., Hinduja & Patchin, 2012; Menesini, 2012; Olweus, 2012a; Olweus, 2012b; Smith, 2012). Traditional bullying is defined as repeated, intentional aggressive behavior by a group or individual against a victim who cannot easily defend him- or herself (Olweus, 1993). The context for this behavior is usually the school, and especially the age group of childhood and adolescence. Theoretical as well as empirical publications support both the position of cyberbullying

as a distinct construct as well as cyberbullying as an extension of traditional school bullying. It is indisputable that there is a substantial empirical overlap between the two forms of behavior. However, rates are inconsistent and amount to anything between 50% and 90% (cf. Olweus, 2012a). For example, Kowalski et al. (2012) report 56% of cybervictims to also be traditional victims, 77% of cyberbullies to also be traditional bullies and 77% and 75% of cyberbully/victims (those involved in both perpetration and victimization) to be traditional bullies and traditional victims, respectively. A link has also sometimes been found between adolescents being victims in real-life and at the same time bullies in cyberspace (e.g., Ybarra & Mitchell, 2004a) giving rise to a retaliation-hypothesis stating that victims in the traditional context become perpetrators in the digital environment to take revenge for their offline victimization.

Despite some high numbers for the overlap, it currently seems overhasty to draw the conclusion of cyberbullying being a subcategory of traditional bullying because the rates of overlap leave at least one in ten and up to one half of victims and bullies in the cyber context unaccounted for. Bauman (2010) points out that the correlations between cyberbullying and traditional bullying found by some researchers (Yoon & Tairiol, 2009; Kowalski et al., 2005; both cited in Bauman, 2010) are, albeit statistically significant, only small to medium in size. She also emphasizes that there clearly must be other explaining variables for cyberbullying when regression models including traditional bullying as a predictor only account for 10% of the variance (Bauman, 2010, p. 807; Hinduja & Patchin, 2008).

Hence, some researchers have proposed that cyberbullying and traditional bullying are not the same (e.g., regarding goals and motivations; Dooley, Pyzalski, & Cross, 2009), but related phenomena (Wang, Iannotti, & Nansel, 2009), for example, by an underlying pattern of antisocial behavior (Katzer, Fetchenhauer, & Belschak, 2009a; Menesini et al., 2008, cited in Menesini, Calussi, & Nocentini, 2012a; Wang, Iannotti,

& Luk, 2012). Moreover, examining unique, additive and synergistic effects, Menesini et al. (2012a) found that traditional and cyberbullying showed both unique and additive effects, but the synergistic model (operationalized by the interaction between cyberbullying and traditional bullying) was only significant for one indicator (delinquent behavior) and only for boys. From this they conclude that cyberbullying explains a unique part of the variance in internalizing and externalizing symptoms over and above the variance explained by traditional bullying.

Some confusion might also be due to methodological issues: Due to a lack of conceptual knowledge in the beginnings of cyberbullying research, the traditional bullying definition as well as assessment instruments (e.g., Olweus' Bully/Victim Questionnaire; Olweus, 2000) have simply been adapted to cyberbullying (see also section “Definitional issues”) without accounting for specificities of this context. It should not be a surprise then that there are high correlations between the constructs. Accordingly, when Law, Shapka, Hymel, Olson, and Waterhouse (2012b) used a measure specifically designed for the cyber context they found structural differences for cyberbullying compared to traditional bullying. Participants distinguished the cyberbullying and -victimization items by aggression mode and not by victim or perpetrator role as they did for traditional bullying. Also, the cyberbullying/-victimization items resulted in a clear own factor distinct from the other two factors traditional bullying and traditional victimization.

To highlight the specificities of cyberbullying compared to traditional school bullying, researchers emphasize

- the physical distance between victim and perpetrator and accordingly a lack of emotional feedback and less awareness of the effects of the behavior on the recipient,

- the 24/7 nature and pervasiveness (victim is available at all times and in all places),
- the persistence and searchability of digital contents,
- that content can be copied and pasted from anywhere to anywhere,
- no temporal, spatial, and numerical limits regarding potential and invisible audience,
- the potential anonymity of the perpetrator,
- a lack of fear on the perpetrator's part as sanctions are unlikely to occur, and
- that the social dynamics differ from traditional bullying as for one the power differential is not given in the way that a victim dare not react as well as that the role of bystanders is blurred and the bystander roles are not as easily identifiable and assignable as in traditional bullying (Boyd, 2008; Kowalski & Limber, 2007; Kowalski et al., 2012; Law, Shapka, Domene, & Gagné, 2012a; Patchin & Hinduja, 2012; Raskauskas & Stoltz, 2007; Slonje & Smith, 2008).

Based on the presented arguments, the present dissertation will treat cyberbullying as a distinct phenomenon and will try to explore its nature as free from the influence of knowledge on traditional bullying as possible. In some studies, traditional bullying will be controlled for or otherwise taken into account in order to grasp the specific impact of cyberbullying.

**Prevalence**

When regarding the following prevalence rates for Germany and abroad one needs to keep in mind that to date differences within and across countries are most probably due to methodological and conceptual differences. Differences in access to modern communication technology do not play a role in Germany because households are

(nearly) fully equipped with computers, internet access and mobile phones (MPFS, 2012). Currently, nearly none of the studies on cyberbullying are really comparable. A wide variety of instruments are being used, differing cut-off scores for categorizations are implemented and samples are often selective. The range of prevalence scores for cybervictimization in Germany is depicted in Figure 1. Figure 2 presents the respective scores for cyberbullying. Only comparable rates, that is those referring to the widely accepted cut-off for categorizing persons as cybervictims and cyberbullies when they are involved in cyberbullying 2-3 times a month or more often or those including this data so that the prevalence rate can be computed by the reader, were included. Answer scales for cyberbullying and cybervictimization often assess frequencies and use the categories “never”/”has not happened”/”have not done”, “only once or twice” (within the respective reference period given by the researchers), “2-3 times a month”, “once a week” and “several times a week”. To take into account the criterion of repetition, cut-offs are placed at thresholds indicating some regularity such as “2-3 times a month”.

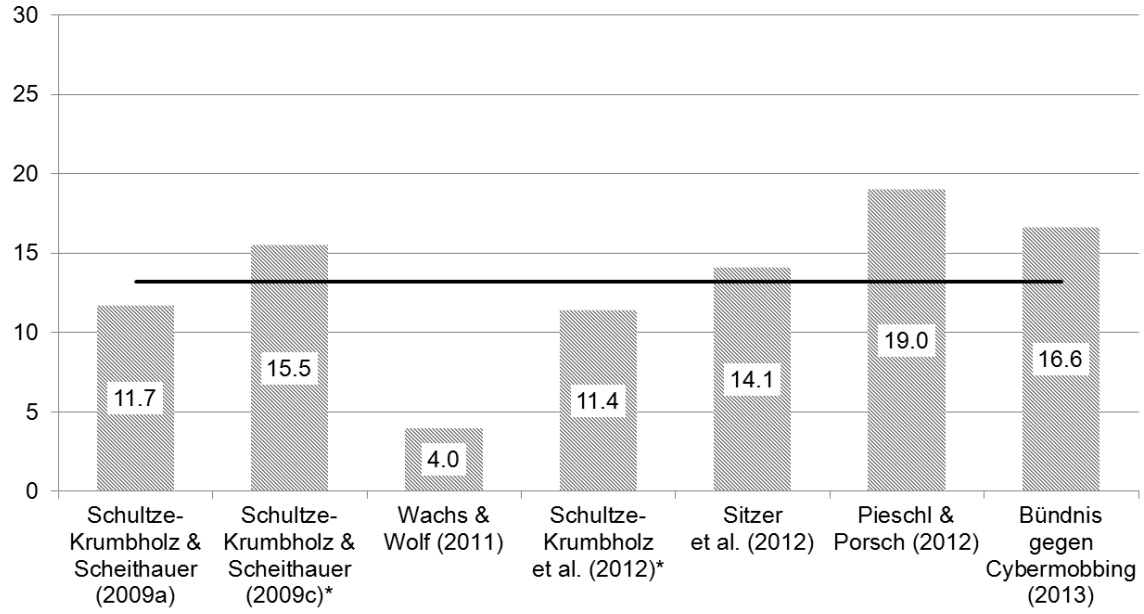


Figure 1: Prevalence rates for cybervictimization in Germany from studies using comparable cut-off scores. The black line indicates the mean score across all of the studies (M = 13.2%; after Patchin, 2012).

Note: * these studies stem from the present thesis.

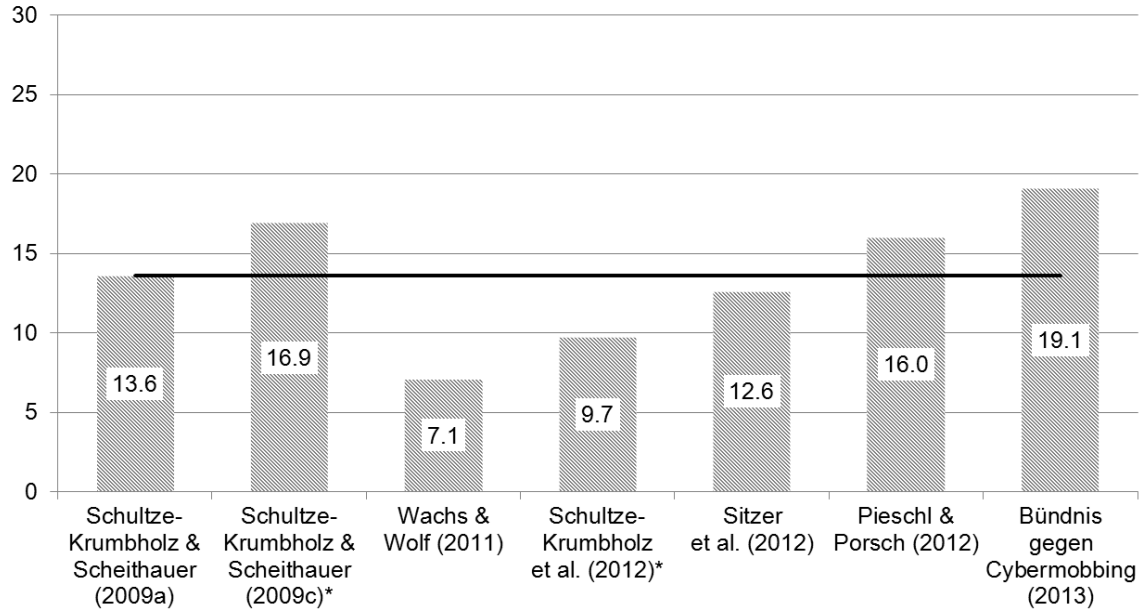


Figure 2: Prevalence rates for cyberbullying in Germany from studies using comparable cut-off scores. The black line indicates the mean score across all studies (M = 13.6%; after Patchin, 2012).

Note: * these studies stem from the present thesis.

The annual representative study on media use among adolescents (JIM-Study; MPFS, 2012, p. 38f.) found that 15% of teens between 12 and 19 years old have already (ever) experienced false or malevolent information being spread about them and 16% indicated that embarrassing or insulting pictures had been posted without their consent. A representative study with 1,000 students between 14 and 20 years old showed that 32% had already experienced cyberbullying-related incidents and 8% had already perpetrated an act of cyberbullying (lifetime prevalence; Techniker Krankenkasse, 2011).

On a European level, the representative large-scale EU Kids Online study including 25 European countries found 6% of 9 to 16 year-old internet users to be victims of cyberbullying through the internet during the previous twelve months and 3% to confess to bullying others online (Livingstone, Haddon, Görzig, & Ólafsson, 2011a). Internationally, prevalence rates for victimization range from 6% in Spain and Turkey to 72% in the US. For cyberbullying perpetration, the range is not as wide with 4% in the US to 36% in Turkey (Suzuki, Asaga, Sourander, Hoven, & Mandell, 2012). Reviews including different international studies identified mean rates for cyberbullying victimization of 24% and for perpetration of 16-18% (Patchin & Hinduja, 2012; Suzuki et al., 2012).

It is unclear whether cyberbullying has been constantly increasing. Some publications report that rates have not increased in the last years (e.g., Hinduja & Patchin, 2012; Olweus, 2012b) while others have found upward trends over several years (Hinduja & Patchin, 2009; Rivers & Noret, 2010; Ybarra & Mitchell, 2004a; Ybarra, Mitchell, Wolak, & Finkelhor, 2006). A less peremptory view is that of Smith (2012) who suggests that cyberbullying may have been on the rise at first with the spread of modern communication technology and then stagnated over the last few years. However, with a constant change in technology and communication channels, reported

prevalence rates of cyberbullying will always be only of temporary nature (Smith, 2012, p. 554).

In accordance with researchers who claim no increase of cyberbullying in the last years, the JIM-Study data for the years 2008 (when this topic was first included in the study) to 2012 show fluctuation between 14% and 17% (in 2008) of victimization through the spread of false or harmful information over the years with no continuous rising trend (MPFS, 2008, 2012).

Putting cyberbullying into perspective, it should be pointed out that although quite high prevalence rates have been found in some cases, cyberbullying is still less prevalent than traditional school bullying (e.g., Hinduja & Patchin, 2012; Livingstone et al., 2011a; Smith et al., 2008). Nonetheless, the prevalence is non-negligible when translated into absolute numbers of students who are either affected or otherwise involved in this negative behavior.

**Gender differences**

Results on gender differences are mixed. They range from finding no differences to finding differences favoring either gender. A synthesis of international empirical studies published until January 1, 2011 (Patchin & Hinduja, 2012), indicates gender differences with girls being victims more often (8 out of 13 studies, 2 studies with no difference) and boys being more likely to be perpetrators. On average, 21.8% of girls and 19.5% of boys were victims of cyberbullying. While it is repeatedly argued that the nature of cyberbullying better corresponds to forms of aggression preferred by females (i.e. relational and indirect) the authors found 11 out of 13 studies in favor of boys as perpetrators. On average, 14.1% of girls and 18.5% of boys were cyberbullies. Summarizing German research, we found that out of 10 studies 3 reported boys to be perpetrators more often, 3 did not find a significant gender difference and 4 studies did

not give any information on a possible gender difference (Schultze-Krumbholz & Scheithauer, 2012). None reported girls as more likely to be perpetrators. For victimization, half of the studies reported no significant gender difference, 2 found boys to be victims more often and 3 provided no information. Compared to international results German findings are inconsistent regarding whether a significant difference exists, but tend to show no difference and definitely none favoring girls, except for two more recent studies (Bündnis gegen Cybermobbing e.V., 2013; Sitzer, Marth, Kocik, & Müller, 2012), which, however, only report descriptive results and provide no information on statistical significance.

**Age differences**

Cyberbullying and cybervictimization seem to be problems among middle and high school students in particular. Previous studies have found a peak around 8$^{th}$ grade (Ortega et al., 2009; Williams & Guerra, 2007). A large cross-sectional study in the Czech Republic which included 2,215 participants between 12 and 88 years old showed that adolescents between 12 and 19 years are cyberbullies most often and that cybervictimization is most common in the age groups of 12 to 19 and of 20 to 26 years (Sevcíková & Smahel, 2009). Other researchers reported an initial peak in middle school and then a constant increase over the high school years (Patchin & Hinduja, 2012) or a consistent increase from middle school through high school (Wolak, Mitchell, & Finkelhor, 2006). In a study with a total of 1,000 students from 25 European countries, Görzig and Ólafsson (2013) reported that the likelihood to be a cyberbully had increased by 95% between the ages 9 to 16. Bauman (2010) found no age difference for cybervictimization, but increasing rates of cyberbullying from 5$^{th}$ to 8$^{th}$ grade. Kessel Schneider, O'Donnell, Stueve, and Coulter (2012) reported a slight decrease in cyberbullying from 9$^{th}$ to 12$^{th}$ grade.

To sum up, although not entirely consistent regarding whether cyberbullying and -victimization are more prevalent in specific grades or age groups, many studies show clear increases in cyberbullying and –victimization in early and middle adolescence and a special risk during middle and high school years which is then followed by declines in the rates of cyberbullying and cybervictimization.

Summarizing, a number of definitions, defining criteria and approaches have been proposed for cyberbullying, but had not been empirically tested at the time of Study 1. Further, taxonomies of cyberbullying behavior were presented, but most of them had also not been empirically investigated. Therefore, Study 1 fills a gap by assessing the validity of definition criteria, behavioral categories and adolescents' laymen understanding of the term "cyberbullying". As illustrated, cybervictimization and cyberbullying are serious problems among adolescents with averagely 13.2% and 13.6% of students involved, respectively, although these rates are below international prevalence rates. An increase of cyberbullying over the last years could not convincingly been proven and cyberbullying is currently also less prevalent than traditional bullying. For Germany, no clear statement can be made about whether there are significant gender differences. As was shown, cyberbullying is a problem especially in middle school. Age and gender differences also play a role in some of the subsequent dissertation studies. The knowledge on age differences moreover provided the basis for limiting the target group for the preventive intervention Medienhelden.

## 2.2 Risk and protective factors for cyberbullying

The sub-division into risk and protective factors and consequences of cyberbullying in this chapter is mostly based on theoretical deliberations. This is owed to the fact that most of the current knowledge was derived from cross-sectional studies and thus mainly

indicates co-occurrence of the reported constructs and items, but does not allow causal inferences. The sub-division into risk and protective factors and consequences of cyberbullying is therefore mostly based on theoretical deliberations.

The present dissertation focuses on individual factors and especially on empathy and perspective-taking. Thus, the following section will present current research findings on these factors, but also on additional factors such as attitudes, beliefs and norms. Factors, which are not relevant for the studies of the present dissertation will only be outlined briefly in the section 'Further individual factors'. Factors on the family and community levels will not be reviewed. However, there already is a noticeable body of research on their links with cyberbullying and –victimization (see Schultze-Krumbholz & Scheithauer, in press, for an overview).

**Empathy and perspective-taking**

Empathy is conceptualized as "understanding and sharing in another person's emotional state or context" (Cohen & Strayer, 1996, p. 988). It is "an emotional response that stems from another's emotional state or condition" and "is congruent with the other's emotional state or situation" (Eisenberg & Strayer, 1987, p. 5). Empathy combines functionally different aspects which are necessary to reach this state of understanding and sharing. For one, certain cognitive skills are required and are often represented by the construct of cognitive empathy, that is, the ability to understand another person's emotions by taking his or her perspective (cognitive empathy, also called perspective-taking). On the other hand, responding emotionally to other persons' affective states (e.g., by feeling the same, being upset by the other's situation or feeling concern for the welfare of the other person) is necessary to be able to share others emotional states and this is often called affective empathy (Hoffman, 1977; Stocks & Lishner, 2012).

Previous mainly cross-sectional research on the association between cyberbullying and cognitive and affective empathy has found negative associations between empathy and cyberbullying perpetration. Steffgen, König, Pfetsch, and Melzer (2011) showed cyberbullies to display less self-reported affective empathy than non-cyberbullies in a large adolescent sample from Luxembourg. Similar results were obtained in Italy (Renati, Berrone, & Zanetti, 2012) although this only held for affective empathy whereas there were no significant differences for levels of cognitive empathy. A study using peer reports of affective empathy replicated these results showing both cyberbullies and cybervictims to be perceived as significantly less empathic by their peers (Schultze-Krumbholz & Scheithauer, 2009c).

In a study on how cyberbullies perceive the impact of their actions on others which did not measure empathy Campbell, Slee, Spears, Butler, and Kift (2013) found that 57% of cyberbullies did not perceive their actions as harsh and 74% did not believe that they had impact on the victims' lives. This indicates that they are possibly unable to imagine what their action might do to others or to imagine that others might interpret these behaviors differently thus showing that they do not take others' perspectives.

Examining interactions of the two empathy dimensions, Ang and Goh (2010) reported a buffering effect: for girls, high affective empathy compensated the effect of low cognitive empathy. That is, girls who showed high levels of affective empathy committed less cyberbullying regardless of their level of cognitive empathy. This is in line with previous studies on general aggression showing affective empathy to moderate the effects of cognitive empathy on aggression (Björkqvist, Österman, & Kaukiainen, 2000). However, boys with high scores on affective empathy and low levels of cognitive empathy committed cyberbullying more often than boys with high scores on both empathy dimensions. Somewhat differently, Topcu and Erdur-Baker (2012) found that gender differences in cyberbullying were actually mediated by the combination of

cognitive and affective empathy in Turkish adolescents. They conclude that the risk of becoming a cyberbully is not increased by being a boy or girl but rather by being less empathic.

In sum, inconsistent results regarding differences or lack of significant differences in cognitive empathy illustrate the controversy about whether bullies in general lack cognitive empathy or are rather skilled in reading others emotions, that is have high cognitive empathy, which might be necessary to cause the harm intended (cf. Sutton, Smith, & Swettenham, 1999).

In a first study on the involvement of other groups than the victims' and the perpetrators' roles in a cyberbullying situation, high levels of affective and cognitive empathy were shown to be protective factors also against bystanders joining in a cyberbullying situation. For this, Barlińska, Szuster, and Winiewski (2013) used an experimental design in which affective and cognitive empathy were activated by videos and reflective tasks focusing on emotions (affective empathy) or behaviors (cognitive empathy) in a sample of 11-18 year-old students. The videos showed cyberbullying situations and their effects on the victim. Students were then presented with a hypothetical situation in which they received a humiliating picture of someone else and had to decide whether to pass it on to a peer, upload it to a public forum or delete it. Students were less likely to pass on the message when having been confronted with a victim's emotions (either in the affective or cognitive condition) in a cyberbullying situation beforehand.

Thus, empathy might play a key role in preventing cyberbullying as it can inhibit aggressive and antisocial behavior (Miller & Eisenberg, 1988). Fostering empathy development or an increase in readiness to react empathically could reduce cyberbullying, which has been assumed to result from a lack of empathy (Steffgen et al., 2011). Especially affective empathy should be the focus of prevention efforts because it

was shown to compensate for the negative effects of a lack of cognitive empathy, at least for girls (Ang & Goh, 2010).

**Aggression**

Because cyberbullying is a subtype of aggression, associations with measures of aggression are not surprising. Some studies have examined the link of cyberbullying to other subtypes of aggression. Study 2 of the present dissertation, for example, examined differences in *relational aggression* between cybervictims and -bullies and non-involved students. Relational aggression refers to aggression on the level of social relationships in which individuals damage relationships and friendships of others (Crick & Grotpeter, 1995). Apart from Study 2 almost no other studies investigated the link between relational aggression and cyberbullying. Utsumi (2010), however, reported relational aggression to predict both cyberbullying and -victimization cross-sectionally and Werner, Bumpus, and Rock (2010) found this relation for perpetrators of internet aggression. In this study, however, they did not investigate the links to victimization through internet aggression.

Other research investigated the links of cyberbullying to *reactive* and *instrumental aggression* (also referred to as proactive aggression, cf. Ang, Huan, & Florell, 2013). Reactive aggression describes aggression with the intention of self-defense, for example against a provocation, whereas instrumental aggression is intentionally used for personal goal attainment (Little, Jones, Henrich, & Hawley, 2003). Several cross-sectional studies showed that cyberbullies exhibited higher levels of reactive as well as instrumental aggression than non-cyberbullies or that these two subtypes of aggression predicted cyberbullying (Ang et al., 2013; Burton, Florell, & Gore, 2013; Gradinger, Strohmeier, & Spiel, 2009; Sontag, Clemans, Graber, & Lyndon, 2011). When asked directly about the motives of cyberbullying most students

did not clearly differentiate between proactive and reactive aggression; the reasons included reactive and instrumental elements at the same time (Law et al., 2012a). In this study, semi-structured interviews with a subsample of 15 students revealed that students, who cyberbullied others felt justified to do so because they perceived their own behavior as more reactively motivated and the behavior of others as more proactively aggressive. In the present dissertation, Study 4 examined decreases and increases, respectively, in instrumental and reactive aggression as potential consequences of cyberbullying and -victimization longitudinally.

**Attitudes and beliefs**

A link has also been found between cyberbullying and respective attitudes and beliefs regarding cyberspace and technology, which might posit risk factors. For example, in a study by Li and Fung (2012), *beliefs* about the cyber context relating to cyberbullying were a significant predictor of cyberbullying: Positive beliefs were associated with less cyberbullying perpetration while negative beliefs (e.g., having the right to say anything they want online, even if it hurts others or violates their rights, p. 105) were associated with higher levels of perpetration. Also of some significance, witnesses were more likely to join in the cyberbullying or to support the perpetrators, for example by cheering them on, if they held more negative beliefs about cyberspace. Victims in turn were less likely to retaliate (and thus to become cyberbully-victims) if they held more positive beliefs (Li & Fung, 2012).

*Positive attitudes towards cyberbullying* (Vandebosch & Van Cleemput, 2009), *attitudes justifying violence* (Calvete, Orue, Estévez, Villardón, & Padilla, 2010; Williams & Guerra, 2007) and *normative beliefs* about aggression justifying its use (Ang, Tan, & Talib Mansor, 2011) are all positively related to cyberbullying perpetration. In a study by Barlett and Gentile (2012) the stability of cyberbullying

perpetration across time was mediated by the perception of a positive gain of this behavior. *Pro-victim attitudes* in turn constitute a protective factor against cyberbullying perpetration as they are associated with lower perpetration levels (Elledge et al., 2013).

A construct, which has been investigated in connection with cyberbullying rather often compared to the relative overall number of empirical studies, is *moral disengagement*, which "is a socio-cognitive process through which people rationalize and justify harmful acts against others" (Pornari & Wood, 2010, p. 82). "Regulatory self-sanctions" (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996) are disabled in specific situations by a number of mechanisms to justify one's harmful behavior such as blaming the victim, displacing responsibility or downplaying the consequences. In previous studies, overall moral disengagement (Pornari & Wood, 2010; Robson & Witenberg, 2013), and especially the subscales "diffusion of responsibility" and "attribution of blame" (Robson & Witenberg, 2013), predicted cyberbullying, but not cybervictimization (Pornari & Wood, 2010). Beside cyberbullies-only, cyberbully-victims were also found to be morally less engaged (e.g., Renati et al., 2012). In a study by Perren and Gutzwiller-Helfenfinger (2012) cyberbullying was not predicted by moral disengagement, but by low levels of moral values and moral emotions (i.e. remorse). Pornari and Wood (2010) also reported that moral disengagement was less pronounced for the cyber context than for the traditional bullying context. Independent of each other, the authors of both of these publications assume that moral disengagement might not be (as) necessary for cyberbullying due to the specificities of the context such as a lack of direct feedback from the victim. However, more studies have found an association so the lack of statistical significance in the results of Perren and Gutzwiller-Helfenfinger (2012) might possibly also be due to methodological issues as they are the only ones of the studies reviewed here not using the moral disengagement instrument by

Bandura. This lack of consistency or replication might also indicate a bias in studies using the Bandura instrument.

Attitudes and beliefs seem to play an important role in cyberbullying as the constructs presented here contribute to a behavioral disposition towards cyberbullying which in turn leads to cyberbullying behavior in situations which encourage this behavior (cf. findings from risk-tasking behavior research, Pomery, Gibbons, Reis-Bergan, & Gerrard, 2009). This process has been examined by Heirman and Walrave (2012), for example. In their short-term longitudinal study with 1,042 Belgian students with an average age of 15.5 years they identified several processes preceding cyberbullying which influence a behavioral willingness and reported that the more favorable an adolescent's attitudes are towards cyberbullying, the higher the intention to perform this behavior.

Attitudes, beliefs and moral disengagement are not explicitly investigated in the present dissertation. However, they are part of the theoretical model underlying the development of the prevention program Medienhelden which is described in Study 5.

**Media-related behavior**

Naturally, cyberbullying and cybervictimization are more likely among youth who spend more time online (Görzig & Ólafsson, 2013), for example in internet chatrooms or online social networks (Accordino & Accordino, 2011), and those with risky online behavior (Bauman, 2010; Görzig & Ólafsson, 2013; Katzer et al., 2009a; Katzer, Fetchenhauer, & Belschak, 2009b). Victims, for example, often lack effective strategies for a safe internet use and knowledge about risk-increasing behavior. Different studies found cyberbullying victimization to be associated with risky behavior like sharing passwords or talking to strangers online (Hinduja & Patchin, 2009; Mishna, Khoury-Kassabri, Gadalla, & Daciuk, 2012; Sengupta & Chaudhuri, 2011; Wolak et al., 2006).

Intensive media use was especially shown to be a predictor of cybervictimization (e.g., Mishna et al., 2012; Wolak, Mitchell, & Finkelhor, 2007). Li and Fung (2012) report access to the internet at home and cell phone use in school to predict cyberbullying. Inconsistence exists regarding the question whether unmonitored (private) access generally increases the risk of becoming a bully or a victim. Sengupta and Chaudhuri (2011) found that internet use in private places at home increased the risk for victimization compared to using the internet in a more public place in the home. Other researchers, and especially a large study including 25 different European countries, could not replicate this finding (Bauman, 2010; Görzig & Ólafsson, 2013). In their studies, private access to a cell phone or the internet did not per se present a risk factor.

Concluding, being equipped or having access to the respective technologies is a necessary condition for cyberbullying and being cyberbullied. Also, the more frequently these technologies are used the higher the risk of involvement in cyberbullying. Whether having private (unmonitored) access increases the risk is still controversial. Monitoring the use of the internet and other communication devices in children and adolescents is likely to become even more difficult as technologies evolve further. A considerable amount of adolescents today are equipped with so-called smart phones enabling access to the internet wherever they go making it impossible for parents to control their children's internet activities regardless of whether the computer with internet access is placed in a private or rather public place in the family home.

**Further individual factors**

It is still unclear whether *self-esteem* should be treated as a risk or a protective factor for cyberbullying and -victimization or rather as a possible consequence of these. Two different pathways are conceivable: High (but instable) self-esteem might be necessary to perpetrate cyberbullying or cyberbullying itself might serve to raise perpetrators'

self-esteem which originally was low. Sticca, Ruggieri, Alsaker, and Perren (2013) found no longitudinal predictive value of self-esteem for cyberbullying perpetration. Patchin and Hinduja (2010) as well as Kowalski and Limber (2013) reported both perpetrators and victims to show lower rates of self-esteem than non-involved students. And Brighi et al. (2012) found that self-esteem decreased when the extent of cyberbullying victimization increased. Most likely, self-esteem follows different pathways for cyberbullies and cybervictims. For victims, low self-esteem might be an outcome of their victimization while it might be a precursor for cyberbullying perpetration.

*Lack of self-control* was also found to be linked to cyberbullying and cybervictimization across 25 European countries (Vazsonyi, Machackova, Sevcikova, Smahel, & Cerna, 2012). Cyberbullies also showed high scores of *callous-unemotional traits* (Fanti, Demetriou, & Hawa, 2012) which indicates that cyberbullies pay little attention to, are less able to recognize or simply do not care about their victims' distress.

As already illustrated in previous sections, there are links with *traditional bullying and victimization*. Accordingly, these constructs were the strongest predictors of cyberbullying and cybervictimization, respectively, in many studies (e.g., Fanti et al., 2012; Katzer et al., 2009a, 2009b; Raskauskas & Stoltz, 2007).

Little is known about protective factors on the individual level. Ubertini (2010) examined *life satisfaction* and *social support*, which have been shown to protect against traditional bullying, and found no protective effects against being cybervictimized.

On the social level, *friendships* might have a protective function, at least against becoming a perpetrator of cyberbullying. Li and Fung (2012) reported that cybervictims were less likely to retaliate for experienced cyberbullying acts the more frequently they were involved in extracurricular activities.

On the other hand, *social standing* posited a potential risk factor as well as a motive for cyberbullying in a 1-year longitudinal study. Badaly, Kelly, Schwartz, and Dabney-Lieras (2013) showed that girls nominated as popular by their peers were more involved in electronic aggression and in turn electronically aggressive girls received higher popularity scores over time. In contrast, socially accepted boys (operationalized as being liked by their peers) were at a higher risk of becoming cybervictims, although like girls, popular boys were more electronically aggressive. At the same time, electronic aggression in boys was associated with decreases in popularity. The authors assume that electronic aggression might be a means of maintaining the status in the social hierarchy within a classroom.

This list of further individual factors serves to show that since the beginning of the present dissertation research on risk and protective factors has expanded to include many more aspects. However, many of these have yet to be replicated in further studies. A full model of risk and protective factors is unrealistic due to the large number of single factors and the sample size required for testing all of them at the same time. Therefore, we must be content with the relative amount of variance explained by models which can only depict a snippet of the factors interacting to foster or inhibit cyberbullying perpetration and victimization.

Summarizing, I have presented a number of potential risk (and some few protective) factors. The focus is on cognitive and affective empathy which have been investigated in connection with cyberbullying perpetration especially. Repeatedly, studies showed low (affective) empathy scores to predict cyberbullying perpetration. Also, an interaction was shown between affective and cognitive empathy, that is, affective empathy buffered the effects of low cognitive empathy in specific cases. However, there is a clear lack of longitudinal studies on this. The present studies

contribute to filling this gap. Aggression subtypes were also shown to be linked to cyberbullying. Externalizing and internalizing behaviors are often treated as dichotomous; externalizing symptoms are assumed to be related to perpetration and internalizing symptoms to victimization. The present dissertation does not make this dichotomous distinction a priori and it also investigates a possible reinforcement of aggression by perpetration and victimization using longitudinal data.

It is beyond the scope of the present literature review to list all potential risk and protective factors which have not yet, but should be investigated in regard to their contribution to cyberbullying. Some of the present dissertation studies already contributed to filling some of these gaps by addressing factors which have nearly not been previously (explicitly) addressed such as relational aggression.

## 2.3 Consequences of cyberbullying

Cyberbullying victimization and perpetration are associated with a range of manifestations of negative psychosocial adjustment. They touch on various areas of functioning such as mental and physical health indicators, school functioning and relationships. Although attention often focuses on the victims, research has shown that perpetrators are no less affected than victims and are themselves at risk for long-term detrimental outcomes, contradicting the general belief that cyberbullies feel well and unaffected by their actions. However, cyberbullies are often not examined regarding negative outcomes or associations contradicting priori assumptions of increased externalizing problems are not reported. Thus, the separation of internalizing outcomes for victims and externalizing outcomes for bullies is often based on theoretical deliberations. Therefore, research on detrimental outcomes in cyberbullies apart from externalizing symptoms is scarce.

The following section summarizes current research findings and focuses on the topics of depression, psychosomatic symptoms, isolation and social withdrawal, which are objects of the present dissertation and its empirical studies. Additional important outcomes underlining the need to address cyberbullying in research, public and policy-making are presented in a condensed form under the sub-heading "other consequences". The findings will show that all students involved in cyberbullying often suffer from a myriad of adjustment problems which may negatively impact them in the long term, especially if they are left alone to deal with the emotional and social strain.

**Depression**

In past studies, cybervictims and cyberbullies showed significantly elevated levels of *depression*, *anxiety* and *stress* (e.g., Campbell, Spears, Slee, Butler, & Kift, 2012; Campbell et al., 2013; Finkelhor, Mitchell, & Wolak, 2000; Kessel Schneider et al., 2012; Ybarra & Mitchell, 2004b). Because research into cyberbullying often investigates subclinical levels of adjustment problems, *depressive symptoms* were investigated by a number of studies and found to be increased in cybervictimized adolescents (Erdur Baker & Tanrikulu, 2010; Gradinger et al., 2009; Perren, Dooley, Shaw, & Cross, 2010). In one of the first longitudinal studies and the first to investigate bidirectional relationships, Gámez-Guadix, Orue, Smith, and Calvete (2013) discovered that depression is a consequence, but also a precursor of cyberbullying victimization: T1 victimization predicted increased depression scores at t2 and t1 depression scores positively predicted victimization at t2.

*Suicidal ideation* and *suicide attempts* (Hinduja & Patchin, 2010; Kowalski & Limber, 2013; Schenk & Fremouw, 2012) were associated with cyberbullying victimization as well as perpetration cross-sectionally. Further, cybervictims reported more *self-injury* than non-involved adolescents (Kessel Schneider et al., 2012).

Bauman, Toomey, and Walker (2013) analyzed data from nearly 1,500 students in a cross-sectional design and found suicide to be mediated by depression for female victims of cyberbullying, but not for males. In this analysis, depression accounted for 75% of the variance in the probability of suicide attempts. This underlines that suicides in connection with cyberbullying cannot be viewed as mono-causal, but rather as multi-causal in interaction with further social, emotional or psychological problems the victims were experiencing (Hinduja & Patchin, 2010).

Regarding cyberbullies, Bauman et al. (2013) found a significant direct path from cyberbullying to suicide attempts for boys, but no mediation by depression, and suspected that the perpetrators did not expect their intentional or unintentional acts to escalate in the way they did and therefore possibly experienced the consequences and the associated guilt as unbearable.

**Loneliness and social withdrawal**

Cybervictimization has shown positive associations with loneliness (Olenik-Shemesh, Heiman, & Eden, 2012; Şahin, 2012), that is the higher the victimization scores the higher loneliness. The author found loneliness to significantly predict cybervictimization and therefore examined it as a risk factor. However, since the study was a cross-sectional one, loneliness might also be a consequence of cybervictimization. This notion is supported by results found by Spears and colleagues (Spears et al., 2009) who report from qualitative data that victims tend to withdraw from their social surroundings because suspicion and mistrust is fostered by the nature of cyberbullying victimization, especially when it is anonymous. Brighi et al. (2012) categorized victims into not involved, occasional and severe victims and were able to show that increasing frequency of victimization was associated with increasing levels of feelings of loneliness in relationships with parents and also in relationships with peers. An

especially interesting finding refers to increases in aversion and affinity for loneliness which both increase with increasing levels of victimization, that is, the negative and positive attitudes towards loneliness increase simultaneously. The authors suspect that this might be because attacks often stem from peers which push the victims into isolation although they do not actually want to be isolated. At the same time, withdrawing from social contacts might be the only way to escape from the attacks. Affinity for loneliness even surpasses aversion to loneliness scores when the cyber-attacks are directed at the reputation of the victim.

Regarding the perpetrator status of cyberbullying, Şahin (2012) did not find significant correlations with loneliness. Schoffstall and Cohen (2011), however, found higher rates of loneliness in connection with higher rates of cyberbullying in their cross-sectional study. To the knowledge of the author of this dissertation, no other studies have been conducted which have examined loneliness in cyberbullies.

Social withdrawal of victims or perpetrators has not explicitly been investigated in connection with cyberbullying so far, but rather indirectly, e.g. by assessing aversion or affinity for loneliness. Thus, Study 3 of this dissertation is the first of its kind in this context.

**Psychosomatic symptoms**

For victims of cyberbullying, significantly decreased levels of *physical health* (e.g., Kowalski & Limber, 2013) and increased levels of *somatic symptoms* have been reported compared to non-involved and cyberbullying students. They reported feeling sick more often, having sleeping troubles, headaches and stomach aches (Carter, 2011; Gradinger et al., 2009; Techniker Krankenkasse, 2011). However, cyberbullying perpetrators also reported lower subjective health levels than non-involved students

(Låftman, Modin, & Östberg, 2013) and somatic symptoms like headaches (Sourander et al., 2010).

**Other consequences**

On the level of mental health outcomes, results regarding *drug use* also deserve to be mentioned. Cross-sectional studies have shown increased levels of tobacco and alcohol consumption for cybervictims (Ybarra & Mitchell, 2004b) as well as cyberbullies (Sourander et al., 2010). Examining bidirectional links based on short-term longitudinal data, however, have shown substance use to predict later cybervictimization, but not to be predicted by being a cybervictim (Gámez-Guadix et al., 2013).

Regarding school functioning, cybervictims exhibited *poor concentration levels* and *lower grades* (Beran & Li, 2005; Kowalski & Limber, 2013) and more *absenteeism* (Ybarra, Diener-West, & Leaf, 2007). Cyberbullies also showed higher numbers of school absences and lower academic achievement (Kowalski & Limber, 2013). Both victims and bullies reported leaving school before the end of a school day out of sickness reasons more often than non-involved students (Kowalski & Limber, 2013). Especially relevant for all members of a school is the finding that cybervictims were 8 times more likely to *carry a weapon* to school than non-victimized students (Ybarra et al., 2007). Not wanting to go to school might be a result of the humiliation caused by cyberbullying victimization, but also by the victim not knowing who the perpetrator is and thus being suspicious of their social surroundings (Raskauskas & Stoltz, 2007; Spears et al., 2009).

Cyberbullies have been reported to score significantly higher on *peer relationship problems* and lower on *prosocial behavior* than non-involved students (Campbell, Slee, Spears, Butler, & Kift, 2013). The adolescents in Schoffstall and Cohen's (2011) study indicated that engagement in cyberbullying as a perpetrator

predicted lower levels of peer optimism, mutual friendships, social acceptability and popularity. In a German online study with 1,881 participants, Sitzer and colleagues (2012) found that 18.8% of perpetrators reported feeling bad as a consequence of their behavior; 13.3% were cyberbullied themselves as a consequence of their behavior, 9.8% were bullied in school as a consequence, 8.6% were excluded from their clique.

Studies on emotional impact of cyberbullying reported that victimized students may not feel any impact at all (between 22% and 32% of victims), but more often experience moderate stress with mostly feeling angry or severe stress with a variety of negative emotions like feeling angry, depressed, upset and afraid (Ortega et al., 2012). Frequent victims were more often severely affected as compared to occasional victims. Sitzer and colleagues (2012) examined the specific forms of cyberbullying included in their questionnaire and found that the level of general stress was linked to the type of cyberbullying. More prevalent forms of cyberbullying (among the population of adolescents) were perceived as less stressful. According to the authors, these forms might possibly be viewed as normal peer conflicts by the victims. In this study, 43.1% of the victims reported to not have felt stressed, 30.2% experienced some stress and 26.7% were strongly affected.

For cyberbully-victims, those adolescents who are perpetrators as well as victims of cyberbullying, the negative consequences seem to accumulate as they reported experiencing the impact of the victim's as well as the bully's role at the same time and therefore reported the highest levels of maladjustment (Gradinger et al., 2009; Kowalski & Limber, 2013; Sourander et al., 2010), such as significantly higher levels of social anxiety, depression, suicidal ideation and worse self-esteem and school grades compared to victims only, bullies only and non-involved adolescents (Kowalski & Limber, 2013).

The present review of research findings illustrates the often massive strain on all parties involved in cyberbullying. However, providers, for example, should pay more attention and support to intervention and prevention strategies as cyberbullying does not only cause costs for the health care system (which have not been estimated so far), but is also associated with economic damages for the providers themselves. For example, according to news reports (e.g., Guynn & Stobart, 2013) Ask.fm has lost its three most lucrative advertisers in the wake of reports of cumulated teen suicides associated with this social network.

Summarizing, a number of different potential consequences of cyberbullying such as depression, anxiety, loneliness, and psychosomatic symptoms were presented which often focus mainly on victims. There were some few indications that perpetrators also suffer, for example, from depression. The present dissertation does not focus solely on victims, but equally investigates the same variables as potential consequences for cyberbullying perpetrators. Also, the previous, mainly cross-sectional results leave open whether the variables are predictors or outcomes. The present studies contribute by examining longitudinal links. Also, this dissertation is one of the first to investigate loneliness as an outcome also of perpetration and to the knowledge of the author is the first work to explicitly address social withdrawal.

## 2.4 Intervention and preventive approaches to cyberbullying

According to the IOM Model by Mrazek and Haggerty (1994), there are three levels at which prevention can begin. Perren et al. (2012b, p. 285) applied this model specifically to cyberbullying and approaches to tackling cyberbullying. Before cyberbullying even emerges (first level) risks can be addressed and reduced. This is the classical starting point for prevention. It can be achieved through reducing traditional bullying and

general online risks using anti-bullying strategies, social skills training, or addressing school climate, parental mediation and safe internet use. At the second level, while cyberbullying is taking place it can be combatted directly. This can be achieved by using technical solutions, confronting or ignoring the bully or by seeking support from others. On the third level, after cyberbullying incidents, affected students and their environment can try to buffer the negative effects and try to prevent or reduce subsequent maladjustment by seeking/providing emotional support and by using/promoting healthy emotional coping.

Technical strategies are very popular with policymakers because they are easy and rather cheap to implement. On a political level, provider services can be induced to include technical applications and recommendation lists can easily and widely be distributed to the public. These technical strategies include blocking a sender, restricting screen names from buddy lists, changing the online identity, deleting messages, using a report button or tracing the identity of the perpetrator (cf. Perren et al., 2012a, p. 13). Of these and other strategies, Price and Dalgleish (2010) have found blocking the sender to be perceived as most effective by victims with 76.4% rating this strategy as helpful to some degree. At the same time, 5.1% of participating victims reported that they could not get this function to work. Other studies have shown that strategies like a report button are not well accepted especially when the cyberbullying results from peer conflicts from a shared offline environment (Wagner, Brüggen, Gerlicher, & Schemmerling, 2012).

More personal strategies such as confronting the bully (which includes both bullying back as well as talking to the bully directly) or ignoring the bullying have either not been evaluated empirically or have even been proven to be ineffective. Both strategies bear the risk of further escalation (cf. Hoff & Mitchell, 2009).

Another often proposed coping strategy is resorting to friends, family, school staff or other adults for instrumental or emotional support (Perren et al., 2012a). However, a serious obstacle is presented by adolescents not telling adults about incidents for fear of losing media use privileges (Mishna, Saini, & Solomon, 2009). But restricting access or taking away the Internet or cell phone is most likely to be perceived as a punishment equivalent to social death (Kowalski et al., 2012, p. 4) by adolescents. Trying to cope in a self-reliant way increases with the age of the students whereas confiding in adults decreases (Stacey, 2009) and thus guidance or training for teachers and parents may be helpful, but may not reach the affected students effectively. On the other hand, awareness-raising campaigns often make a point of recommending approaching parents and teachers when faced with cyberbullying. If these adults then lack the knowledge about what to do and how to assist, this might shake students' confidence in them and make them feel even more isolated. However, so far empirical knowledge only exists about what kind of support students wish for, but there are no empirically-tested intervention strategies.

As intervention seems difficult to date, prevention is even more important. Several efforts have been made nationally and internationally. In the following, only theory-based and empirically validated approaches will be addressed briefly. Cyberbullying can either be addressed in the context of general bullying prevention, such as the Noncadiamointrappola program (Menesini, Nocentini, & Palladino, 2012b) or the KiVa program (Salmivalli, Kärnä, & Poskiparta, 2011); or specifically by taking into account the media-related and cyberbullying-specific characteristics. Only approaches for the second method will be outlined here.

*Medienhelden* is one of the first theory-based and evaluated cyberbullying prevention programs worldwide. It shall not be described in detail here as it explicitly is subject of Study 5. It is a structured, school-based, manualized program with teaching

materials for Grades 7 to 10 and is implemented by classroom teachers in regular school lessons. According to schools' and teachers' needs a long and a short version were developed which represent different expenditure. As Study 5 shows, both versions show effect. However, the long version is more recommendable because the effects are stronger. Studies which have shown that adolescents more often turn to peers and friends instead of adults (Perren et al., 2012a; Stacey, 2009; Topçu, Erdur-Baker, & Çapa-Aydin, 2008) support Medienhelden's design as a universal preventive intervention which not only targets victims and perpetrators, but also non-involved classmates.

Simultaneously to Medienhelden, another German program was published called *Surf-Fair* (Pieschl & Porsch, 2012). It targets 5$^{th}$ to 7$^{th}$ graders within their school environment and presents an everyday cyberbullying problem in a short video. The subsequent exercises follow the principles of anchored instruction (Pieschl & Urbasik, 2013). The exercises are modular and can be freely combined by the classroom teacher. Using one control class without intervention, one class with 90 minutes of intervention and one class with 180 minutes (2 x 90 minutes) the authors were able to show a reduction of cybervictimization and cyberbullying in the longer intervention group two months after the intervention while the rates stayed the same in the shorter intervention group and increased in the control group. Further, the intervention partly had a positive effect on functional and dysfunctional coping.

Another program developed in Germany is *CyberTraining* (Jäger, 2009). It provides a manual with materials for trainers working with adolescents based on experts' opinions. However, the effectiveness of this training has not been investigated empirically so far.

A further example of a successful cyberbullying prevention program is the Spanish *ConRed* program (Ortega-Ruiz, Del Rey, & Casas, 2012). It encompasses 8

teaching sessions conducted by the program developers, is integrated into already existing whole school approaches and follows the normative social behavior theory. It also includes an awareness-raising component for teachers and families of the participating schools. The program showed effects on awareness of the risks associated with the disclosure of private information. Male participants of the program also showed a significantly reduced need to interact with others online. Further, rates of cyberbullying victimization and perpetration decreased in the intervention group compared to the control group.

The preceding section outlined the efforts which have been undertaken to date to address cyberbullying using evidence-based methods and makes clear that the program Medienhelden which was developed and evaluated as part of the present dissertation fills an important gap and makes a contribution to the current status of cyberbullying research and anti-cyberbullying actions.

Based on the previous knowledge presented in the literature review and the current status of the research at the time the studies were conducted, respectively, the following research questions built the foundation of the present dissertation:

a) How are cyberbullying behaviors and definitional criteria perceived by adolescents and which term do they use for these behaviors?;
b) Are cognitive and affective empathy as well as different subtypes of aggression risk factors for cyberbullying perpetration and victimization?;
c) Are depressiveness, loneliness, social withdrawal, psychopathological symptoms and different subtypes of aggression potential consequences of being a victim or perpetrator of cyberbullying? and

d) Can a preventive intervention implemented in a classroom context and targeting cognitive and affective empathy, among others, successfully reduce cyberbullying?

## 2.5 Design of the dissertation

The present dissertation used data from different data sources and combines cross-sectional and longitudinal as well as intervention and evaluation designs. Table 2 gives an overview of the studies, their data source, sample sizes, research objectives and the status of the respective study in the publication process. Due to the lack of research at the beginning of this dissertation project and the studies' dependence on superordinate research projects, the studies do not use consistent measures to assess, for example, the target variables of cyberbullying and cybervictimization. However, when assessing the target variables, students were always asked to answer behavior-based questions rather than judging on a global item - which might not trigger memory of respective experiences enough - whether they had been cyberbullied applying their own subjective intuitive definition of the construct. Further, the intention was to prevent as much social desirability as possible and also to prevent defense mechanisms against the realization of being or labeling a person as a victim. Experience also showed that students often do not read introductory texts and definitions (see also Ybarra, Boyd, Korchmaros, & Oppenheim, 2012) or their answers and understanding of the measure might be confounded with their reading literacy (cf. Ortega et al., 2001). Using behavior-based items allowed a more differentiated picture. Measures used throughout this dissertation are predominantly self-reports.

Table 2: Description of studies included in the present dissertation

| | Data source | N | Age | Research question | Publication status |
|---|---|---|---|---|---|
| Study 1 | COST Focus groups | 20 | 11-16 | Definition and perception by target group | published (2010) |
| Study 2 | Pilot study | 71 | *M* = 14.05 (*SD* = 1.20) | Correlates of victimization and perpetration | published (2009) |
| Study 3 | fairplayer evaluation Bremen Control group | 77 | *M* = 12.53 (*SD* = 0.68) | Longitudinal associations, risk/protective factors, outcomes | revised after review |
| Study 4 | DAPHNE III (Medienhelden evaluation) t1 (pre) and t2 (post) Control group | Cross: 412 Long: 223 | Cross: *M* = 13.35 (*SD* = 1.04) Long: *M* = 13.14 (*SD* = 0.87) | Between-group differences, longitudinal associations, risk/protective factors, outcomes | published (2012) |
| Study 5 | DAPHNE III (Medienhelden evaluation) t1 (pre) and t3 (follow-up) Control and intervention groups | 722 | *M* = 13.36 (*SD* = 1.00) | Evaluation of the cyberbullying prevention program, comparison of two program versions | under review |

The five following dissertation studies contribute to the current literature or have previously contributed to it, respectively, by

a) investigating adolescents' understanding of the concept, its relevance for adolescents' everyday life and identifying an adequate term to use when conducting research,
b) examining potential individual risk and protective factors in cross-sectional and longitudinal analyses,
c) identifying and replicating potential outcomes for victims and bullies, and

d) developing and evaluating an approach to reduce rates of cyberbullying by building on previous research and by fostering empathy.

They fill some of the previous gaps and sometimes even are some of the first studies of their kind. The first 4 dissertation studies, among others, allowed to develop an effective, empirically-based prevention program (Study 5). The studies will be discussed regarding in how far they contribute to the field of cyberbullying research by replicating or contradicting previous knowledge or by being replicated or contradicted by following research and what possible explanations might be found.

# 3 Study 1: Definition of cyberbullying

Cyberbullying: Labels, Behaviours and Definition in Three European Countries

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## 3.1 Abstract

The present study aims to examine students' perception of the term used to label cyberbullying, the perception of different forms and behaviours (written verbal, visual, exclusion and impersonation) and the perception of the criteria used for its definition (imbalance of power, intention, repetition, anonymity and publicity) in three different European countries: Italy, Spain and Germany. Overall, 70 adolescents took part in nine focus groups held using the same interview guide across countries. Thematic analysis focused on three main themes related to: (1) the term used to label cyberbullying; (2) the different behaviours representing cyberbullying; (3) the three traditional criteria of intentionality, imbalance of power and repetition and the two new criteria of anonymity and publicity. Results showed that the best word to label cyberbullying is Cyber-Mobbing in Germany, virtual or cyber-bullying in Italy, and harassment or harassment via Internet or mobile phone in Spain. Impersonation cannot be considered fully as cyberbullying behaviour. In order to define cyberbullying act, adolescents need to know if the action is done intentionally to harm the victim, the effect on the victim and the repetition of the action (this latter criterion evaluated simultaneously with the publicity). Information about the anonymity and publicity contribute to better understand the nature and the severity of the act, the potential effects on the victim and the intentionality.

*Keywords*: cyberbullying, cross-cultural, focus groups, Spain, Italy, Germany

Cyberbullying: Labels, Behaviours and Definition in Three European Countries

## 3.2 Introduction

Since the year 2000, a new form of aggression using modern information and communication technologies has attracted large attention in the media cross-nationally. Led by especially Anglophone countries (e.g. Australia, United Kingdom and the USA), cyberbullying research quickly spread to many countries of the world raising the need for a common understanding of the phenomenon. Especially cross-national studies make comparability necessary thus requiring an investigation of terms and understanding in different countries and cultures.

However, often the perspective of the subjects of this research field is lacking (cf. Spears, Slee, Owens, & Johnson, 2009). It might well be that students do not use the same terms and definitions for what is happening to them as experts and researchers do (cf. Smith, Cowie, Olafsson, & Liefooghe, 2002). Furthermore, each specific language might have different labels for this phenomenon (Smith et al., 2002; Slee, Ma, & Taki, 2003). Therefore, exceptional focus needs to be turned to the target groups' understanding of cyberbullying.

**The label for cyberbullying**

Problems related to the term used to label the phenomenon of cyberbullying in different languages can be derived from the literature of bullying. The word bullying is not easy to translate into different languages and different terms are used both in anyone language and in different languages (Smith et al., 2002). Especially the term mobbing is familiar in the Scandinavian and Germanic languages. Words for bullying are less familiar in the Latin languages, although during the last years they have been used more and more. In Italy and Spain a plurality of terms exists, all of them connoting a specific

aspect of bullying (Fonzi, Genta, Menesini, Bacchini, Bonino & Constabile, 1999; Ortega, Del Rey, & Mora-Merchán, 2001). Furthermore, also the term cyber can be affected by the same difficulties. For example the English word cyber is present in the Italian dictionary, connoting the use of electronic means and virtual community (Garzanti, 2007). In Spain, the word ciber is present in the dictionary and refers to computer networks (RAE, 2010). In Germany, cyber refers to computer-generated artificial virtual surroundings which may be perceived as real (Langenscheidt, 2010).

Starting from these considerations we might ask: which is the best term used by adolescents to label cyberbullying and is it the same across countries?

**The different cyberbullying behaviours**

The complexity and the accelerated evolution of new technologies create some difficulties in defining which are the specific cyberbullying behaviours. Different classifications have been proposed: for example covert and overt cyberbullying (Spears et al., 2009), cyberbullying by Phone or by PC (Smith et al., 2008), traditional bullying in a new context, relational cyberbullying and technically sophisticated cyberbullying (Schultze- Krumbholz & Scheithauer, 2009), cyberbullying through specific behaviours: flaming, harassment, denigration, impersonation, outing, trickery, exclusion and cyberstalking (Willard, 2007). Trying to summarize these eight last categories in typologies of behaviour, four main types can be identified: written-verbal behaviours behaviours (phone calls, text messages, e-mails, instant messaging, chats, blogs, social networking communities, websites), visual behaviours (posting, sending or sharing compromising pictures and videos through mobile phone or internet), exclusion (purposefully excluding someone from an online group) and impersonation (stealing and revealing personal information, using another person's name and account).

According to these typologies, we might ask if adolescents perceived all these types of behaviours as cyberbullying and how severe they are.

## The definition of cyberbullying

Early studies of cyberbullying used their own definition of this phenomenon, most of them developed in a top-down approach and based on the definition of traditional bullying proposed by Dan Olweus (1993). A small number of them have become widely accepted and are cited regularly in new publications (see Belsey, 2005; Hinduja & Patchin, 2009; Smith, Mahdavi, Carvalho, Fisher, Russell & Tippett, 2008; Willard, 2003). These definitions highlight some fundamental aspects of (cyber)bullying: (intentional) harm, repetition over time and a power imbalance between victim and perpetrator(s). Recently, these definitions have become subject of a controversy among experts and researchers: it is still unclear whether these criteria are applicable to cyberbullying. Furthermore, new criteria have been proposed such as anonymity and publicity (e.g. Menesini & Nocentini, 2009a; Slonje & Smith, 2008).

**Intention.** It has been argued that due to the indirect nature of cyberbullying it is very difficult to identify the intention of this behaviour (Menesini & Nocentini, 2009b). The question also is whether intention is truly necessary to cause harm or whether unintentional acts, meaning the students not being aware of the harm caused, have the same effect on the victim; thus, underlining that only the impact on or the perpetrator's intention perceived by the victim should be regarded as a criterion (COST Training School, personal communication, April 12, 2010).

**Repetition.** A common argument against the use of the criterion of repetition is the fact that posting contents online in itself constitutes repetition as they can be viewed and forwarded repeatedly (cf. Kowalski, Limber, & Agatston, 2008; Menesini & Nocentini, 2009a). Also, online contents often are still accessible years after the original

incident. This way, a single act of cyberbullying can lead to countless incidents of victimisation (Dooley, Pyzalski, & Cross, 2009).

**Power imbalance.** The inability of the victim to force providers to delete harmful contents, higher levels of media literacy or a higher social status of the perpetrator within a virtual community might be interpreted as a power imbalance (e.g. Hinduja & Patchin, 2007; Menesini & Nocentini, 2009a). Wolak and colleagues (2007) contradict this criterion and state that the victim is rather in a more powerful situation than it would be in traditional bullying because it has the possibility to terminate negative interactions easily. However, they allow that this might not be given concerning the posting of information or negative comments in "public" virtual places (e.g. websites).

**New cyber-specific criteria: anonymity and publicity.** Anonymity, occurring when the victim does not know the identity of the bully, may increase feelings of frustration and powerlessness (e.g. Dooley et al., 2009; Slonje & Smith, 2008) and may reduce the need for power imbalance as a criterion (Fauman, 2008). Publicity, as opposed to private exchanges between two parties, characterizes all the acts where a large audience is involved (i.e. e-mails, SMS, MMS sent to a large audience or offences occurring in a public forum or videos and pictures distributed via social networking). In previous studies, students declared cyberbullying acts including a large and public audience as the most severe type of cyberbullying (Slonje & Smith, 2008). Incorporating these two criteria (anonymity and publicity) may represent cyberbullying more adequately than previous common definitions.

## 3.3 Aims of the present study

The present study examines students' perception of the term used to label cyberbullying, the perception of different forms (written verbal, visual, exclusion and

impersonation) and the perception of the criteria used for the definition (imbalance of power, intention, repetition, anonymity and publicity) in three different European countries: Italy, Spain and Germany. The first aim was to identify the most adequate term to describe cyberbullying behaviour which can consequently be used for the assessment of cyberbullying by researchers and practitioners in contact with adolescents (i.e. professors, educators, counsellors, etc.). Secondly, we wanted to examine if the four typologies of behaviours proposed all represent the cyberbullying construct. Finally, the adequacy of the different criteria of the cyberbullying definition was examined, including the three conventional criteria of traditional bullying and the new ones related to the specific cyber context.

## 3.4 Method

**Participants**

Overall, 70 adolescents in nine focus groups took part in the study. 27 adolescents were part of the Italian study, 23 participated in the study in Spain and 20 participants were recruited in Germany (for further sample details see Table 3). Schools were selected using convenience sampling.

**Materials and procedures**

Youths were invited to participate in a group discussion. School staff was instructed to select students who they thought would be comfortable in a group setting. For all the students parents' permission was requested. Nine focus groups were held using the same interview guide across countries and they were conducted in the original language.

Table 3: Sample characteristics

| | Italy | Spain | Germany |
|---|---|---|---|
| Total | 27 | 23 | 20 |
| Gender distribution | 20 boys, 7 girls | 9 boys, 14 girls | 11 boys, 9 girls |
| Age | 16-18 | 12-13, 16 | 11-12, 12-13, 13-16 |
| Number of focus groups | 4 | 2 | 3 |
| Recruited from | School | School | Schools, Youth Club |
| City | Florence and Lucca | Cordoba | Berlin |

The groups were conducted at the students' schools or youth club, respectively; the moderator and the recorder were the only adults present during the group discussion except in the oldest German focus group which was accompanied by the person in charge of the youth club. Moderators and recorders were active in the field of psychology: they were either researchers in psychology, young graduate psychologists or psychology students. For conducting the focus groups the guidelines of Krueger (1994) and Morgan (1988) were followed. A moderator and a recorder greeted the adolescents as they arrived to participate (*Welcome*). The moderator informed the youths about the purpose of and procedure for conducting focus group (*Our topic is...*). To facilitate the focus groups, the moderator followed an interview guide which considered the following sections: Opening Questions (participants presentations), Introductory Questions (general introduction of the topic without using the term Cyberbullying), Key Questions (see below), Ending Questions (leave students to discuss other topics if they want to), Summary (the moderator try to give a summary) and Thanks/Dismissal (thank students for their help and participation).

Focus groups' structure followed three key questions: (1) Which is the best term to label four scenarios describing different situations or behaviours that could be

considered cyberbullying or not? (see Table 3 for the scenarios description). For this purpose, four posters were presented describing four scenarios. For each scenario we asked students to write or say the word considered as the best term to label the scenario. (2) Do all the four typologies of behaviours represent the cyberbullying construct? Referring to the four posters, we asked adolescents if any differences existed between the scenarios, if one behaviour is more severe as compared to the others, and if we can speak about different forms of cyberbullying. (3) Are the three criteria for defining bullying (intentionality, imbalance of power and repetition) relevant in order to define a cyberbullying act? Are the two additional specific criteria for cyberbullying (publicity and anonymity) relevant in order to define a cyberbullying act? This was investigated using one control scenario (where no criteria were present) and five experimental scenarios, one for each criterion (for the definition of criteria see Table 4). After the presentation of the two scenarios for each criterion (i.e. for the criterion of intentionality: "Control: M. sent a nasty text message to C. as a joke."; "Experimental: M. sent a nasty text message to C. intentionally to hurt C.") we asked participants to discuss the difference between them. Some of the questions proposed were: Is there any difference between the two scenarios? If yes, what are the differences? Are both scenarios good examples of cyberbullying? Why?

All focus groups were audiotaped and lasted between 40 and 90 minutes, depending on age and participants' concentration. The audiotapes were transcribed verbatim and the content of the text was coded in relation to the key questions in the interview guide (Morgan, 1988). The report for each focus group was prepared in a question-by-question format using amplifying quotes and a descriptive summary. These coded statements were then compiled under general headings or themes (e.g., adolescents' term for each scenario): results by categories of individual focus groups were compared and contrasted. The main themes and quotes were edited and

summarized, reducing the transcripts to a more manageable size. We selected the most descriptive quotes for each question, capturing the essence of the conversation.

Table 4: Definition of the criteria used in the control and experimental condition

| Criterion | Control condition | Experimental condition |
|---|---|---|
| Intentionality | "as a joke" | "to hurt him/her" |
| Imbalance of power | the victim "didn't care" | the victim "was upset and didn't know how to defend himself/herself" |
| Repetition | "last month" | "every week for a month" |
| Publicity | sending only to the victim | sending the message "to other people to see" |
| Anonymity | "a familiar boy/girl" | "using an anonymous number" and "who didn't know him/her personally" |

## 3.5 Results

**Theme 1: The label**

Results will be presented separately for the four different scenarios. The specific terms used in each country, including the words in the original language, can be found in Table 5. Excerpts from the transcripts translated in English are included to illustrate students' perceptions and reasoning in the adolescents' words.

**Written-verbal behaviours.** Some of the terms mentioned for this behaviour in Italy referred to more general constructs, such as abuse, stalking and psychological violence, whereas others describe more specific behaviours, such as offenses, threat and blackmail. Abuse was used to stress the repetition across time while stalking emphasised the persecutive nature of the behaviour. Psychological violence was used to underline the indirect nature of aggressive behaviour, particularly to exclude physical behaviour. In Spain, the majority of adolescents called this behaviour harassment. However, there were age differences as for younger students the terms nuisance and for

older students psychological damage or abuse seemed to be very relevant. The difference between harassment and nuisance consists of the frequency of the behaviours: harassment is more frequent than nuisance. Students in all three countries mentioned the label bullying for this behaviour. In Germany, it was even the first word which came to mind followed by harassment and knocking someone. Spanish adolescents mentioned that they had received school sessions about bullying during the last school year. They also referred to TV programs and newspapers about the topic as did the German participants later on in the discussion. However, the Spanish participants could not agree on the exact meaning of the term bullying. In contrast to the other countries, German participants emphasised the emotional level of the behaviour in friendships by proposing terms such as back-stabbing, vicious, dishonest and upsetting.

*"It is bullying when someone sends a message to another person to ruin him." (Italy)*

*"Bullying is a kind of harassment, like the abuse against women: the first is harassment between peers, the second one is harassment against women." (Spain)*

*"You probably hurt others with it." (Germany)*

**Visual behaviours.** Apart from some of the previously used terms, Italian adolescents also mentioned privacy violation, stressing the relevance of using other people's pictures or images. The term virtual bullying was spontaneously proposed in order to differentiate bullying across contexts. Spanish participants also stressed the violation of the personal image or intimacy, with both having the same meaning. The intention to harm the victim was a very important aspect for their definition. The younger Spanish students also proposed harassment, as did the German participants. Further, German students labelled the behaviour bullying and also public humiliation, putting their focus not on the intention, but rather on the effect as compared to the

Table 5: Example of the four different behaviours (written-verbal, visual, impersonation and exclusion) and terms used for each scenario - English and original language words

| Scenarios | Italy | Spain | Germany |
|---|---|---|---|
| "Sending nasty text messages" (written-verbal) | aggressive behaviour (*comportamento aggressivo*), psychological violence (*violenza psicologica*), offenses (*offese*), abuse (*abuso*), bullying (*bullismo*), stalking (*stalking*), threat (*minaccia*), blackmail (*ricatto/blackmail*) | harassment (*acoso*), psychological damage (*daño psicológico*), psychological abuse (*maltrato psicológico*), evil (*maldad*), bullying (*bullying*), nuisance (*incómodo/fastidio*) | bullying (*Mobbing*), to knock someone (*runtermachen)*, harassment (*Belästigung)*, back-stabbing (*hinterhältig)* |
| "Sending a compromising photo" (visual) | blackmail (*ricatto/blackmail*), threat (*minaccia*), bullying (*bullismo*), psychological violence (*violenza psicologica*), abuse (*abuso*), privacy violation (*violazione di privacy*), virtual bullying (*bullismo virtuale*) | violation of personal image/intimacy (*violaciòn de la imagen personal e intimidad*), harassment (*acoso*), harm (*hacer daño*), offense (*ofensa*), cruelty (*crueldad*) | "photing", bullying (*Mobbing*), harassment (*Belästigung)*, public humiliation (*öffentliche Demütigung*) |
| "Get access to password or personal information and use them" (impersonation) | privacy violation (*violazione di privacy*), identity theft (*furto di identità*) | privacy violation (*privacy/right violation*), crime (*delito*), betrayal (*traición*), lack of respect (*falta de respeto*) | humiliation (*Demütigung*), hacking (*Hacking*), revenge (*Rache*), psychological hurt (*seelische Verletzung*), theft (*klauen*) |
| "Take off from the online group" (exclusion) | exclusion (*esclusione*), isolation (*isolamento*) | exclusion (*exclusión*), contempt (*desprecio*), neglect (*marginación*), discrimination (*discriminación*), evil (*maldad*), teasing (*fastidiar*), anguish (*angustiar*), bullying (*bullying*) | knock someone (*runtermachen)*, put someone down (*fertigmachen*), bullying (*Mobbing*), dissing (*dissen*), cyberbullying (*Cyber-Mobbing*), exclusion (*ausgeschlossenwerden*) |

Spanish participants. The German students even created a new word for this: photing, which represents a mixture of Mobbing (the German term for bullying) and photos.

*"Virtual because you don't show your own identity using these electronic means." (Italy).*

**Impersonation.** In all three countries, this behaviour was considered legally relevant or even a crime such as theft when using someone's password to steal money (Germany) or identity theft more generally (Italy). Both Italians and Spanish specifically labelled the behaviour as privacy violation. Further, Spanish and German adolescents pointed out the aspect of betrayal if the act was committed by friends. One German group further mentioned an overlap with the visual scenario as having access to someone's password also gives the person access to photos, videos and personal secrets.

*"It is a betrayal: it is not a crime but hurt." (Spain)*

**Exclusion.** All participants in all countries labelled this behaviour as exclusion or isolation. Additional terms referred to the victim's feelings such as neglect, contempt and discrimination in Spain and knocking someone, putting someone down and dissing in Germany. The Spanish participants also included the intentionality into their description. In Germany this was the only scenario which specifically led to the term cyberbullying. One German group made a concrete reference to an awareness-raising campaign sponsored by the online-initiative "Klicksafe" (European Union) which regularly broadcasts a television advertisement against cyberbullying on German television.

**Theme 2: Typologies of behaviours**

When asked directly whether all the four scenarios represent cyberbullying behaviours (written-verbal, visual, exclusion and impersonation), all the Italian adolescents considered the visual and the written-verbal behaviours as forms of cyberbullying but more disagreement exists for impersonation and exclusion. Spanish students considered all behaviours as bullying. Although they didn't consider each scenario exactly the same they used the same word to summarize all behaviours. German participants considered that impersonation does not actually constitute cyberbullying, but rather a criminal act like theft.

When we asked to the participants about the severity of each scenario in relation with the others, all adolescents in all countries declared the visual as the most serious behaviour. However, some cultural differences emerged, especially between Italy and the other two countries. Spain and Germany considered the visual and the impersonation scenarios as the most severe, whereas in Italy the visual and written-verbal behaviours are the most severe.

**Theme 3: The three traditional criteria of bullying and the two additional criteria for cyberbullying**

**Imbalance of power.** As becomes evident from the discussion in all three countries, the imbalance of power can not actually be viewed independently of the intent to harm. However, all participants agree that if the victim is affected by the behaviour then the behaviour constitutes bullying. The experimental condition may not be well chosen though, as Italian adolescents point out that there is always a way to defend oneself such as asking for help. They suggest further aspects of power imbalance as the cyberbully can be characterized by higher levels of technological skills compared to the victim, but only in case of more technological sophisticated behaviour, such as impersonation, and

not for others. One German group even goes as far as to say that it is still bullying independently of the victim's feelings, because they do not believe that the person in the scenario actually does not care, but rather interpret this as a protective function.

*"It depends if it is a real joke or not." (Spain)*

*"When you don't care and the other one notices it eventually, then he will stop." (Germany)*

**Intention.** In all countries, intention is a strongly relevant criterion to be used for the definition, but it is strictly related to the criterion of imbalance of power. For the Italian girls, this criterion is less important than the feelings and the consequences of the victim. For the Spanish and German participants, the victim's interpretation of the intention is critical. If the act is perceived as a joke then it is not considered bullying. However, the question was raised (and remained unanswered) how the victim should know that the act was not meant seriously.

*"If there is the intention to hurt someone it is bullying." (Italy)*

*"The aim of the bully is to hurt someone, but if the victim is not hurt this is not bullying because the bully did not gain his/her goal." (Italy)*

*"Yes, but you actually don't do this as a joke. So, this is a [bad] joke, so to say." (Germany)*

**Repetition.** In all three countries the adolescents agreed that the criterion of repetition can differentiate between a joke and an intentional attack and it can characterise the severity of the action. One of the German groups stated explicitly that the behaviour can not be unintentional anymore if it is repeated. Thus repetition and intention are perceived as related. One of the German focus groups disagreed and said that defining this behaviour as bullying does not depend on repetition, but rather on the

content of the text messages. Also, when the Italian moderator asked the Italian participants to think about the visual scenario, where the behaviour is done once but it is spread to a large audience through the internet, females said that it can be damaging for the victim although it is done only once.

*"Given that in this case the picture was sent also to other people, even if it is done once it can be very bad for the victim." (Italy)*

*"It is harassment if it is repeated and it is constant, but if it is done once it is not harassment." (Spain)*

*"Yes, then it is not a joke anymore." (Germany)*

**Publicity.** For Italian males publicity can change the intention of the acts, connoting blackmail or defamation. Italian females paid more attention to the relation between anonymity, publicity and intentionality: e.g., if the behaviour is done by an anonymous person to a large audience, they cannot perceive if the act is done intentionally or not. In all countries, students rated public cyberbullying as the most serious incident, because of the role of the bystanders. The victims might be worried about what the other people think about them. However, this criterion is not necessary to define bullying. In the German focus groups, each person receiving the information about the victim seemed to be counted as an additional incident, manifested in the terms used for this behaviour such as mass bullying or multiple bullying.

*"If it is private it is blackmail; if it is public it is defamation." (Italy)*

*"If it's a joke between two friends, does not care; if other people are involved maybe they can't understand if it's a joke or not" (Spain)*

**Anonymity.** In Italy, the criterion of anonymity mainly relates to different reactions of the victims and connotes the intentionality and the nature of the act. In all

countries, anonymity is important for the impact on the victim, but not as a definitional criterion to discriminate cyberbullying from non-bullying incidents. Not knowing who the contents are from can raise insecurity and fear while the perpetrator being someone the students know could hurt more if it was someone they trusted or were friends with. On the level of personal relationships, however, coping is easier. The anonymous scenario was perceived as worse than the control scenario.

*"If you know the person, you can have a talk, positively or negatively and you can better understand if it is a joke or not" (Italy)*

*"If you know a person, you can know how he/she could behave, but if you don't know ..." (Spain)*

*"Yes, it's actually disappointing when it's someone you trust and so on. However, on the other side it's bad if you don't know who it is because then, in principle, it could be anyone" (Germany)*

## 3.6 Discussion

The present study contributes significantly to our knowledge of adolescents' understanding of cyberbullying and provides relevant suggestions about which are the best behaviours to represent the construct and the relevant criteria to define the phenomenon. Furthermore the cross-cultural comparison between the three non-English speaking countries, Italy, Spain and Germany, is the first attempt to disentangle some difficulties related to the use of English terms to label cyberbullying.

Overall, although the term bullying emerged spontaneously through all the focus groups in each country, the term cyberbullying was spontaneously proposed only by German adolescents (Cyber-Mobbing). This could be related to the effectiveness of an awareness-raising campaign in Germany supported by the European Union. Apart from this, the subject of Cyber-Mobbing has been covered widely and regularly in the

German media during the last year. In Italy adolescents spontaneously proposed the term virtual bullying and other terms involving electronic bullying, internet or on-line bullying. However, at the end the majority of them chose cyberbullying. The best labels for cyberbullying in Spain were harassment and abuse. These are the two terms most often used to label bullying behaviour (Ortega et al., 2001) without any reference to the cyber or virtual network.

In line with the studies on bullying (Smith et al., 2002) cultural specificities for the translation of bullying are still present, for example the use of specific words in each culture such as *bullismo* in Italy, *acoso* in Spain and *mobbing* in Germany. In relation to the word cyber, results from focus groups suggested that not all the adolescents need to differentiate bullying across contexts. Furthermore, the word cyber is not widely used by adolescents, particularly in Latin languages, although it is present in each dictionary.

Thus, trying to answer to the key question which term best to use to label cyberbullying in each country we propose to use cyber-mobbing in Germany, virtual or cyber- bullying in Italy, and harassment or harassment via Internet or mobile phone in Spain.

Pertaining to the different behaviours representing or not representing the cyberbullying construct, we can see that Italy and Germany are in accord mentioning some doubts in relation to whether impersonation is a good example of cyberbullying acts, whereas Spanish adolescents declared that all the four types are cyberbullying. However, looking at Table 3, impersonation is the only behaviour where no label specifically related to bullying or harassment is present across countries. Furthermore, Italian and German adolescents agreed that this behaviour is more related to legally relevant matters, and in Spain this is the only case where the term crime is used. Thus, these results seem to be in contrast with the categorization proposed by Willard (2007),

suggesting that impersonation cannot be considered fully as a (cyber)bullying behaviour. Further studies need to deepen this issue more thoroughly.

A final consideration related to the labels concerned the use and the relevance of privacy violation in Italy and Spain, but not in Germany. This result can be affected by the actual relevance of this issue in each country: for example, in Italy and in Spain the problem of privacy law is a big issue to be solved, and media are very focused on this topic. In Germany, many of the legal areas touched by cyberbullying are already mentioned in the criminal code under several different offences and even an anti-stalking law although none of them specifically refer to the cyber context.

In relation to the three bullying criteria, results showed that the imbalance of power can not actually be viewed independently of the intent to harm. However, all participants agree that if the victim is affected by the behaviour then the behaviour constitutes bullying. Results suggested that imbalance of power cannot be defined in terms of higher levels of media literacy of the perpetrator or in terms of the inability of the victim to defend him/herself. Thus, the issue related to the definition of power imbalance in cyberbullying is still open. For the majority of the students the intention to harm is not the only important characteristic to define bullying, because the effect on the victims and his/her perception of the acts can also be more relevant than the intention of the aggressor. Repetition is a very strong criterion to be used for the definition because it can differentiate between a joke and an intentional attack and it can characterise the severity of the action. However, Italy and Germany paid attention to the relation between repetition and publicity: if the act is public and thus it is sent (or showed) to several people, although it is done only once this can be considered as done several times. The terms proposed by German adolescents well represent this meaning: mass bullying or multiple bullying. The other two additional criteria, anonymity and publicity, do not constitute a requisite for labelling an action as cyberbullying, but they

are relevant because they connote the severity and the nature of the attack and the victim reaction. Overall, we think that the results associated with the criteria used for the definition of cyberbullying are particularly relevant. It seems that in order to define a cyberbullying act, adolescents need to know if the action is done intentionally to harm the victim, the effect on the victim and the repetition of the action (this latter criterion evaluated simultaneously with the publicity). Our results partially confirm the necessity of the three traditional criteria used to define bullying. In particular, it seems that intention is needed together with the effects on the victim. Repetition is needed with the exception for public behaviours. Definitions proposed by the literature for power imbalance in the cyber context (Hinduja & Patchin, 2007; Menesini & Nocentini, 2009a) were not supported by our results. Thus, we may ask if the problem is the definition of power imbalance or if this criterion is appropriate in order to define a cyberbullying act. In relation to the new criteria proposed by the literature, anonymity and publicity, our results suggest that they are not necessary to label an action as cyberbullying but they can connote the context (the severity and nature of the attacks, the relationship between actor and victim, the victim's reactions).

In conclusion, the present study gives some relevant suggestions to researchers and practitioners working on cyberbullying with adolescents. Using the same words and the same defining aspects as adolescents do to call and to describe this phenomenon can help adults to better understand what is the meaning, the nature and the severity of the cyber attack suggesting appropriate guidelines and intervention strategies. The use of the same qualitative methodology across countries resulted a useful strategy to compare terms and definitions of cyberbullying across three non-English speaking countries. In spite of these strengths, the study also has some limitations. First, the small number of participants for each country and the convenience sampling limit the generalizability of the results. Second, differences in ages across countries can affect results: however, we

found similarity across countries although different ages characterize the samples. Finally, cultural aspects related to the European regions can be present and they cannot be generalized: for instance we might ask if results related to the impersonation typology can be the same in other non-European cultures.

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# 4 Study 2: Social-Behavioural Correlates of Cyberbullying

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**Author Notes**

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## 4.1 Abstract

*Background:* To date, only little research has been conducted on cyberbullying on an international level – and even less on a national basis in Germany. *Methods:* A pilot study using paper-and-pencil procedures was conducted in a school in Berlin with a sample of 71 7th-10th graders. Frequency and correlates of cyberbullying in this sample were analyzed. *Results:* Significant differences and medium effects were found for empathy and relational aggression for both victims and bullies compared to students not involved in cyberbullying, indicating that victims and bullies show less empathy and more relational aggression.

*Keywords*: cyberbullying, correlates, empathy, internet, mobile phone

Social-Behavioural Correlates of Cyberbullying in a German Student Sample

## 4.2 Introduction

With almost all German households owning mobile phones (99%), personal or laptop computers (99%) and having Internet access (96%) (MPFS, 2008), electronic media play a central role in children's and adolescents' lives in Germany and also pose a new venue for potentially harmful behaviour and experiences such as cyberbullying. Beside first prevalence studies on cyberbullying (Katzer, this issue), there is a lack of studies on risk and protective factors. Impulses for research on this issue can be gained from research on traditional bullying which has shown low scores on empathy to be associated with the status of bully (Jolliffe & Farrington, 2006). Empathy is viewed as the combination of two functionally different aspects: cognitive and affective empathy, with cognitive empathy being the ability to understand another person's emotions (perspective taking) and affective empathy being the affective response to someone else's emotions (Hoffman, 1977).

Sutton, Smith, and Swettenham (1999) hypothesized that (traditional) bullies are able to process social information very accurately and can use it to their advantage rather than being socially "unintelligent" or insensible. Björkqvist, Österman and Kaukiainen (2000) found that indirect, social or relational forms of aggression correlate with social intelligence, but not with empathy; indeed, empathy can function as a mitigator between social intelligence ("adequate behaviour for the purpose of achieving desired social goals", op. cit. p. 192) and aggressive behaviour.

Here we report findings from a pilot study conducted in July 2007, designed to assess the quality of a number of measurement instruments for application in a later study with a larger sample of students, and to identify characteristics of cyberbullies und cybervictims to be targeted as potential risk and/or protective factors in a future

study. Here, we report results about (1) the frequency of cyberbullying, also compared to traditional bullying, (2) the overlap between cyberbullying and -victimization, and (3) whether students involved in cyberbullying show less empathy and perspective taking and more relational aggression and social intelligence than students not involved.

## 4.3 Method

### Participants and Procedure

The convenience sample of this study included 71 students (26 male, 47 female) from a $7^{th}$, an $8^{th}$ and a $10^{th}$ grade of one secondary school (Gymnasium) in Berlin, Germany. Students were on average aged 14.05 years (SD = 1.20). An anonymous questionnaire was used including self-report and peer-rating instruments and administered during regular school lessons. Students were assured of voluntariness and anonymity before the questionnaires were handed out. They were provided with the definition of bullying from the Olweus Bully/Victim Questionnaire (2000) before answering questions about bullying and cyberbullying.

### Measures

The Chat Bully and Chat Victim Scales developed by Katzer and colleagues (2009a, b) and the partly revised BVQ (Olweus, 2000) were adapted and extended to bullying using E-mail, mobile phones and Internet in general ("Internet victim/bully" Cronbach's alpha = .93 and .90, respectively; "mobile phone victim/bully" Cronbach's alpha = .90 and .83, respectively; "E-mail victim/bully" Cronbach's alpha = .92 and .79, respectively). For school victimization and school bullying the partly revised BVQ (Olweus, 2000) was used (Cronbach's alpha = .77 and .45, respectively). The items were treated as single screening items and the bully and victim status was dummy coded.

Empathy, perspective taking and social intelligence were assessed through the Peer Estimated Empathy (PEE) of Kaukiainen et al. (1995a; German by Scheithauer & Bull, 2006; Cronbach's alpha = .89), Peer Estimated Social Intelligence (PESI) of Kaukiainen et al. (1995b; German by Scheithauer & Bull, 2006; Cronbach's alpha = .80) and the (self reporting) Perspective Taking Scale from the Interpersonal Reactivity Index (IRI) by Davis (1980; German by Kunter, Schümer, Artelt et al., 2002; Cronbach's alpha = .80). Relational aggression was assessed through peer-ratings using the Children's Social Behavior Scale (CSBS) by Crick and Grotpeter (1995; German by Scheithauer & Bull, 2006; Cronbach's alpha = .93). Peer-rating scores were z-standardized within each class.

## 4.4 Results

**Frequency of cyberbullying**

In total, 15.5% ($N = 11$) had been victims of cyberbullying. 14.1% were victimized regularly (at least two or three times a month) in the Internet, 5.6% by mobile phone and 4.2% by E-mail. Some of the students were victimized in more than one way. A total of 16.9% ($N = 12$) identified themselves as cyberbullies, 15.5% by the Internet, 8.5% by mobile phone and 5.6% by E-mail. Compared to traditional bullying (9.9% victims, 7.0% bullies), cyberbullying was reported more often in this sample.

**Overlap between cyberbullying and cybervictimization**

Cyberbullies (58.3% (7)) also reported being cybervictims. A chi-square analysis indicates that cyberbullies are more often also cybervictims than expected by chance, $\chi^2$ (1, $N = 71$) = 20.24, $p = .000$.

**Social-behavioural correlates of cyberbullying**

Differences between students involved in cyberbullying and those not involved were analyzed using Kolmogorov-Smirnov *z* tests, see Table 6. Both victims and bullies showed significantly less empathy than students not involved in cyberbullying. Effect sizes (*r*) show a medium effect for both comparisons. Also, both victims and bullies showed significantly higher levels of relational aggression; effect sizes show a medium effect for both groups. For perspective taking, neither significant differences nor any sizeable effect could be found within this small sample. A small effect was found comparing social intelligence between victims and non-victims (victims scoring lower, $r$ = -.13), but this too was not significant.

Table 6: Means (SDs in brackets) and Kolmogorov-Smirnov Z tests for differences between students involved and students not involved in cyberbullying for (a) empathy (N = 61) and (b) relational aggression (N = 60)

| | Means (SD) | Most extreme differences (absolute) | Kolmogorov-Smirnov *z* | Sig (1-tailed) | *R* |
|---|---|---|---|---|---|
| (a) Empathy | | | | | |
| Cyberbullies vs. non-bullies | -1.91 (3.18)<br>0.20 (4.29) | .46 | 1.38 | $p < .05$ | -.25 |
| Cybervictims vs. non-victims | -3.51 (3.75)<br>0.39 (3.99) | .56 | 1.55 | $p < .01$ | -.34 |
| (b) Relational aggression | | | | | |
| Cyberbullies vs. non-bullies | 1.31 (3.05)<br>-1.20 (3.23) | .41 | 1.23 | $p < .05$ | -.28 |
| Cybervictims vs. non-victims | 1.45 (2.80)<br>-1.18 (3.26) | .54 | 1.56 | $p < .01$ | -.30 |

## 4.5 Discussion

We found a higher frequency of cyberbullying compared with traditional bullying, and an overlap between cyberbullying and cybervictimization. Also, cyberbullies and cybervictims showed less empathy and higher relational aggression than students not involved in cyberbullying. The small sample size clearly is a strong limitation to the study, and its findings need to be replicated in a larger and more representative sample. Moderator and mediator effects should also be tested for in a larger sample to analyze mitigating effects of empathy on other social behavioural correlates.

The frequency of traditional bullying in this study was consistent with general prevalence rates found for bullying in German schools (e.g. Lösel, Averbeck, & Bliesener, 1997; Scheithauer, Hayer, & Petermann, 2003). However, previous studies have shown smaller frequency and prevalence rates of cyberbullying in comparison to traditional bullying. The opposite finding of the present study cannot be obviously ascribed to school type, as the school was a "Gymnasium" (grammar secondary school), the school type usually least affected by social-economic factors. However the high educational level might facilitate more sophisticated forms of bullying including electronic forms. However, girls were overrepresented in our sample, so that more indirect forms of bullying may be more common.

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# 5 Study 3: Is cyberbullying related to lack of empathy and social-emotional problems?

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## 5.1 Abstract

Examination of the longitudinal relationship between empathy, social-emotional problems and cyberbullying is still rare and the present study is one of very few. The present study assessed affective and cognitive empathy, and examined whether low scores of these at wave 1 (t1) can predict involvement in cyberbullying five months later (t2). Furthermore, it was examined whether involvement in cyberbullying at t1 predicts psychopathological symptoms and social withdrawal at t2. Participants were 77 7$^{th}$ and 8$^{th}$ grade students from a control group of a pre-/posttest short-term longitudinal evaluation study of a general anti-bullying program (mean $age_{t1}$ = 12.53 years, SD = 0.68; $gender_{t1}$ = 54.5% boys, 45.5% girls). Separate quasi-poisson regression analyses were conducted and traditional bullying and victimization were included as control variables. Low scores of affective, but not cognitive, empathy predicted cyberbullying but not cybervictimization at t2. Neither cyberbullying nor cybervictimization predict social withdrawal or psychopathological symptoms at t2 as assessed in this study. The research hypotheses were only partly supported, but the importance of (affective) empathy in cyberbullying perpetration could be shown with short-term longitudinal data.

Keywords: cyberbullying, short-term longitudinal study, empathy, social-emotional problems, adolescence

Is Cyberbullying Related to Lack of Empathy and Social-Emotional Problems?

## 5.2 Introduction

Cyberbullying is an aggressive behavior performed by an individual or group with the intention to harm others. Modern information and communication technologies are used to repeatedly and intentionally embarrass, humiliate, threaten or harass persons who cannot easily defend themselves (cf. Smith et al., 2008). For Germany, prevalence rates range from approximately 3% to 43% for victims and 8% to 33% for bullies (cf. Schultze-Krumbholz & Scheithauer, 2010). On average, international studies have shown prevalence rates of 16-18% for victims and 24% for bullies (Patchin & Hinduja, 2012; Suzuki, Asaga, Sourander, Hoven, & Mandell, 2012).

Previous studies suggest a negative relation between cyberbullying perpetration and empathy. Empathy is defined as "understanding and sharing in another person's emotional state or context" ( Cohen & Strayer, 1996, p. 988) and consists of two functionally different aspects: Certain cognitive skills required to reach an understanding of others' emotions (cognitive empathy) and responding emotionally to other persons' affective states (affective empathy; Hoffman, 1977). According to empirical research, cyberbullies display significantly less affective empathy than non-bullies according to self- (e.g. Renati, Berrone, & Zanetti, 2012; Steffgen, König, Pfetsch, & Melzer, 2011) and peer-reports (Schultze-Krumbholz & Scheithauer, 2009), but not less cognitive empathy. Regarding the interaction of both dimensions, Ang and Goh (2010) found an interaction: girls with high levels of affective empathy were less likely to be cyberbullies independent of the level of cognitive empathy whereas boys low of cognitive empathy, but high on affective empathy were cyberbullies more often.

Cyberbullying has been found to be connected with depression, anxiety and general emotional problems, both for victims and perpetrators of cyberbullying (Perren,

Dooley, Shaw, & Cross, 2010; Sourander et al., 2010; Ybarra & Mitchell, 2004). Lower scores in physical health indicators as well as increased psychosomatic symptoms such as trouble sleeping, headaches and stomach aches have also been reported (Sourander, et al., 2010). Moreover, victims were shown to display symptoms of social anxiety (e.g. Juvonen & Gross, 2008) and higher levels of social avoidance and distress in new and general situations (Navarro, Yubero, Larrañaga, & Martínez, 2012). The association between social withdrawal and cyberbullying has not been examined explicitly to date. Conclusion can only be drawn from related concepts such as the result that with increasing cybervictimization aversion to and affinity for loneliness both increase at the same time (Brighi et al., 2012). Most of these findings are cross-sectional and give no information about the sequence of events. Very little to no research has examined longitudinal links.

## 5.3 Research questions

The present study aims to analyze sequential links between cyberbullying involvement, aspects of social skills and psycho-social outcomes based on two-wave short-term longitudinal data. Testing uni-directional hypotheses using short-term longitudinal data, we expected a lack of cognitive and affective empathy to predict involvement in cyberbullying. In turn, drawing on studies about the detrimental effects of cyberbullying involvement, we hypothesized an increase in psychopathological symptoms and social withdrawal in this short time period, which we believe to represent acute stress close to recent incidents, especially for cybervictims.

## 5.4 Method

### Participants and design

Participants were 77 college preparatory high school (Gymnasium) students from one school in Bremen, Germany, who provided short-term longitudinal data for two measurement waves (t1 in November 2008, t2 in March 2009). Students attended two $7^{th}$ and one $8^{th}$ grade and had a mean age of 12.53 (SD = 0.68) years. Gender distribution was 54.5% (N = 42) boys and 45.5% (N = 35) girls. The sample was a convenience sample and was the control group of a more comprehensive evaluation study of the fairplayer.manual (Scheithauer & Bull, 2008).

### Procedure and measures

Data were collected with parents' and students' active consent using standardized student questionnaires. Data assessment took place during regular school lessons with a test instructor present in the classroom.

Under the headings "Were you bullied on the Internet/by cell phone/via e-mail in the last four weeks in the following ways?" cyberbullying and cybervictimization were each assessed with 26 items using adapted forms of the Chatvictim and Chatbully Scales by Katzer and colleagues (2009a, 2009b; cf. Schultze-Krumbholz & Scheithauer, 2009). A continuous sum score was used in the present study (Cronbach's $\alpha$ was between .71 and .95, and retest reliability $r$ was between .55** and .71** for the different subscales and measurement occasions). Using a similar heading referring to the school context, traditional bullying and victimization were assessed with seven items each using the partly revised version of the Bully/Victim Questionnaire (BVQ) by Olweus (2000) (Cronbach's $\alpha_{t1}$ = .90 and .93, respectively). The scores on the respective items were summated again.

Further predictor and outcome variables were assessed as follows: Readiness to show affective empathy with one of the stimulus situations (child gets slapped by mother on the street) and the respective seven items from the Sympathy Reactivity Questionnaire (Volland, Ulich, Kienbaum, & Hölzle, 2008) (Cronbach's $\alpha = .89$). A sympathy measure was chosen because sympathy can be conceptualized as an outcome of affective empathy and there is no clear distinction between it and affective empathy (Eisenberg, 2000; Eisenberg, Eggum, & Di Giunta, 2010). A concrete stimulus situation was believed to be more valid than self-reports on very general situations. Cognitive empathy was assessed with eight items of the perspective-taking subscale from the German version of the Interpersonal Reactivity Index (IRI; Lamsfuss, Silbereisen, & Boehnke, 1990) (Cronbach's $\alpha = .89$), social withdrawal with the seven-item "Withdrawn" subscale of the German version of the Youth Self Report (YSR; Döpfner, Berner, & Lehmkuhl, 1994) (Cronbach's $\alpha_{t1} = .69$ and $\alpha_{t2} = .80$) and psychopathological symptoms – also on a subclinical level – with the German version of the Symptom Checklist Short Version-9 with nine items (Klaghofer & Brähler, 2001) (Cronbach's $\alpha_{t1} = .83$ and $\alpha_{t2} = .81$).

**Analyses**

Two separate hierarchical quasi-poisson regression analyses were conducted using the R program (Version 2.15; R Core Team, 2012) to account for non-normal distribution of the data and to analyze chronological sequences. Missing data was multiply imputed (10 datasets) using the Amelia II package (Honaker, King, & Blackwell, 2011) and scales centered for analyses to improve interpretability. For model comparisons $\chi^2$ deviance tests were computed (Asparouhov & Muthén, 2010).

Due to the consistently shown co-occurrence with traditional bullying and victimization (ranging anywhere between 50% and 90% overlap; cf. Olweus, 2012)

these were included in the analyses. Furthermore, previous involvement in cyberbullying was controlled for and interaction terms were included for the two components of empathy, and psychopathological symptoms and social withdrawal.

## 5.5 Results

As descriptive analyses revealed outliers for many of the examined variables, mean values and standard deviations were winsorized for subsequent analyses using the psych package (Revelle, 2013). Winsorized means reduce distortions by outliers while at the same time all cases are retained for analysis; scores of outliers are replaced by the closest valid scores. In the present study, scores below the fifth and above the 95$^{th}$ percentile were replaced. Descriptive statistics can be found in Table 7.

Table 7: Descriptive statistics of key variables before imputation.

| | T1 | | | T2 | | |
|---|---|---|---|---|---|---|
| Variable | Mean | SD | N | Mean | SD | N |
| Cybervictimisation | 1.71 | 3.44 | 76 | 0.66 | 1.41 | 73 |
| Cyberbullying | 0.61 | 1.23 | 76 | 0.78 | 1.67 | 73 |
| Traditional victimization | 1.67 | 2.27 | 76 | - | - | - |
| Traditional bullying | 1.34 | 1.93 | 76 | - | - | - |
| Empathy | 3.87 | 0.84 | 75 | - | - | - |
| Perspective-taking | 1.25 | 0.62 | 76 | - | - | - |
| Psychopathological symptoms | 0.82 | 0.68 | 73 | 0.54 | 0.43 | 65 |
| Social withdrawal | 0.54 | 0.90 | 76 | 2.30 | 2.34 | 76 |

Note: all indicators were winsorized (trim = 0.05).

For the prediction of cybervictimization and cyberbullying at t2 the controlling variables were included in a first step: cybervictimization, cyberbullying, traditional

victimization and traditional bullying, all at t1. In a second step, affective empathy, cognitive empathy and the interaction between both at t1 (variables related to the research questions) were further added.

The regression model for cybervictimization improved marginally ($p < .10$) significantly in the second step ($\chi^2 = 7.225$, df = 3, $p = .07$). In both steps only cybervictimization at t1 was a marginally significant predictor of cybervictimization at t2 ($e^B = 1.15$, $p = .06$), however, indicating stability across time to some extent, but no predictive value of the other variables.

Similarly, for cyberbullying step 2 of the regression was also marginally significant ($\chi^2 = 7.565$, df = 3, $p = .06$) compared to step 1. Being a traditional victim at t1 and below-average t1 empathy scores significantly predicted being a cyberbully at t2 (see Table 8). The interaction between affective and cognitive empathy was a marginally significant predictor.

Table 8: Prediction of cyberbullying at t2 by control variables and empathy.

| | *B* | *SE B* | $e^B$ | *p* |
|---|---|---|---|---|
| *Step 1* | | | | |
| Intercept | -0.46 | 0.31 | | .14 |
| Cybervictim T1 | 0.01 | 0.07 | 1.01 | .83 |
| Cyberbully T1 | 0.17 | 0.13 | 1.18 | .21 |
| Traditional victim T1 | 0.20 | 0.11 | 1.22 | .08+ |
| Traditional bully T1 | 0.07 | 0.09 | 1.07 | .46 |
| *Step 2* | | | | |
| Intercept | -0.71 | 0.38 | | .06+ |
| Cybervictim t1 | -0.07 | 0.09 | 0.94 | .46 |
| Cyberbully t1 | 0.15 | 0.15 | 1.16 | .32 |
| Traditional victim t1 | 0.33 | 0.13 | 1.39 | .01* |
| Traditional bully t1 | 0.04 | 0.08 | 1.04 | .67 |
| Cognitive empathy t1 | -0.10 | 0.63 | 0.91 | .88 |
| Affective empathy t1 | -1.34 | 0.36 | 0.26 | .00*** |
| Cognitive x affective empathy t1 | -1.01 | 0.57 | 0.36 | .08+ |

Note: $e^B$ = transformed Beta weights according to Cohen, Cohen, West and Aiken (2003); significance levels: $^+$ marginally significant at $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Potential outcomes at t2 were also analyzed in two steps. The first step included withdrawal and psychopathological symptoms as well as traditional bullying and victimization at t1. In the second step cybervictimization and cyberbullying at t1 were added to the regression model.

Psychopathological symptoms at t2 were not predicted better by including the cyber indicators in the second step compared to the first step ($\chi^2 = 0.406$, df = 2, $p = .82$). Only the autoregressive path was significant as well as increased levels of withdrawal at t1.

For social withdrawal, step 2 was a significant improvement of the regression model ($\chi^2 = 57.199$, df = 2, $p < .001$). According to the results, withdrawal was significantly predicted by lower levels of traditional bullying (see Table 9).

Table 9: Prediction of withdrawal at t2 by control variables and cyberbullying involvement.

| | *B* | *SE B* | $e^B$ | *p* |
|---|---|---|---|---|
| *Step 1* | | | | |
| Intercept | 0.75 | 0.12 | | .00*** |
| Withdrawal T1 | 0.20 | 0.12 | 1.22 | .11 |
| Psychopathological symptoms T1 | 0.18 | 0.19 | 1.20 | .35 |
| Traditional victim T1 | 0.07 | 0.05 | 1.07 | .17 |
| Traditional bully T1 | -0.13 | 0.07 | 0.88 | .08$^+$ |
| *Step 2* | | | | |
| Intercept | 0.73 | 0.12 | | <.00*** |
| Withdrawal t1 | 0.18 | 0.12 | 1.20 | .13 |
| Psychopathological symptoms t1 | 0.20 | 0.20 | 1.22 | .31 |
| Traditional victim t1 | 0.03 | 0.08 | 1.03 | .68 |
| Traditional bully t1 | -0.16 | 0.08 | 0.85 | .04* |
| Cybervictim t1 | 0.02 | 0.05 | 1.02 | .76 |
| Cyberbully t1 | 0.12 | 0.10 | 1.13 | .22 |

Note: $e^B$ = transformed Beta weights according to Cohen et al. (2003); significance levels: $^+$ marginally significant at $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

## 5.6 Discussion

The present study is one of the first (short-term) longitudinal examinations into cyberbullying, its precursors and consequences in Germany. Chronological sequences were analyzed using separate quasi-poisson regressions to account for the non-normal distribution of the data. Results showed a marginally significant stability of cybervictimization. Above-average scores of cybervictimization five months prior was the only noteworthy predictor of all the variables included. However, stability of cybervictimization has not been established consistently in previous research (e.g. Gradinger, Strohmeier, Schiller, Stefanek, & Spiel, 2012). Apart from this, the results show that the extent of empathy does not constitute a risk factor for cybervictimization in the present subsample. This might indicate that there are no clear victim

characteristics, but rather that anyone can become a victim independent of affective and cognitive empathy. Other research points to risky online behaviour, for example, as an important risk factor for victimization (e.g. Katzer, et al., 2009b).

Contrarily, below-average scores of affective empathy at t1 predict higher levels of cyberbullying perpetration about five months later lending (short-term longitudinal-based) support to our research hypothesis and previous research results associating cyberbullying perpetration with a lack of affective empathy (e.g. Renati, Berrone, & Zanetti, 2012; Steffgen, König, Pfetsch, & Melzer, 2011). The cognitive component did not contribute to the prediction of cyberbullying. A further noteworthy result was that increased levels of traditional victimization at t1 predicted future cyberbullying perpetration which lends support to the controversial retaliation thesis (Ybarra & Mitchell, 2004).

Concerning potential consequences of cyberbullying and cybervictimization our hypothesis was not confirmed as the results show that at least across the short term of five months both involvement types do not predict psychopathological symptoms or social withdrawal. Possibly, these might only be affected in the long term. Alternative explanations for the results of the previous cross-sectional results might be that the reported problems are acute stress reactions at the time of involvement or that the identified victims and perpetrators have already been exposed to cyberbullying for some time. The future challenge will be to disentangle the chronology. However, it might also be possible that non-significant results in the present study are a sheer effect of low power of the present analyses due to a small sample size and an even smaller prevalence of cyberbullying and cybervictimization within this sample.

A further limitation of the present study is the short time interval between waves, but research has shown cyberbullying to be less stable than traditional bullying (e.g. Low & Espelage, 2013) so the short interval was believed necessary to unveil

direct effects. Also, the sample only included students from the highest track of secondary school (Gymnasium) and was thus most likely biased regarding educational and socio-economic background. Further, a larger sample size would have been preferable, but was not viable within the larger framework which this study was part of. To account for the lack of robustness of such a small sample respective statistical methods were implemented in the analyses. In future investigations, additional variables and potential mediators should be included as only very few direct effects could be observed. Also, other directions of sequence should be tested which were omitted here (e.g. does withdrawal lead to increased perpetration or victimization levels?). For the moment, the study is a valuable contribution nonetheless as it presents one of the first (short-term) longitudinal studies into precursors and consequences of cyberbullying in Germany.

## 5.7 References

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# 6 Study 4: Emotional and behavioral problems in the context of cyberbullying

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## 6.1 Abstract

Although many studies have reported on internalizing and externalizing problems related to cyberbullying roles, there is a lack of longitudinal research in this area. This study reports (1) cross-sectional data from 412 German middle-school students to examine differences between cyberbullies, cybervictims and cyberbully–victims compared to non-involved students in regard to internalizing (depressiveness and loneliness) and externalizing (instrumental and reactive aggression) problems; and (2) longitudinal data from 223 students about links of cyberbullying and cybervictimization with internalizing and externalizing problems across two measurement occasions, analyzed using path analysis (separately by gender). Self-report measures were used. The results revealed no significant differences between groups in internalizing problems, but all three cyberbullying groups differed significantly from the non-involved group in externalizing problems. Female victims showed increases in externalizing problems while male victims did not show changes across time in either internalizing or externalizing problems. Male bullies reported decreases in internalizing problems across time. For boys, scoring high in both cyberbullying and cybervictimisation led to increases in loneliness, while for girls this predicted decreases in reactive aggression.

*Keywords*: cyberbullying; cybervictimisation; depression; loneliness; aggression; longitudinal study

Emotional and behavioural problems in the context of cyberbullying: a longitudinal study among German adolescents

## 6.2 Introduction

Cyberbullying has become a growing concern in Germany since the first media reports in 2004 (Jäger, Arbinger, and Lissmann 2010). In 2011, public awareness reached a peak when a website encouraged students throughout Germany to spread gossip and rumours about each other, following the model of a popular American teen television series. It guaranteed students complete anonymity and that the operators would not share identity information with the authorities. The website was very popular with adolescents. Apart from online threats and insults there also were offline consequences such as physical attacks between perpetrators and victims (Lischka, Stöcker, and Ternieden 2011). These incidents put pressure on schools and policy makers to adequately address the problem of cyberbullying.

Internationally, most early studies used their own definition of cyberbullying while later studies relied on previous and widely accepted definitions, such as the one by Smith et al. (2008), which is used in many European studies. To provide an integrative definition of a number of generally accepted, but partly inconsistent definitions, Tokunaga (2010, 278) proposes this synthesis: 'Cyberbullying is any behavior performed through electronic or digital media by individuals or groups that repeatedly communicates hostile or aggressive messages intended to inflict harm or discomfort on others'. We used this definition in the present study, not regarding the additional criteria of anonymity and publicity which have also been examined in some studies focusing on the definition and, for example, adolescents' understanding of it (Menesini et al. in press; Nocentini et al. 2010).

Research on cyberbullying in Germany dates from 2007 (Jäger, Arbinger, and Lissmann 2010). The prevalence rates of cyberbullying in Germany range from 7.6% to 32.8% for cyberbullies and from 3.3% to 43.1% for cybervictims (Schultze-Krumbholz and Scheithauer 2010). The overlap between cyberbullies and cyber-victims has been little documented, but Schultze-Krumbholz and Scheithauer (2009a) found a prevalence of 6.8% for so-called bully–victims in a small, non-representative sample. As cyberbully–victims have been shown to be impacted most seriously by cyberbullying (Gradinger, Strohmeier, and Spiel 2009), this group should be taken into account in studies on cyberbullying.

Many studies have documented adverse effects of participation in traditional bullying. Also, many studies have shown substantial overlap between participation in traditional and cyberbullying (Tokunaga 2010). However, differing definitions and unique characteristics support the view that both should be treated as different although not independent phenomena. For example, in our own studies, 8.8–14.1% of participating students were involved solely in cyberbullying, 7.0–14.2% were involved only in traditional bullying and the overlap ranged from 8.5% to 9.8% (Schultze-Krumbholz and Scheithauer 2009a). The focus of the present study is on the impact of cyberbullying on all involved adolescents, so we do not review the research on traditional bullying further.

**Emotional and behavioural difficulties associated with cyberbullying**

Several cross-sectional studies, mainly correlational or regression studies, have examined the co-occurrence of internalising and/or externalising difficulties with involvement in cyberbullying (as bully, victim or bully–victim) among adolescents. Most of the reported studies – unless indicated otherwise – used student samples.

**Internalising problems and cyberbullying**

Many studies have focused on internalising problems, especially depression or depressive symptoms, and emotional problems in general. Studies from the USA, Spain and Germany report that large proportions of cybervictims experience a range of negative emotions such as sadness, anxiety, embarrassment and helplessness (Finkelhor, Mitchell, and Wolak 2000; Ortega et al. 2009; Raskauskas and Stoltz 2007; Techniker Krankenkasse 2011). Cybervictims feel more negatively affected if they are victimised frequently (Ortega et al. 2009). Also, cybervictims felt more suspicious of their environment when the perpetrator was anonymous (Raskauskas and Stoltz 2007). In a population-based study with Finnish adolescents, Sourander et al. (2010) found cybervictimisation to be associated with emotional problems generally and physical health indicators. In Germany, cybervictims reported psychosomatic symptoms such as trouble sleeping, headaches and abdominal pain (Techniker Krankenkasse 2011). In a US study, somatisation symptoms were also significantly correlated with cybervictimisation (Carter 2011), although the depression scale was not. Dempsey et al. (2009) found cybervictimisation to be associated with social anxiety, but not depression, in a US sample.

In regression analyses of a Swiss and an Australian student sample, Perren et al. (2010) found that cybervictimisation predicted depressive symptoms even when controlling for traditional victimisation. This effect was culturally independent and not moderated by country. Depressive symptoms were also predicted by cybervictimisation in Turkey (Erdur Baker, and Tanrikulu 2010).

Analyses of other involvement groups in the USA also showed bullies and bully–victims to be highly depressed (Ybarra and Mitchell 2004a, 2004b) Sontag et al. (2011) found that both cyberbullies and cybervictims showed higher levels of anxiety and depression. In Austria, differentiated patterns for involvement groups emerged, with

victims showing more internalising problems (depressive and somatic symptoms) and bully–victims showing both internalising and externalising behaviour (Gradinger, Strohmeier, and Spiel 2009).

**Externalising problems and cyberbullying**

Cyberbullying and cybervictimisation have also been linked to externalising problems. In Austria, Gradinger, Strohmeier, and Spiel (2009) reported more externalising problems (instrumental and reactive aggression) only for cyberbullies and cyberbully–victims. Ybarra and Mitchell (2004a, 2004b) found more online harassers in the USA to be delinquent, and many bully–victims to exhibit problem behaviours. But some studies also found externalising problems associated with cybervictimisation. In Finland, Sourander et al. (2010) found that cyberbullies reported hyperactivity, conduct problems and other externalizing behaviours, but cybervictimisation was linked to behaviour problems with peers. Sontag et al. (2011) found high scores on proactive and reactive aggression scales for both cyberbullies and cybervictims in a US sample. In Germany, Schultze-Krumbholz and Scheithauer (2009b) found that both cybervictims and bullies were more relationally aggressive than non-involved students. Katzer, Fetchenhauer, and Belschak (2009a, 2009b) identified antisocial online behaviour and delinquency, among others, as predictors of chat bullying and antisocial online behaviour, among others, as a predictor of chat victimization in Germany. Cybervictims can also demonstrate externalising emotional reactions. Ortega et al. (2009) found a group of Spanish cybervictims who reacted angrily to the experience; in a German sample two-thirds of cybervictims reported feeling angry (the most frequent answer) when asked what being cyberbullied made them feel like (Techniker Krankenkasse 2011), and in a US sample cybervictims felt angry and annoyed (Carter 2011).

**Gender differences in cyberbullying and internalising and externalising problems**

When examining internalising and externalising problems associated with cyberbullying, gender differences need to be taken into account. So far, no clear patterns have emerged in previous research regarding the gender distribution in cyberbullying and cybervictimisation (Tokunaga 2010). In Germany, studies either report no significant differences or report boys to be involved more often (Schultze-Krumbholz and Scheithauer 2010).

There are clear gender differences in internalising and externalising problems. During adolescence, girls tend to show more internalising problems such as depression and anxiety, while boys exhibit more externalising problems such as conduct disorders or aggression (Crick and Zahn-Waxler 2003). This may interact with involvement in cyberbullying. Ortega et al. (2009) found girls to be more emotionally impacted by cybervictimisation than boys. More girls than boys belonged to a cluster of students showing a range of negative emotions, while more boys were 'not bothered' by the experience.

**Summary**

Many studies have found cybervictimisation to be associated with internalising problems, while cyberbullies showed higher levels of externalising problems. However, some studies also showed negative emotional effects on cyberbullies, such as depression. In addition, aggression levels were higher in victims than with non-involved students. There is a clear picture of the detrimental effects of cyberbullying on all the involved individuals. Gender may also be a factor but it has been little investigated in this context. Despite a range of cross-sectional studies, little is known with regard to the longitudinal impact of cyberbullying, although Williams and Guerra (2007) analysed school context variables and normative orientation as predictors of cyberbullying. Thus,

previous research results only allow conclusions to be drawn about the co-occurrence of cyberbullying and cybervictimisation with emotional and behavioural problems, but do not provide insight into whether these problems are actually caused by cyberbullying and cybervictimisation. However, knowledge about the long-term impact of cyberbullying involvement on internalizing and externalising problems is crucial for the development of prevention and intervention strategies.

**Research objectives**

Given the lack of longitudinal research on cyberbullying with regard to emotional and behavioural outcomes, the main aim of this study was to gain insight into consequences of cyberbullying and cybervictimisation and to find clear indications of the sequence using longitudinal data. We operationalised internalising (or emotional problems) as depressiveness and loneliness, and externalising (or behavioural problems) as instrumental and reactive aggression. Therefore, the research questions were:

(1) Do the conventional groups (cyberbullies, cybervictims and cyberbully–victims) differ in internalising and externalising problems?

    We hypothesised that cybervictims should show higher levels of depressiveness and loneliness than cyberbullies. Cyberbullies are expected to show higher levels of instrumental and reactive aggression than victims. Cyberbully–victims should show higher scores on all problem variables than non-involved students and cybervictims.

(2) Does the extent of involvement in cyberbullying as perpetrator or victim predict increases in internalising and/or externalising problems at a later time-point?

    As previous research shows gender differences in internalising and externalizing problems, both types of problems were included in the model so as not to

confound results about the consequences of cyberbullying with actual gender differences. We hypothesised that boys and girls will show different paths regarding the impact of cyberbullying and cybervictimisation, with girls showing more internalising and boys showing more externalising problems.

## 6.3 Method

### Design

Data were collected as part of a comprehensive evaluation study of a cyberbullying prevention programme ('Medienhelden') (Schultze-Krumbholz et al. 2012). The analyses are based on the pre-measurement (t1, in January/February 2011) and post-measurement (t2, in April to June 2011) of the control group participants. The control group did not receive any kind of intervention.

### Participants

Participants were 452 secondary school students from 16 classes from five different schools in Berlin, Germany. In total, 412 students took part in the study at t1, and 307 at t2. A total of 267 students participated at both measurement points (attrition rate about 35%). Besides normal attrition (students sick on the assessment day, leaving the class/school, etc.), there were organisational problems with one school and the long-term absence of one of the coordinating teachers. Hence, whole classes did not take part at t2 (the school was still represented by classes which did take part at t2 and therefore the attrition was not selective regarding whole schools). The attrition was not systematic as regards involvement in cyberbullying. For the longitudinal analyses 44 students were excluded owing to missing values on any of the study variables, leaving 223 to be included in the analyses. Almost all students (97%) were born in Germany.

**Cross-sectional sample**

The cross-sectional sample of 412 students consisted of 237 girls (52.4%) and 212 boys (46.9%) (three did not indicate gender). Students were on average aged 13.35 years (SD = 1.04), and attended grade 7 (32.3%), grade 8 (49.3%), grade 9 (13.1%) and grade 10 (5.3%). Distribution across schools was School A 31.1%, School B 11.2%, School C 18.2%, School D 22.6% and School E 16.7%.

**Longitudinal sample**

The longitudinal sample had 223 students, consisting of 109 girls (48.9%) and 114 boys (51.1%). The mean age was 13.14 years (SD = 0.87), with students in grade 7 (37.7%), grade 8 (51.6%), grade 9 (7.6%) and grade 10 (3.1%). The high attrition at one school led to a changed distribution across schools: School A 14.7%, School B 10.3%, School C 18.8%, School D 35.0% and School E 21.1%.

**Procedure**

Schools were contacted by phone and informed about the study. If they expressed interest they were sent further information along with a consent form, which was to be returned by fax as this was needed for the permission of the Senate Department in Berlin. Parents were sent letters with information about the study and asking for their consent via the students at every measurement point. Parents' and students' informed, active consent was collected by the classroom teachers. Owing to missing parental consent or active refusal to take part, 3.1% of students were not allowed to participate.

A standardised paper questionnaire was administered during ethics school lessons by trained researchers. Students were assured of voluntariness and anonymity before the questionnaires were distributed. Ethics education was chosen as the framework for the implementation of this project as the study topic fits well into the

predefined curriculum. All students were in grades 7–10, which receive compulsory ethics education in Berlin schools.

**Measures**

All of the measures used are self-report instruments. Reported reliabilities are Cronbach's alpha and are always reported for both measurement occasions (t1 and t2). Except for the depressiveness scale, which was originally in German, all the measures were translated by the research team.

**Cyberbullying and cybervictimisation.** Cyberbullying and cybervictimisation were assessed with the DAPHNE III questionnaire (Brighi et al. 2012), developed within the framework of the project 'Cyberbullying in Adolescence: Investigation and Intervention in Six European Countries' (bullyingandcyber.net). Twelve multiple-choice self-report items listed specific behaviours for both cyberbullying and cybervictimisation. Students were asked to indicate how often they had experienced or taken part in the specific behaviour (e.g. name-calling, threatening, hacking personal accounts, embarrassing pictures) online or through a mobile phone during the previous two months, on a five-point Likert scale (0 = never to 4 = more than once a week). The reliabilities for the cyberbullying scale were $\alpha_{t1} = 0.90$ and $\alpha_{t2} = 0.94$, and for the cybervictimisation scale $\alpha_{t1} = 0.62$ and $\alpha_{t2} = 0.86$.

Students with total scores of 0–2 were categorised as not involved. Students with scores above 2 were categorised as cybervictims or cyberbullies. Participants with scores above 2 on both cyberbullying and cybervictimisation were labelled as cyberbully–victims. The four types of involvement are mutually exclusive. A score of 2 corresponds to showing or experiencing two specific behaviours 'once or twice' or showing or experiencing one specific behaviour 'once or twice a month'.

**Depressiveness.** On a six-item scale (Schwarzer and Bäßler 1999), students rated their depressive thoughts (e.g. 'I often feel sad without a reason') in depressive emotional and motivational situations by utilising a four-point Likert scale (1 = not true to 4 = completely true). Reliabilities were $\alpha_{t1} = 0.70$ and $\alpha_{t2} = 0.80$. The measure was somewhat stable across time ($r = 0.48$, $p < 0.001$).

**Loneliness.** Using the UCLA Loneliness Scale-8 (ULS-8) (Hays and DiMatteo 1987), students indicated their feeling of being separated from others on eight items (e.g. 'There is no one I can turn to') using a Likert scale (1 = never to 4 = always). Reliabilities were $\alpha_{t1} = 0.75$ and $\alpha_{t2} = 0.77$. The measure was stable across time ($r = 0.55$, $p < 0.001$).

**Instrumental aggression.** An instrumental overt aggression scale by Little et al. (2003; extended by Gradinger, Strohmeier, and Spiel 2009) was used. This has six original items, and one additional item within the cyber context ('To get what I want I often use the mobile phone or the computer to send mean text messages, e-mails, videos, or photos to others'). These were answered on a Likert scale (1 = not true to 4 = completely true). Reliabilities were $\alpha_{t1} = 0.92$ and $\alpha_{t2} = 0.95$. The measure was somewhat stable across time ($r = 0.46$, $p < 0.001$).

**Reactive aggression.** A corresponding reactive aggression scale (Little et al. 2003; extended by Gradinger, Strohmeier, and Spiel 2009) similarly had six original and one cyber-specific item ('If others have angered me, I often use the mobile phone or the computer to send them mean text messages, e-mails, videos, or photos'). These were answered on a Likert scale (1 = not true to 4 = completely true). Reliabilities were $\alpha_{t1} = 0.87$ and $\alpha_{t2} = 0.89$. The measure was stable across time ($r = 0.66$, $p < 0.001$).

**Data analysis**

The basis for comparisons between subgroups for research question (1) was the complete t1 sample (N = 412). Using a threshold on a summative scale covering different bullying episodes (see Method), cybervictimisation and cyberbullying were dichotomised to analyse for finding differences between distinct groups.

For research question (2), the longitudinal subsample of 223 students was used. Continuous variables were used, computed through mean scores. This approach was chosen because it was of interest to identify potential consequences within the general student population and not just within extreme groups. To take into account the skewness of the data, the robust estimator MLR was used during statistical analyses as suggested by Finney and DiStefano (2006). As school survey data are naturally clustered within classes, a priori analyses were conducted to test the necessity of multilevel modelling. Intraclass correlations were very low (0.01–0.06) and there were no significant group effects on any of the variables examined here. We proceeded without explicitly accounting for nested structures (cf. Snijders and Bosker 1999, 21–2). Statistical analyses were conducted using the statistics programs SPSS 20.0 (SPSS 2011) and Mplus 6.11 (Muthén and Muthén 1998–2010).

## 6.4 Results

Descriptive results for the study variables are presented in Table 10. We found no significant gender difference regarding cybervictimisation and cyberbullying. Girls showed higher levels of depressiveness and loneliness at t1, supporting the assumption of gender differences in internalising problems, but these were not statistically significant at t2. Boys persistently reported significantly higher levels of instrumental and reactive aggression than girls at both measurement occasions.

Table 10: Mean values, standard deviations and gender differences of study variables

| | Overall *M* (SD) | Girls *M* (SD) | Boys *M* (SD) | *T* | df | *p* |
|---|---|---|---|---|---|---|
| Cyberbullying t1 | 0.11 (0.35) | 0.09 (0.30) | 0.13 (0.40) | -1.175 | 405 | .24 |
| Cybervictimisation t1 | 0.09 (0.19) | 0.09 (0.20) | 0.09 (0.18) | 0.332 | 409 | .74 |
| *Internalising problems* | | | | | | |
| Depressiveness t1 | 1.50 (0.47) | 1.58 (0.50) | 1.43 (0.46) | 2.576 | 253 | < .05* |
| Depressiveness t2 | 1.49 (0.54) | 1.53 (0.48) | 1.48 (0.61) | 0.184 | 253 | .85 |
| Loneliness t1 | 1.85 (0.47) | 2.00 (0.49) | 1.79 (0.44) | 3.319 | 248 | < .01** |
| Loneliness t2 | 1.89 (0.51) | 1.96 (0.49) | 1.85 (0.53) | 1.554 | 248 | .12 |
| *Externalising problems* | | | | | | |
| Instrumental aggression t1 | 1.28 (0.48) | 1.19 (0.37) | 1.37 (0.57) | -2.300 | 217 | < .05* |
| Instrumental aggression t2 | 1.36 (0.63) | 1.23 (0.46) | 1.53 (0.75) | -3.231 | 217 | < .05* |
| Reactive aggression t1 | 1.71 (0.61) | 1.49 (0.50) | 1.95 (0.65) | -5.397 | 217 | < .001*** |
| Reactive aggression t2 | 1.71 (0.71) | 1.44 (0.54) | 1.99 (0.77) | -5.561 | 217 | < .001*** |

Note: All participants with valid scores for both measurement points of the respective study variable (i.e. longitudinal sample, N = 223) were included.

**Cross-sectional results: differences between groups at t1 (research question 1)**

At the first measurement point, 22 students (5.3%) were scored as cyberbullies, 29 (7.0%) as victims and 18 (4.4%) as both (cyberbully–victims). Multivariate analyses of variance (MANOVAs) were conducted for comparisons of the three involved groups and the non-involved group regarding the internalising (depressiveness and loneliness) and externalising (instrumental and reactive aggression) variables. Gender was not included as a covariate owing to small subgroups.

For internalising variables, the multivariate test revealed a significant effect: Pillai criterion $F(2,786) = 4.17$, $p < 0.001$, $\eta^2 = 0.03$. However, Scheffé post-hoc tests did not show any significant differences between cybervictims, cyberbullies, cyberbully–victims and non-involved students in either depressiveness or loneliness at t1.

For externalising variables, the MANOVA revealed a significant multivariate effect: Pillai Criterion $F(2,710) = 11.83$, $p < 0.001$, $\eta^2 = 0.09$. Scheffé post-hoc tests showed that all groups involved in cyberbullying scored significantly higher on instrumental aggression than students not involved in cyberbullying (Table 11). For reactive aggression the results for Scheffé post-hoc tests presented in Table 11 show that cyberbullies and cyberbully–victims scored significantly higher than non-involved students (and cyberbullies higher than cybervictims).

Table 11: Mean scores (SD in brackets) and results of Scheffé post-hoc tests of the MANOVA for differences between all involvement groups regarding externalising problems at t1

| Group | Instrumental aggression | Reactive aggression |
|---|---|---|
| | *M* (SD) | *M* (SD) |
| (a) Not involved | 1.21 (0.36)[b,c,d] | 1.63 (0.55)[b,d] |
| (b) Cyberbully | 1.81 (1.01)[a] | 2.57 (0.84)[a,c] |
| (c) Cybervictim | 1.56 (0.67)[a] | 1.87 (0.50)[b] |
| (d) Cyberbully-victim | 1.79 (0.79)[a] | 2.30 (0.87)[a] |

Note: Mean values with subscripts are significantly different by at least $p < .05$ from the respective group (a = not involved, b = cyberbully, c = cybervictim, d = cyberbully-victim).

**Longitudinal results: impact of cyberbullying on internalising/externalising problems at t2 (research question 2)**

A longitudinal path analysis was conducted and continuous variables for cybervictimisation and cyberbullying were used. A comparison of models showed separate models for girls and boys to be more adequate than one general model for the whole sample (AIC = 995.8 vs. AIC = 1033.5). As cyberbully–victims showed the worst psychosocial profiles in previous research (Gradinger, Strohmeier, and Spiel 2009) an interaction term was included in the model. This model separating by gender fits the data well on all of the conventional goodness-of-fit indices: $\chi^2(16) = 17.898$, $p = 0.275$, RMSEA = 0.03, CFI = 1.00, TLI = 0.99, SRMR = 0.03.

One of the questions of major interest is whether cyberbullying and cybervictimisation lead to detrimental outcomes. The results show different paths for girls and boys. For girls, higher levels of cybervictimisation predict increases in depressiveness, but not loneliness, over time (Table 12). However, increases in loneliness were predicted by higher depressiveness, indicating the need for more complex analyses such as mediator analyses to investigate whether depressiveness is a mediator between victimisation and loneliness.

Cybervictimisation in girls led to increased levels of reactive and instrumental aggression. However, the interaction term indicates that showing higher levels of both cyberbullying and cybervictimisation at the same time predicted decreases in reactive aggression, while pure cyberbullying again predicted increases in reactive aggression.

Taking into account autoregression, the model for girls explains 46% of the variance in depressiveness, 40% of the variance in loneliness, 66% of the variance in instrumental aggression and 82% of the variance in reactive aggression across time (Table 12). The only exception from the stability of the internalising and externalising problems across

time is presented by instrumental aggression. The level of instrumental aggression at t1 is not predictive of instrumental aggression three months later.

Summarising, for girls, cybervictimisation predicted increases in internalising as well as externalising problems. Simultaneous cybervictimisation and cyberbullying predicted decreases in parts of externalising behaviour while pure cyberbullying predicted increases in parts of externalising problems. Figure 3 gives an overview of the significant regression paths.

Table 12: Path coefficients for the prediction of internalising and externalising problems by cyberbullying, cybervictimisation and an interaction term for girls

| | Estimate | Standardised Estimate | Standard Error | p-Value |
|---|---|---|---|---|
| *Depressiveness t2* | | | | |
| Depressiveness t1 | 0.561 | 0.571 | 0.094 | <.001*** |
| Loneliness t1 | 0.104 | 0.104 | 0.090 | .25 |
| Victimisation t1 | 0.388 | 0.147 | 0.162 | <.05* |
| Interaction t1 | -1.373 | -0.059 | 1.888 | .47 |
| Bullying t1 | 0.039 | 0.033 | 0.030 | .19 |
| $N$=109, $R^2$=.46 | | | | |
| *Loneliness t2* | | | | |
| Loneliness t1 | 0.512 | 0.474 | 0.097 | <.001*** |
| Depressiveness t1 | 0.242 | 0.228 | 0.099 | <.05* |
| Victimisation t1 | 0.045 | 0.016 | 0.189 | .81 |
| Interaction t1 | -0.645 | -0.026 | 1.782 | .72 |
| Bullying t1 | 0.024 | 0.019 | 0.755 | .45 |
| $N$=109, $R^2$=.40 | | | | |
| *Instrumental aggression t2* | | | | |
| Instrumental aggression t1 | 0.423 | 0.275 | 0.323 | .19 |
| Reactive aggression t1 | 0.252 | 0.188 | 0.125 | <.05* |
| Victimisation t1 | 0.964 | 0.249 | 0.425 | <.05* |
| Interaction t1 | -7.272 | -0.215 | 3.767 | .05 |
| Bullying t1 | 0.799 | 0.461 | 0.548 | .14 |
| $N$=109, $R^2$=.66 | | | | |
| *Reactive aggression t2* | | | | |
| Reactive aggression t1 | 0.757 | 0.446 | 0.131 | <.001*** |
| Instrumental aggression t1 | 0.110 | 0.056 | 0.161 | 0.493 |
| Victimisation t1 | 0.932 | 0.190 | 0.379 | <.05* |
| Interaction t1 | -7.986 | -0.186 | 3.437 | <.05* |
| Bullying t1 | 1.217 | 0.552 | 0.581 | <.05* |
| $N$=109, $R^2$=.82 | | | | |

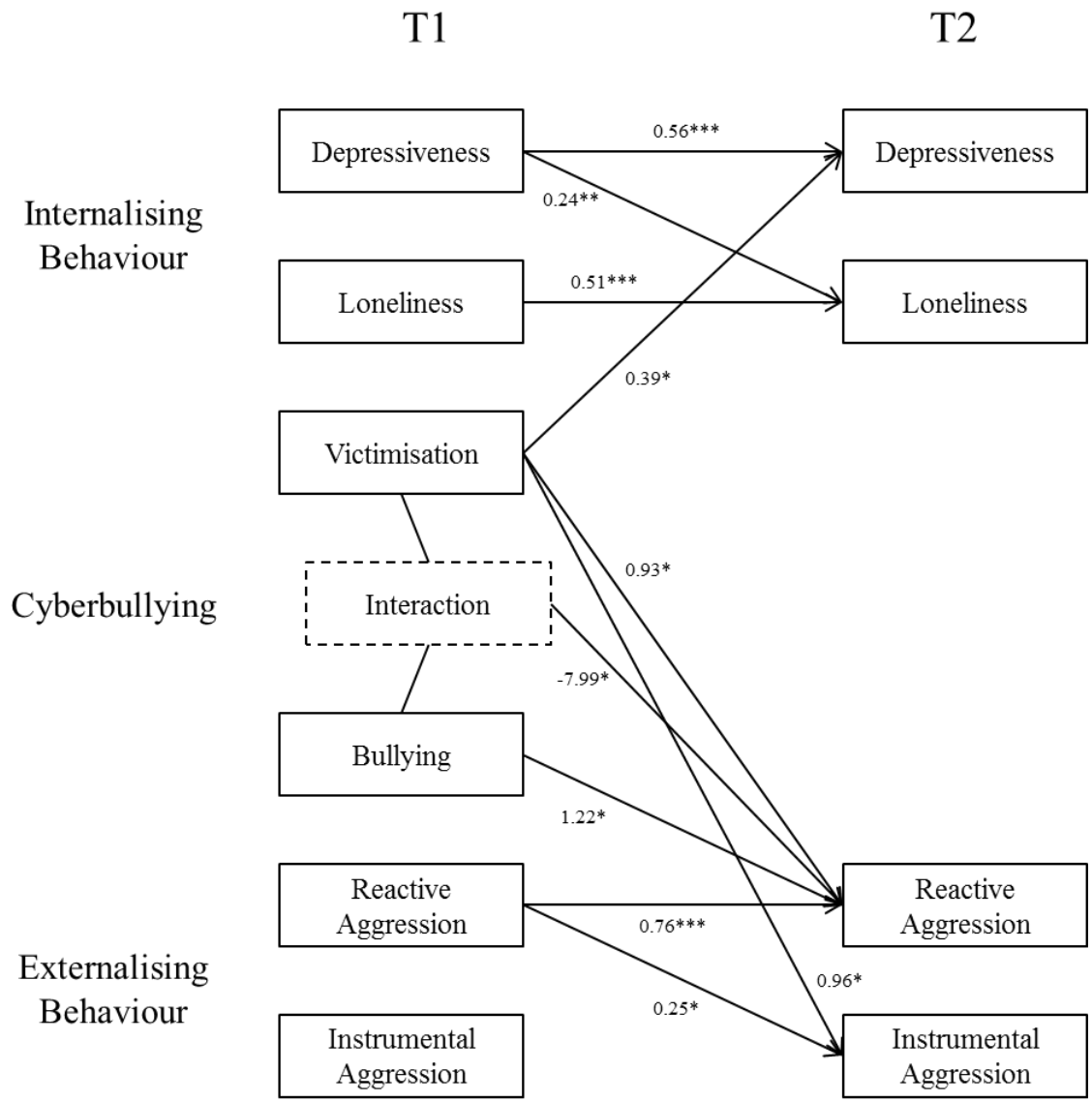


Figure 3: The final model displaying significant paths and path coefficients for predicting direct outcomes of cyberbullying for girls

For boys, pure cybervictimisation did not predict any of the emotional or behavioural difficulties (Table 13). Cyberbullying significantly predicted decreases in both depressiveness and loneliness. However, cyberbullying did not predict any changes over time in externalising behaviour, and neither did cybervictimisation, but the interaction term indicated that boys felt lonelier at t2 if they showed high levels of both cyberbullying and cybervictimisation at t1.

The model for boys explains 18% of the variance in depressiveness and 36% of variance in loneliness at t2. The autoregression of reactive aggression accounts for 34% of explained variance, while 22% of the variance of instrumental aggression at t2 was explained by a marginally significant path between reactive aggression at t1 and instrumental aggression at t2 and a number of non-significant predictors (Table 13). As for girls, the level of instrumental aggression at t1 is not predictive of instrumental aggression three months later. When comparing the proportions of explained variance, the model evidently has more explanatory power for girls than for boys.

Summarising, for boys, decreases in internalising problems were predicted by the involvement in cyberbullying, while increases in parts of internalising behaviour were predicted by simultaneous cybervictimisation and cyberbullying. Externalising behaviour was not predicted by any of the cyberbullying variables and pure cybervictimisation did not predict any internalising or externalising problems. Figure 4 illustrates the significant regression paths.

## 6.5 Discussion

The aim of this study was to explore differences among groups involved in cyberbullying, and the longitudinal impact of cyberbullying and cybervictimisation on internalising and externalising problems, analysed using a longitudinal path analysis. Cross-sectionally, we found significant differences in externalising behaviour between the groups. No significant differences in internalising behaviour were found. Unfortunately, gender differences could not be considered in this first analysis.

Investigating longitudinal links from cyberbullying to internalising and externalising behaviour, the path analysis revealed different patterns for girls and boys.

Table 13: Path coefficients for the prediction of internalising and externalising problems by cyberbullying, cybervictimisation and an interaction term for boys

| | Estimate | Standardised Estimate | Standard Error | p-Value |
|---|---|---|---|---|
| *Depressiveness t2* | | | | |
| Depressiveness t1 | 0.493 | 0.361 | 0.147 | < .01** |
| Loneliness t1 | -0.020 | -0.015 | 0.136 | .89 |
| Victimisation t1 | 0.758 | 0.160 | 0.742 | .31 |
| Interaction t1 | 0.465 | 0.115 | 0.461 | .31 |
| Bullying t1 | -0.559 | -0.241 | 0.208 | < .01** |
| $N$=114, $R^2$=.18 | | | | |
| *Loneliness t2* | | | | |
| Loneliness t1 | 0.461 | 0.413 | 0.093 | < .001*** |
| Depressiveness t1 | 0.166 | 0.146 | 0.100 | .10 |
| Victimisation t1 | 0.620 | 0.157 | 0.501 | .22 |
| Interaction t1 | 0.880 | 0.261 | 0.334 | < .01** |
| Bullying t1 | -0.493 | -0.255 | 0.164 | < .01** |
| $N$=114, $R^2$=.36 | | | | |
| *Instrumental aggression t2* | | | | |
| Instrumental aggression t1 | 0.067 | 0.052 | 0.192 | .73 |
| Reactive aggression t1 | 0.318 | 0.294 | 0.163 | .05 |
| Victimisation t1 | 0.031 | 0.006 | 0.422 | .94 |
| Interaction t1 | -0.903 | -0.198 | 0.809 | .26 |
| Bullying t1 | 0.865 | 0.331 | 0.570 | .13 |
| $N$=114, $R^2$=.22 | | | | |
| *Reactive aggression t2* | | | | |
| Reactive aggression t1 | 0.697 | 0.607 | 0.133 | < .001*** |
| Instrumental aggression t1 | -0.201 | -0.147 | 0.172 | .24 |
| Victimisation t1 | -0.107 | -0.019 | 0.443 | .81 |
| Interaction t1 | -0.990 | -0.205 | 0.692 | .15 |
| Bullying t1 | 0.758 | 0.274 | 0.495 | .13 |
| $N$=114, $R^2$=.34 | | | | |

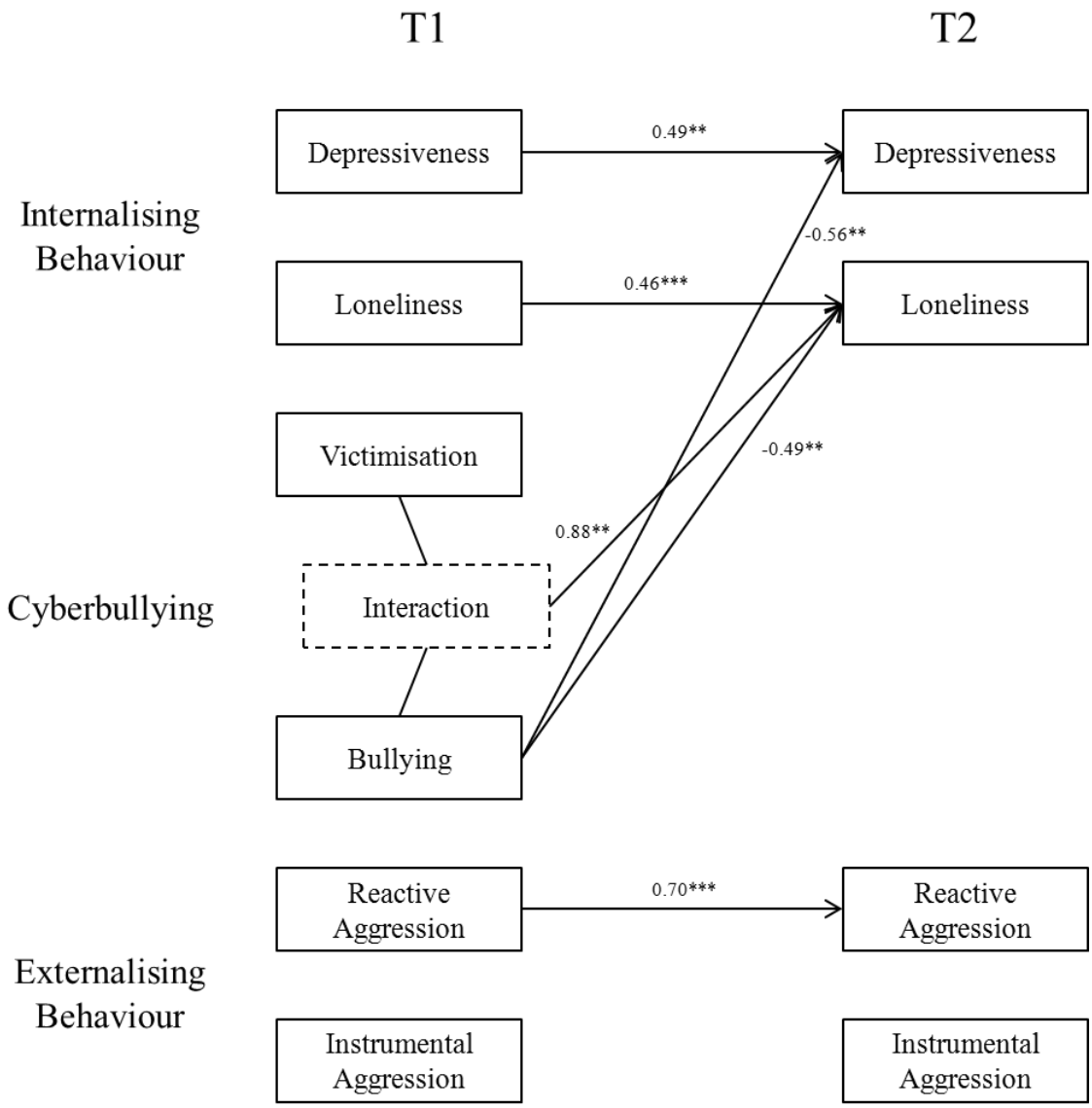


Figure 4: The final model displaying significant paths and path coefficients for predicting direct outcomes of cyberbullying for boys

For girls, increases in externalising behaviour and in parts of internalising behaviour were predicted by cybervictimisation. Higher scores on the cyberbullying perpetration scale predicted more reactive aggression. Higher levels of cybervictimisation combined with higher scores of cyberbullying perpetration at the same time led to a reduction in reactive aggression. Victimised boys did not show any increases in internalising or externalising problems. However, at higher levels of

cyberbullying perpetration victimised boys showed increases in loneliness. In contrast, boys with higher cyberbullying scores showed decreases in internalising behaviour.

**Cybervictimisation and internalising and externalising problems**

We found a significant difference between non-involved students and cybervictims regarding instrumental aggression, with cybervictims reporting higher levels. They did not differ significantly from cyberbullies or cyberbully–victims. Instrumental aggression as understood in the present study describes aggressive behaviours used to achieve self-serving goals (Little et al. 2003). This difference cannot be explained by the overlap between cyberbullying and cybervictimisation as a bully–victim group was explicitly included in the analysis. However, in previous research, cybervictimisation has also been linked to externalising problems. Previous research results suggest that victims who show anger as a result of their victimisation (e.g. Carter 2011; Ortega et al. 2009; Techniker Krankenkasse 2011) will also show higher levels of reactive aggression. Indeed, for girls the longitudinal analysis revealed that higher victimisation scores lead to increases in both instrumental and reactive aggression. Possibly, in our study the measures of instrumental and reactive aggression were not distinct from each other or the items were too abstract for the participants. They might have conceived reactive aggressive behaviours to be instrumental (e.g. using aggression to get someone to stop harassing oneself).

We had predicted that cybervictims would show greater internalising problems. In fact, cross-sectionally, we found that cybervictims did not differ significantly from any of the other groups in regard to depressiveness or loneliness. However, in girls higher victimization scores led to increased depressiveness. Victimised boys showed no increased in either internalising or externalising problems. At least for girls, this result is in line with previous findings which show that girls are generally more strongly affected

by cybervictimisation, including feelings of anger as well as internalising problems (e.g. Dooley et al. 2010; Ortega et al. 2009).

This greater effect on girls might be explained by findings that relational victimization contributes considerably to internalising problems, whereas physical victimisation is strongly associated with externalising problems (Prinstein et al. 2001). Cybervictimisation can also be considered a form of relational aggression targeting peer relationships. As girls are more vulnerable to threats to their social relationships (Rose and Rudolph 2006) they might be more affected by cybervictimisation than boys.

**Cyberbullying and internalising and externalising problems**

We found cyberbullies to be more instrumentally and reactively aggressive than noninvolved students and cybervictims. As cyberbullying is also a form of aggression, this cross-sectional finding may indicate a general antisocial behaviour pattern. Katzer, Fetchenhauer, and Belschak (2009a) found cyberbullies to show other forms of antisocial behaviour such as delinquency, school truancy and negative chatroom behaviour. The co-occurrence of cyberbullying and reactive aggression may indicate that cyberbullying can be an act of retaliation, as postulated by Ybarra and Mitchell (2004a).

In girls, higher scores of cyberbullying perpetration led to increases in reactive aggression. Female cyberbulliesmight have learned to defend themselves by reacting aggressively to relational threats. A lack of consequences or perhaps even positive feedback (e.g. through ‘likes’ on an offensive post) in the online environment may reinforce their use of reactive aggressive behaviour. Boys showing higher cyberbullying scores reported decreases in depressiveness and loneliness. ‘Acting out’ online may subjectively make boys feel better, for example by feeling more powerful. Future analyses should also include measures of social status or popularity, as being a

cyberbully may make boys more popular among peers and therefore may make them feel less lonely. Findings from previous research that cyberbullies, too, showed increased internalising problems (Sontag et al. 2011; Ybarra and Mitchell 2004b) were only replicated in part for girls and even revealed contrary directions for boys. Also contrary to previous research findings, male cyberbullies did not show any associations with changes in externalising problems.

**Simultaneous cybervictimisation and cyberbullying and the associations with internalising and externalising problems**

This study is one of few to explicitly take into account the interaction between cybervictimisation and cyberbullying. This seems justified as the analyses revealed differentiated effects. Cyberbully–victims showed more externalising problems on a crosssectional basis. However, these did not exceed those of pure cyberbullies, in contrast to findings by Gradinger, Strohmeier, and Spiel (2009). There were also differentiated results for male and female cyberbully–victims. Girls who scored high on both cybervictimisation and cyberbullying reported decreases in reactive aggression over time, while both pure cyberbullies and pure cybervictims showed increases in internalising and externalizing problems. Possibly, 'acting out' may improve the situation for girls over time and resolve problems when 'fighting back' by perpetrating cyberbullying themselves. Another possible explanation is that by being cybervictimised themselves and possibly taking the perspective of other victims, female cyberbullies may reduce their aggressive behaviour. This needs to be investigated in future analyses, including mediator variables such as empathy and perspective-taking, and by including more measurement occasions to analyse the chronology of being a cyberbully–victim (e.g. are cyberbully–victims victimized first and then become

perpetrators themselves, or the other way around?). The transition from being involved in cyberbullying to becoming uninvolved should also be examined.

In boys, scoring high on cyberbullying perpetration and victimisation at the same time led to increases in depressiveness. This is the only detrimental outcome for boys in the present model as the only other significant paths show 'improvements' for male cyberbullies. Possibly, male cyberbully–victims are especially affected by their status through feeling shame and guilt. Schoffstall and Cohen (2011) found cyberbullies to be less popular. In addition to being less popular when being a victim, this may increase the impact of being a cyberbully–victim.

**Conclusions**

In the present study we could not find confirmation of our expectation of clear internalizing patterns for cybervictims and externalising patterns for cyberbullies, or internalizing patterns for girls and externalising patterns for boys. Rather, female victims also showed externalising behaviour. This may seem surprising. However, previous studies have shown the same pattern, albeit separate from each other and not within one analysis. Dempsey et al. (2009) and Carter (2011) could not replicate the results of victims showing more depression. We also found that boys involved in cyberbullying did not show any longitudinal links to externalising problems. Moreover, there were no significant differences for the involvement groups on a cross-sectional basis for internalizing problems.

As loneliness is predicted by depressiveness, which in turn is predicted by cybervictimisation in girls, depressiveness may be a mediator of the association between loneliness and cybervictimisation. To investigate this, more longitudinal research with greater intervals and across a longer timespan is needed. Reactive aggression being predicted by cybervictimisation, cyberbullying and the interaction

term may indicate a vicious circle of victimisation and retaliation. Further and more complex studies should be conducted to analyse potential moderator and/or mediator effects on the outcomes of cyberbullying and cybervictimisation. Furthermore, if boys do not cyberbully anonymously, but are known in their social environment to be cyberbullies, peers may avoid them, leading to feelings of loneliness and isolation.

In the present analyses, girls were clearly more affected by cyberbullying involvement. This might be ascribed to the importance of social relationships for adolescent girls. On the other hand, boys might have experienced less severe incidents or perceived them as less severe. As during adolescence, cyberbullying incidents increasingly gain a sexual connotation (Spears et al. 2009), this may also be harder for girls to cope with or may make girls easier or more frequent targets. For boys, the amount of explained variance shows that internalising and externalising problems are not sufficiently explained by cyberbullying involvement. At the same time, cyberbullying involvement may have consequences other than those included in this study and which were not covered by the variables of the present study.

**Limitations**

Limitations of the present study are the exclusive reliance on self-reports and the limited number of variables operationalising internalising and externalising behaviour. The proportion of explained variances in some analyses indicates the need to include further variables to reach a satisfactory result. In addition, some repeatedly documented results from previous research could not be replicated, which may be due to methodological issues such as a lack of power of the measures used, a suboptimal selection of instruments, or the use of different cut-off scores or continuous variables. Further reasons might be the use of prospective longitudinal analyses or specific cultural effects. The high attrition rate and the lack of representation of the longitudinal subsample

versus the total sample and also the large sample reduction might have distorted the results. The sample was selective and the participating schools might have had larger or smaller problems with cyberbullying compared to the general school population.

Furthermore, moderator and mediator effects should be analysed. For example, as seen in one of the findings, the impact of cyberbullying involvement on one of the internalizing variables may be influenced by the presence or level of the other.

**Implications**

We focused on internalising (emotional) and externalising (behavioural) problems as we were especially interested in investigating the detrimental effects of cyberbullying to underscore the importance of prevention and intervention efforts. Future studies should also include students' resources in dealing with cyberbullying such as social support and coping strategies. The opposite direction of effects should also be examined to determine whether adolescents already showing internalising or externalising problems are more likely to be involved in cyberbullying. This kind of result may also be an indication for vicious cycles (e.g. depressed girls being cybervictims more often, which further increases their depressiveness).

However, the present study is one of the first to use longitudinal data and the results present a starting point for future research and provide information for prevention and intervention efforts.

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# 7 Study 5: Targeting cyberbullying in school

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## 7.1 Abstract

The term cyberbullying describes a form of deliberate aggressive behavior perpetrated through digital media. As schools and their students are increasingly relying on the use of modern technology, ways to counteract risks associated with these become necessary. In the present study we introduce the classroom-based preventive intervention "Medienhelden" which builds on the knowledge about links between empathy, perspective-taking and cyberbullying. 722 high school students aged 11 to 17 years ($M$ = 13.36, $SD$ = 1.00, 51.8% female) provided longitudinal data in an evaluation study with measurement waves before and nine months after the implementation to test whether such an intervention is effective and to compare two versions of the intervention. A 10-week and a 1-day version were conducted and compared with a control group (controlled pre-long-term-follow-up study). Schools were asked to randomly assign their participating classes to the intervention conditions. Multi-group structural equation modeling (SEM) showed a significant effect of the short intervention on perspective-taking and significant effects of the long intervention on empathy and cyberbullying. The results show a long-term intervention to be more effective in reducing cyberbullying and promoting empathy. Without any intervention, cyberbullying increased and empathy decreased across the study period.

Keywords: Medienhelden, empathy, cyberbullying, prevention, intervention, classroom

## 7.2 Introduction

Recent media reports of adolescents committing suicide as a consequence of online attacks and harassment have repeatedly put a relatively new phenomenon called cyberbullying in the focus of public attention. Cyberbullying is a form of aggressive online behavior which uses digital means to harass, humiliate or insult others. There is still no clear consensus on specific criteria for defining this type of aggression. Tokunaga's (2010, p. 278) attempt of a synthesis of existing definitions resulted in the following description of cyberbullying: "[…] any behavior performed through electronic or digital media by individuals or groups that repeatedly communicates hostile or aggressive messages intended to inflict harm or discomfort on others". Studies revealed that cyberbullying impacts students' lives much more severely when it is connected to and influences "real-life" relationships such as peer-relations in school (Ševčíková, Šmahel, & Otavová, 2012). Although often not perceived thus, cyberbullying is a problem of and in schools and requires schools to take action and responsibility. For example, Sanders, Smith, and Cillessen (2009) found 28.8% of cyberbullies to be the victims' classmates and 20.3% to be schoolmates of the victim. Also, schools increasingly use modern communication and information technology for teaching as well as representative functions. There is a growing number of schools relying exclusively on computers and laptops in classes. Thus, strategies to foster students' media-related skills and to prevent abuse of these technologies are required.

Apart from the often cited conceptual differences of cyberbullying compared to traditional school bullying such as the 24/7 accessibility of the victim, lack of emotional feedback, a large potential audience, the archival nature of the internet and the lack of consequences due to the unknown identity of the perpetrator (Mishna, Saini, & Solomon, 2009; Slonje & Smith, 2008) other recent studies have also supported the claims to view cyberbullying as a different construct. Law and colleagues, for example

were able to show functional and structural differences (Law, Shapka, Domene, & Gagné, 2012; Law, Shapka, Hymel, Olson, & Waterhouse, 2012) thus showing that the development of cyberbullying-specific interventions rather than using general anti-bullying interventions is sensible. The need to address cyberbullying as a part of youths' life is reflected in the prevalence rates found in previous studies. In Germany, the most recent studies have found 5.0% of students to have been victimized and 3.9% to have been perpetrators at least once a week (Wachs, 2012; Wachs, Wolf, & Pan, 2012). When looking at less restrictive criteria (that is at least two or three times a month), between 11% (Schultze-Krumbholz, Jäkel, Schultze, & Scheithauer, 2012) and 19% (Pieschl & Porsch, 2012) were victimized and 10% (Schultze-Krumbholz et al., 2012) to 19% (Bündnis gegen Cybermobbing e.V., 2013) admitted to being cyberbullies. Internationally, these rates show an even wider range. Prevalence rates of 6% in Spain and Turkey to 72% in the US have been found for cyberbullying victimization (cf. Suzuki, Asaga, Sourander, Hoven, & Mandell, 2012). For cyberbullying perpetration, international prevalence rates range from 4% in the US to 36% in Turkey (cf. Suzuki et al., 2012). Depending on the studies included in respective reviews, mean rates of 24% for cyberbullying perpetration and 16-18% for cyberbullying victimization have been found across all countries (Patchin & Hinduja, 2012; Suzuki et al., 2012). Thus, parents, teachers and policy-makers from many different countries now worry about how children and youths can be protected from threats that are virtual and rather intangible. Communication tools which were meant to bring people closer together and to simplify the search for information among others have also repeatedly been used to cause distress and harm to others and therefore it has become necessary to develop prevention strategies.

**Impact of cyberbullying**

The need for effective prevention and intervention arises from the detrimental outcomes that have been identified in cyberbullying research. Apart from cyberbullying-related suicides (as widely covered by the media), suicidal ideation (Hinduja & Patchin, 2010) and homicides there are also many consequences of cyberbullying which have not received wide public attention. The majority of victims of cyberbullying feel moderately affected with anger being the predominant emotion (Ortega et al., 2012). This might explain why higher levels of aggression have especially been found for female victims (Schultze-Krumbholz et al., 2012). However, a smaller group of adolescents also feels strongly affected and reports feeling depressed along with other negative emotions such as fear, distress and worry (Ortega et al., 2012). Other studies have also found victims to show severe signs of stress and anxiety (Campbell, Spears, Slee, Butler, & Kift, 2012; Finkelhor, Mitchell, & Wolak, 2000). Apart from academic problems (Beran & Li, 2007), increased loneliness (Şahin, 2012) and depression (Perren, Dooley, Shaw, & Cross, 2010; Schultze-Krumbholz et al., 2012; Sontag, Clemans, Graber, & Lyndon, 2011), victims also reported increased problems in their physical health and somatic symptoms (Gradinger, Strohmeier, & Spiel, 2009; Sourander et al., 2010). They are also more likely to bring a weapon to school (Ybarra, Diener-West, & Leaf, 2007) because they perceive the school environment as unsafe (Varjas, Henrich, & Meyers, 2009). But cyberbullying also negatively affects the perpetrators. They show higher levels of aggression (Gradinger et al., 2009; Schultze-Krumbholz & Scheithauer, 2009), substance abuse and delinquency (Sourander et al., 2010) and lower levels of academic achievement than non-involved or victimized peers (Beran & Li, 2007). However, higher levels of anxiety and depression have also been found for cyberbullies (Sontag et al., 2011; Ybarra & Mitchell, 2004a, 2004b). The negative correlates and consequences

of cyberbullying for both victimized and perpetrating students emphasize the need for action as all involved are at risk for enduring and significant negative outcomes.

**Cyberbullying and empathy**

Empathy is conceptualised as "understanding and sharing in another person's emotional state or context" (Cohen & Strayer, 1996). It combines functionally different aspects which are necessary to reach this state of understanding and sharing. For one, certain cognitive skills are required and are often represented by the construct of cognitive empathy, that is the ability to understand another person's emotions by taking his or her perspective (perspective-taking). On the other hand, responding emotionally to other persons' affective states (e.g. by feeling the same, being upset by the other's situation or feeling concern for the welfare of the other person) is necessary to be able to share others' emotional states. This is referred to as affective empathy (Hoffman, 1977; Stocks & Lishner, 2012).

Previous, mainly cross-sectional, research on the association between cyberbullying and cognitive and affective empathy suggests a negative relation for cyberbullying perpetration. Steffgen, König, Pfetsch, and Melzer (2011) showed cyberbullies to display less empathy than non-bullies in a large adolescent sample from Luxemburg. Similar results were obtained in Italy (Renati, Berrone, & Zanetti, 2012) although this only held true for affective empathy while there were no significant differences for levels of cognitive empathy. But not only self-reports of empathy (as reported above) have shown this association. A study using peer reports of empathy replicated these results showing both cyberbullies and cybervictims to be perceived as significantly less empathic by their peers (Schultze-Krumbholz & Scheithauer, 2009).

Examining interactions of the two empathy dimensions, Ang and Goh (2010) report a buffering effect: for girls, high affective empathy compensated the effect of low

cognitive empathy. That is girls who showed high levels of affective empathy committed less cyberbullying regardless of their level of cognitive empathy. However, boys with high scores on affective empathy and at the same time low levels of cognitive empathy committed cyberbullying more often than boys with high scores on both empathy dimensions. Somewhat contrary, in their study among Turkish adolescents Topcu and Erdur-Baker (2012) found that gender differences in cyberbullying were actually mediated by the combination of cognitive and affective empathy. They conclude that the risk of becoming a cyberbully is not increased by being a boy or girl but rather by being less empathic. Also, studies on aggression in general have shown affective empathy to mediate the effects of cognitive empathy on aggression (Björkqvist, Österman, & Kaukiainen, 2000). Addressing empathy might therefore be an adequate means to combating and preventing cyberbullying as it can inhibit aggressive and antisocial behaviour (Miller & Eisenberg, 1988).

**Aims**

Based on previous research results the present paper examines the effects of a classroom-based cyberbullying-specific preventive intervention using empathy training and promotion of perspective-taking as one of many ways to address this adolescent concern. For the objectives of the present study the two dimensions of empathy are examined separately (but not independently). Therefore, perspective-taking refers to the aspect of cognitive empathy and the term empathy is used to refer to the affective dimension.

We examined the following two research questions:

(1) Can a preventive intervention implemented in the school environment and addressing empathy and perspective-taking reduce cyberbullying and increase these social skills in the long term in adolescents?

(2) Is a longer term (10 90-minute sessions in 10 weeks) intervention more effective than a short-term (1 day) intervention?

Comparing two approaches which differ greatly in the amount of resources and commitment is of great importance as schools often prefer resources-saving interventions. It is therefore essential to support or disprove this practice on the basis of empirical data.

## 7.3 The classroom-based preventive intervention program "Medienhelden"

Based on the findings reported above the preventive intervention "Medienhelden" (engl.: "Media Heroes") for implementation in classrooms was developed in order to further investigate the influence of cognitive and affective empathy on cyberbullying as well as the potential for change in these variables and the cyberbullying behavior itself.

"Medienhelden" is a comprehensive, modularized, theoretically based (Theory of Planned Behavior; Ajzen, 1991) program that extends over ten weeks with sessions of 90 minutes per week as part of a curriculum. It covers topics of general media usage, strategies to defend oneself and others on the internet as well as legal aspects of cyberbullying while relying mainly on social learning (e.g. role-play, model learning) and the application of well-established cognitive-behavioral methods (e.g. positive reinforcement).

It aims at improving affective and cognitive empathy as well as perspective-taking skills by confronting students with different cyberbullying-related stimuli (e.g. text-based stories, news items, videos, plays) and encouraging them to reflect about involved people's thoughts, motivations and feelings before enacting the situations themselves. The program further addresses other variables with empirically-established relations to cyberbullying –perpetration such as normative beliefs in favor of aggressive

behaviors (Ang, Tan & Mansor, 2011; Jones, Manstead & Livingstone, 2011) and unfavorable attitudes and morals with regard to bullying and cyberbullying (Boulton, Lloyd, Down, & Marx, 2012; Heirman & Walrave, 2012; Williams & Guerra, 2007). Therefore the program aims at disclosing and changing attitudes and norms within the group (e.g. by discussing and comparing own opinions and those of other students with regard to cyberbullying; discussions of cyberbullying-centered moral dilemmas).

Findings from a German-wide study support the necessity to develop and implement programs such as "Medienhelden": 86% of teachers reported a need for teaching materials or lesson modules and teacher training on the topic of cyberbullying (Bündnis gegen Cybermobbing e.V., 2013). “Medienhelden” provides teachers with all that is needed to carry out the intervention themselves. Consequently, participating teachers were trained by psychologists over 8 hours on two days, thereby learning about the scientific background of cyberbullying as well as discussing and practicing the methods and exercises of the program. Thereafter, teachers carried out “Medienhelden” within their usual classroom-environment in a standardized form with the help of the “Medienhelden” manual (Schultze-Krumbholz, Zagorscak, Siebenbrock, & Scheithauer, 2012). Reacting to schools’ needs for time-efficient programs, a shortened one-day-version (4 sessions of 90 minutes) was developed in addition to the ten-week curriculum which offers teachers an economic alternative, in case they are unable to carry out the longer version within their regular school curriculum. In general, the short version covers the same contents except from legal aspects of cyberbullying, which are omitted completely. While relying on the same methods, the longer version deals with most of the subjects in more depth and makes it possible to apply effective methods multiple times. Contents of both program versions are reported in more detail by Wölfer et al. (under review).

## 7.4 Method

### Procedure

The study design was a pretest-posttest-follow-up-control-group design. The measurement waves of interest in the present analyses are the pretest before the preventive intervention (January 2011) and the follow-up nine months after the intervention (November/December 2011) to examine potential long-term effects. Students and their parents were asked to give informed active consent. Data were gathered during regular school lessons using standardized questionnaires. A member of the research team was present during data assessment in each class, collected the questionnaires and ensured anonymity. The senate department responsible for ethical issues in school-based research approved the procedures.

**Selection process and allocation to treatment conditions.** A complete list of all secondary schools in a large German city (> 1,000,000 inhabitants) was compiled and all schools were sent information about the present study and conditions for participation. Due to the strongly cognitive-oriented teaching methods used in the program, only regular secondary schools were included in the study. Eleven of the contacted schools indicated interest from which five schools eventually signed an agreement (e.g. agreeing to participate on all measurement occasions) with the research team and took part. Thus, the sample was self-selective, but not a convenience sample.

The schools represent high (N=2), medium (N=2) and low (N=1) socio-economic backgrounds. Further, four of the schools were college preparatory high schools (“Gymnasium”), constituting 4.3% of this school type in the city of study location, and one school was a general high school (“Integrierte Sekundarschule”), constituting 0.9% of this school type. This selectiveness may be attributed to

administrational strain in general high schools as this general school type was only established citywide months before the begin of the present study.

The participating schools were informed in advance to provide control-group classes for each class participating in the program. Principals and/or subject supervisors assigned their school's classes randomly to the treatment conditions. They chose whether they wanted to implement the long or the short program version before receiving the respective tailored teacher training. Teachers of control-group classes committed themselves to not implementing the program in their classes for the following 12 months, but were provided with the materials after the end of the study (waiting control group).

**Implementation of the program.** Before implementing the preventive intervention program "Medienhelden", teachers received a training of eight hours in two days specifically focusing on the intervention version they were assigned to (i.e. the long version, also called the "Medienhelden" curriculum, vs. the short version, also called the "Medienhelden" project day). Training for the curriculum took place in December 2010 and this long intervention was implemented from February to April 2011. Teachers conducting the project day completed their training in February 2011 and carried out this short intervention in April 2011. During teacher training the teachers received the manualized materials and along with the training were thus enabled to implement the program on their own in ethics classes. This was an important aspect for program sustainability after the end of the research project. Adherence to the standardized implementation procedures was controlled using session protocols after each program session (process evaluation). For the project day one member of the research group was always present and wrote a protocol. After program implementation, questions about the intervention were included in the standardized questionnaires (summative evaluation).

In total, 18 teachers took part in the study of which 15 also implemented the program in some of their classes (short intervention N = 7, long intervention N = 9). To assess program acceptance, teachers (N = 6) rated each session of the long intervention on a scale of 1 (not at all) to 5 (absolutely). On average, they found the materials very understandable (*M* = 4.65) and easy to handle (*M* = 4.37). They also generally liked the sessions very much (*M* = 4.42) and were very satisfied (*M* = 4.25) with the students' cooperation during the sessions. Results from the summative evaluation show that 75% of the teachers (N = 8) generally liked the program much or very much.

**Participants**

Letters explaining the study along with consent forms were given to the students to pass on to their parents. While participation in the intervention was obligatory (as it became part of their ethics classes), students were informed of voluntariness and confidentiality of the survey before starting with the questionnaire. Only students with parents' and own consent were allowed to take part in the study. Students without consent were allowed to peruse the questionnaire or to quietly read or write.

Participants were initially 897 students from 35 classes and five schools in a large German city. Of these, 722 provided longitudinal data for the variables of interest here (dropout = 19.5%). Participants were from grades 7 to 10 (high school, secondary level I) and were aged between 11 and 17 years (*M* = 13.36, *SD* = 1.00). 78.7% of the sample were students from college preparatory high school, while 21.3% were from general high school. 51.8% of the students were female, 46.3% were male and 1.9% did not indicate their gender. Almost half of the students (49%, N = 354; 16 classes) were in the control group with no intervention for the time of the study, 18.8% (N = 136; 7 classes) took part in the short intervention and 32.1% (N = 232; 12 classes) took part in

the long intervention. Intervention conditions were balanced in regards to gender distribution ($\chi^2$ = 1.225, *df* = 2, *p* = .458).

**Measures**

**Cyberbullying.** The European Cyberbullying Intervention Project Questionnaire (ECIPQ; Brighi et al., 2012) was used. It was self-constructed within the framework of the present research project and, among others, it comprises 11 self-report items for cyberbullying perpetration (e.g. "I said nasty things to someone or called them names using texts or online messages"). Students were asked to answer how often they had done specific things to others during the last 2 months on a 5-point Likert scale (0 = never to 4 = more than once a week). Internal consistencies were good with $\alpha_{t1}$=.81 and $\alpha_{t2}$=.91.

**Perspective-taking.** Students rated their own perspective-taking skills on the 8-item measure (e.g. "I sometimes try to understand my friends better by imagining how things look from their perspective") from the respective subscale of the Interpersonal Reactivity Index (IRI; Davis, 1980; German translation: Lamsfuss, Silbereisen, & Boehnke, 1990). Answer categories ranged from 1 (never true) to 5 (almost always true). Internal consistencies were good with $\alpha_{t1}$=.85 and $\alpha_{t2}$=.89.

**Empathy.** As empathic skills are expected to be generally developed by early adolescence (cf. Hoffman, 2000) we assessed adolescents' tendency to show empathy by presenting them a stimulus situation from the Sympathy Reactivity Questionnaire (Volland, Ulich, Kienbaum, & Hölzle, 2008) which we adapted for the cyber context. After reading the adapted stimulus situation about finding a so-called online hate group about another person, adolescents answered 7 questions about how they would react emotionally on a 6-point scale (1 = not at all to 6 = completely). Internal consistencies were good with $\alpha_{t1}$=.82 and $\alpha_{t2}$=.83.

**Statistical Analysis**

A structural equation modeling (SEM) approach was chosen to investigate the questions outlined above. This analytical approach has the benefit of allowing for the simultaneous consideration of three main characteristics of this study: (1) longitudinal data, (2) multiple groups (short intervention, long intervention and control group), and (3) clustered data sampling (classrooms).

To properly handle the longitudinal nature of the data the latent-change (LC) approach proposed by Steyer, Eid, and Schwenkmezger (1997) was chosen. The LC-approach depicts intraindividual change between two measurement occasions as a latent variable by decomposing the state of the second occasion as $S_2 = S_1 + C_{2\text{-}1}$, where $S_1$ represents the latent state of the first occasion, $S_2$ represents the latent state of the second occasion, and $C_{2\text{-}1}$ represents the difference between these two latent states. This decomposition makes $C_{2\text{-}1}$ an endogenous latent variable within the model, allowing for further modeling of latent change.

Because it is the focal point of this study to investigate the differences in changes between three groups (control group *CG*, short-term intervention group *IGS*, and long-term intervention group *IGL*) the LC-approach was combined with multiple group SEM (Joreskog, 1971). This approach has the advantage of not only allowing for the analysis of mean differences in latent change, but also allowing for the investigation of differential relationships between the latent variables across groups. Therefore, multiple group modeling enables us to examine intervention effects on the mean structure and the relationships of the constructs considered.

Due to the combination of longitudinal and multiple group analysis, two types of measurement invariance must be accounted for in the model presented here: longitudinal invariance (e.g.,Widaman & Reise, 1997) and invariance across groups (e.g., Marsh & Hocevar, 1985; Raju, Laffitte, & Byrne, 2002). To determine which

level of invariance can be assumed, the most restrictive model combining strict measurement invariance across groups and occasions was estimated first. Then successively less restrictive variants were compared until Satorra-Bentler-Corrected $\chi^2$ model comparisons (Satorra & Bentler, 2001) revealed the more restrictive variant to not be worse than the less restrictive model.

The nested structure of the observations (students nested in classrooms) was accounted for by bias-correcting the standard-error estimates provided by the model as proposed by Asparouhov and Muthén (2006).

To examine the effect sizes of the average latent changes in the three different groups the effect size coefficient $d'$ was computed by $d' = E(C_{2-1})/sd(C_{2-1}) * \sqrt{2}$ . To investigate intervention effects group contrasts of mean latent-changes were calculated by $D_{IGS} = E(C_{2-1}^{IGS}) - E(C_{2-1}^{CG})$ and $D_{IGL} = E(C_{2-1}^{IGL}) - E(C_{2-1}^{CG})$, respectively.

The overall model used in this study is shown in Figure 5. Three parcels were created for each construct after preliminary analysis. All analyses were done using Mplus Version 7 (Muthén & Muthén, 1998-2012).

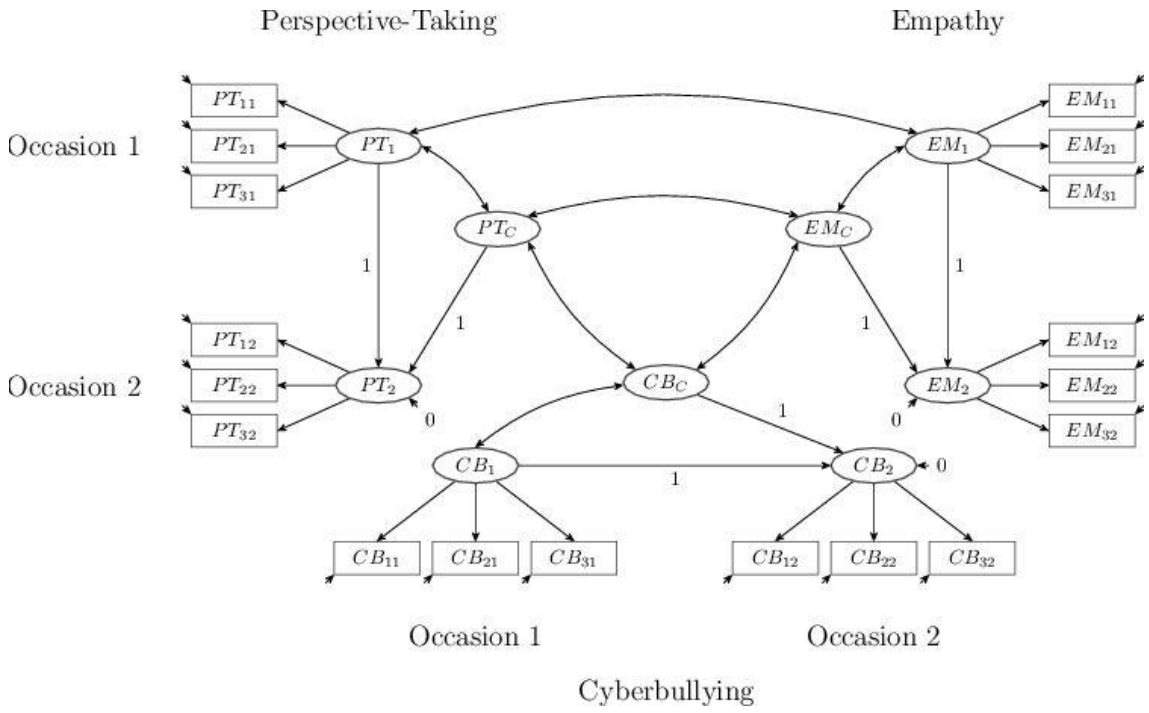


Figure 5: Path diagram of the model used. *PT* indicates variables pertaining to perspective-taking, *EM* indicates variables pertaining to empathy, and *CB* indicates variables pertaining to cyberbullying. Indexes of the manifest variables represent parcel and occasion numbers. Latent state variables are indexed with the occasion number and latent change variables are indexed with *C*. The latent correlations of $CB_1$ with $EM_1$ and $PT_1$ are omitted for clarity.

## 7.5 Results

The investigation of measurement invariance showed that the assumption of strict invariance holds across groups ($\chi^2$ = 22.952, *df* = 18, *p* = .192) and across measurement occasions ($\chi^2$ = 9.362, *df* = 9, *p* = .405) when compared to models incorporating only strong invariance assumptions. This model also showed adequate overall model fit ($\chi^2$ = 682.610, *df* = 465, *p* < .001, RMSEA = .044, CFI = .973, SRMR = .071).

### Mean Structure

At the first occasion, the means of the three constructs investigated here did not differ significantly across the three groups ($\chi^2$ = 2.806, *df* = 6, *p* = .833). Table 14 shows the

means of the latent change variables for each of the three groups. Model comparison using the Satorra-Bentler-Corrected $\chi^2$ (Satorra & Bentler, 2001) revealed differences in the means of the latent-change variables between groups ($\chi^2 = 42.685$, $df = 6$, $p < .001$). Group contrasts investigating the location of these differences showed a significant intervention effect of the short-term intervention on perspective taking ($D_{IGS} = 0.187$, $S.E. = 0.080$, $p = .020$), while the effect of the long-term intervention did not reach statistical significance ($D_{IGL} = 0.134$, $S.E. = 0.071$, $p = .060$). The short-term intervention had no significant effect on the change of empathy ($D_{IGS} = 0.125$, $S.E. = 0.075$, $p = .096$), while the long-term intervention did ($D_{IGL} = 0.130$, $S.E. = 0.065$, $p = .046$). The same pattern was found for cyberbullying ($D_{IGS} = -0.049$, $S.E. = 0.038$, $p = .196$; $D_{IGL} = -0.125$, $S.E. = 0.039$, $p = .002$).

Table 14: Latent-change means of the three groups on the three constructs. CG represents the control group, IGS represents the short-term intervention group, IGL represents the long-term intervention group. The p-value shown here is two-sided.

| | Estimate | Standard Error | p-Value | d' |
|---|---|---|---|---|
| | | *Perspective Taking* | | |
| CG | 0.028 | 0.040 | .485 | 0.095 |
| IGS | 0.215 | 0.070 | .002 | 0.701 |
| IGL | 0.162 | 0.060 | .007 | 0.670 |
| | | *Empathy* | | |
| CG | - 0.120 | 0.041 | .004 | - 0.370 |
| IGS | 0.005 | 0.063 | .935 | 0.023 |
| IGL | 0.011 | 0.051 | .833 | 0.033 |
| | | *Cyberbullying* | | |
| CG | 0.062 | 0.030 | .039 | 0.385 |
| IGS | 0.013 | 0.023 | .584 | 0.248 |
| IGL | - 0.063 | 0.026 | .015 | - 1.484 |

**Latent Correlations**

Model comparison using the Satorra-Bentler-Corrected $\chi^2$ (Satorra & Bentler, 2001) showed that a model assuming the same correlations across groups fit the data significantly worse than a model with unrestrained correlation matrices ($\chi^2 = 74.498$, $df = 30$, $p < .001$). Table 15 through Table 17 show the latent correlations in each of the three groups.

Findings suggest that across all constructs and groups initial states are negatively correlated with changes pertaining to the same construct. Additionally, empathy and cyberbullying are significantly negatively correlated at the first occasion and change in empathy is significantly associated with change in perspective taking in all three groups. Differential correlative patterns were found concerning the change of cyberbullying.

In the control group change in cyberbullying was not associated with change in either perspective taking or empathy. In the short-term intervention, which induces a significant mean change in perspective taking, change in cyberbullying is negatively correlated with change in perspective taking, while it is not significantly associated with change in empathy. In the long-term intervention group change in cyberbullying is significantly negatively correlated with change in empathy, while it is not significantly correlated with change in perspective taking.

Table 15: The latent correlations for the control group

| | $PT_1$ | $EM_1$ | $CB_1$ | $PT_C$ | $EM_C$ | $CB_C$ |
|---|---|---|---|---|---|---|
| $PT_1$ | 1 | | | | | |
| $EM_1$ | 0.444*** | 1 | | | | |
| $CB_1$ | - 0.071 | - 0.113* | 1 | | | |
| $PT_C$ | - 0.358*** | 0.010 | - 0.063 | 1 | | |
| $EM_C$ | 0.045 | - 0.383*** | - 0.035 | 0.165* | 1 | |
| $CB_C$ | - 0.230** | - 0.151* | - 0.191 | - 0.016 | - 0.175 | 1 |

*: p < .05; **: p < .01; ***: p < .001

Table 16: The latent correlations for the short-term intervention group

| | $PT_1$ | $EM_1$ | $CB_1$ | $PT_C$ | $EM_C$ | $CB_C$ |
|---|---|---|---|---|---|---|
| $PT_1$ | 1 | | | | | |
| $EM_1$ | 0.652*** | 1 | | | | |
| $CB_1$ | - 0.293* | - 0.391*** | 1 | | | |
| $PT_C$ | - 0.504*** | - 0.262* | 0.045 | 1 | | |
| $EM_C$ | - 0.269** | - 0.363*** | 0.133 | 0.531*** | 1 | |
| $CB_C$ | 0.064 | 0.031 | - 0.345** | - 0.303*** | - 0.121 | 1 |

*: p < .05; **: p < .01; ***: p < .001

Table 17: The latent correlations for the long-term intervention group

| | $PT_1$ | $EM_1$ | $CB_1$ | $PT_C$ | $EM_C$ | $CB_C$ |
|---|---|---|---|---|---|---|
| $PT_1$ | 1 | | | | | |
| $EM_1$ | 0.520*** | 1 | | | | |
| $CB_1$ | - 0.084 | - 0.281*** | 1 | | | |
| $PT_C$ | - 0.366*** | - 0.158* | 0.041 | 1 | | |
| $EM_C$ | - 0.154 | - 0.392*** | 0.275** | 0.270** | 1 | |
| $CB_C$ | 0.041 | - 0.216** | - 0.975*** | - 0.028 | - 0.326*** | 1 |

*: p < .05; **: p < .01; ***: p < .001

## 7.6 Discussion

Data were analyzed on two levels: first, mean changes within groups were examined and secondly, the associations between the constructs in each group were looked at more closely. Regarding the control group that did not receive any intervention no changes in perspective-taking could be observed. However, readiness to show empathy decreased significantly over the almost one-year period between measurement waves. Decreases in readiness to show empathy across adolescence have also been shown in the study by Volland and colleagues (2008). While it can be assumed that the respective skills have been developed by early adolescence (cf. Hoffman, 2000) it might be "uncool" to actually act empathically at the age our subjects were in at the time of the study. Also, cyberbullying increased significantly in the control group which is in accordance with previous studies showing a peak of cyberbullying during high school (Ortega, Elipe, Mora-Merchán, Calmaestra, & Vega, 2009; Williams & Guerra, 2007). Although empathy did not significantly increase in any of the intervention groups (as can be seen in (Table 14) the intervention effect of the long intervention compared to the worsening in the CG is significant meaning that the long intervention was successful in preventing the age-related decrease and preserving the empathy levels across the long term. Students in the IGL decreased significantly regarding their levels of cyberbullying perpetration and showed a significant increase in perspective-taking. However, compared to the control group the intervention effect on perspective-taking was not significant while it was for the short intervention. It seems that the short-term intervention achieved long-term effects on a cognitive basis, but was not elaborate or intense enough to manifest in behavioral or emotional changes. This might be due to the reduced amount of time available for the contents which also resulted in a reduced variety of methods. The long intervention was the only intervention condition showing positive outcomes regarding cyberbullying perpetration.

The association between cyberbullying and empathy was replicated in the latent correlations showing that lower levels of empathy are related to higher scores on cyberbullying perpetration. Previous studies have shown cyberbullies to be less empathic (Schultze-Krumbholz & Scheithauer, 2009; Steffgen et al., 2011). However, our study also showed that the cognitive component (perspective-taking) is not consistently directly related to being a cyberbully. This is in line with findings by Renati and colleagues (2012).

Further interpreting the latent correlations, the increase of cyberbullying in the control group is not related to changes in either perspective-taking or empathy meaning. We can therefore not conclude that the possibly age-related decreased readiness to show empathy is automatically connected to higher levels of antisocial behavior (cyberbullying). For the short intervention group, students who increased in perspective-taking decreased in their cyberbullying scores as indicated by the negative correlation between the respective change variables. For the long intervention group the same relationship was shown between change in empathy and change in cyberbullying which again is in accordance with previous research findings on the association between (affective) empathy and cyberbullying. Therefore, although the short intervention was not enough to significantly reduce cyberbullying for the whole group, it was sufficient for those whose perspective-taking skills were enhanced to also reduce their antisocial behavior. This might indicate that this intervention version is not adequate for every student. Generally, it seems that the two intervention version operate in different ways as the short intervention showed effects only on perspective-taking and not on empathy and the long intervention also significantly changed perspective-taking, but only showed an intervention effect for empathy (and cyberbullying). The project day obviously fosters (only) the cognitive components, but these still show long-term effects.

## 7.7 Conclusions

Returning to the aims of the study and its research questions, we conclude that a classroom-based preventive intervention addressing two dimensions of empathy is successful in improving these social skills depending on the version chosen. Further, we were able to show that one version of the program using intense methods over a period of ten weeks significantly reduced cyberbullying while students who did not take part in "Medienhelden" even showed a decrease in social competences and an increase in the problem behavior cyberbullying. These effects were shown on a long-term basis.

Concerning the question whether the same effects could also be achieved using a 1-day rather than 10-week intervention we can clearly say that a short-term intervention is not effective in reducing cyberbullying, but that it can effectively enhance cognitive empathy.

It is especially noteworthy that the presented effects were achieved by a classroom-based intervention which was implemented by the classroom teachers and not external experts and that the teachers seemed to get along with the material very well as shown in the results of the process and summative evaluation. The target group was universal and not specifically constricted to at-risk students or students who already showed a history of being cyberbullies. Longer-term effects beyond the nine months follow-up as well as the preventive success will need to be assessed in the future.

Implementing a program fostering cognitive and affective empathy within in the classroom might show further effects on a group level such as school classes and might possibly improve the levels of antisocial behavior by improving class climate. This needs to be examined in future studies as Wölfer, Cortina and Baumert (2012) were able to show that being part of a class in which adolescents feel accepted by their peers was associated with higher levels of empathy. "Medienhelden" might be able to contribute at this level as well by raising empathy within whole classrooms. Some of the teaching

methods applied also have the potential to positively influence the atmosphere within a classroom. Therefore, more research is necessary on the mechanisms of change achieved by "Medienhelden". This might contribute to making the short version more effective and to find a compromise between schools' needs and scientifically founded prevention and intervention.

Another limitation is that randomization was not conducted by the research team but by the schools themselves. However, where schools are not legally obligated to take part in this kind of study it is necessary to accommodate those willing with taking part in the decisions made in the project. Also, this study relied on self-reports from students which is a side effect of the behavior studied. Cyberbullying takes place invisibly and partly anonymous. Peer-reports would most probably underestimate the problem even more than self-incriminations and the effects of associated social desirability because peers could only report the snippet of events which they themselves witness and where they know the perpetrators. The assessment of cyberbullying remains a challenge for this research field (cf. Ybarra, Boyd, Korchmaros, & Oppenheim, 2012), but a first approach can be to gain an overview of existing measures, their characteristics and psychometric properties (cf. Berne et al., 2013).

A clear strength of the present study is the examination of long-term effects (9 months after the intervention) rather than examining effects at the end of the program which might deteriorate over time. Also, the study was carried out in multiple classrooms with a large sample of 722 students providing longitudinal data.

The present results are a clear indication of the long-term effectiveness of "Medienhelden" and long-term changes in students' social skills and behavior. Teachers are effectively able to implement a preventive intervention against cyberbullying within their classrooms.

## 7.8 References

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# 8 General discussion

The following section begins with a summary of the dissertation studies and highlights their contribution to current knowledge in the field of cyberbullying. Afterwards, the results will be compared and discussed in the context of previous and current empirical findings, separately for the different topics.

## 8.1 Summary of studies

### 8.1.1 Study 1: Definition of cyberbullying

Study 1 started out with the most frequent and widely accepted definition of cyberbullying and its definition criteria (a) intentionality, (b) power imbalance, and (c) repetition, and included two further criteria derived from theoretical assumptions on the specificities of the cyber context: (d) anonymity and (e) publicity. The aim was to empirically test the validity of these theoretically derived criteria and to test their comparability across three European countries. Using vignettes describing cyberbullying situations, the importance of the theoretically based criteria for adolescents' understanding of cyberbullying was assessed. Also, the perception of different cyberbullying behaviors and whether they adequately represent cyberbullying in the youth's eyes were of interest. A further objective was to find the most adequate term for these exemplary incidents for further use in future studies. To this end, qualitative data were collected using focus groups with a total of 70 adolescents in 9 groups and stimulus materials (i.e. vignettes) across three European countries. The four cyberbullying behaviors written-verbal, visual, exclusion and impersonation were derived through the reduction of the taxonomy by Nancy Willard (2007). The focus groups were conducted in a structured way. The scenarios (i.e. vignettes) were experimentally manipulated regarding the presence and absence of the different defining

criteria of cyberbullying and were compared to a control scenario where all criteria were absent.

Written-verbal behaviors were labeled as bullying, abuse and harassment, among others. For visual behaviors an important label was privacy violation in the two South European countries and public humiliation in Germany. It was also again called bullying and harassment. Impersonation was not called bullying, but was rather perceived as a criminal act with aspects of betrayal and privacy violation. Exclusion was the only scenario triggering the term "cyberbullying" and only in one country, Germany. It was recognized and specifically labeled as exclusion, but also as bullying. Regarding the question whether all behaviors represent cyberbullying the groups across all countries only consistently agreed on visual and written-verbal behaviors. There were country-specific opinions on the other two behaviors of impersonation and exclusion. The visual scenario was consistently perceived as the most severe experience. Beside visual acts, Spanish and German adolescents also considered impersonation as very severe while Italian youth perceived written-verbal acts as such.

Results showed that power imbalance, operationalized by the helplessness of the victim, cannot be viewed as an independent criterion, but interacts with the intention to harm which is in turn very strongly relevant for the definition. Students were missing the aspect of the victim's perception of the incident and of the perpetrator's intention which would be a more important criterion for the definition of cyberbullying. There is disagreement about whether something is (cyber)bullying if it is not repeated because single acts may also cause harm. However, repetition clearly indicates bullying and also signals intention. Repeated bullying cannot be unintentional anymore, in the eyes of the adolescents. Thus, again there is an interaction between the definition criteria. Publicity was shown not to be crucial for judging an act as (cyber)bullying or not, but it was meaningful for judging the severity of an act. Also, publicity reduces the importance of

repetition. Public acts do not need to be repeated in the students' opinions. Anonymity only played a role for estimating the impact of an incident, but not for distinguishing between bullying and non-bullying incidents.

Concluding, the term cyberbullying seems a bit artificial and was not consistently produced as a spontaneous answer to the presented scenarios. Adolescents in all three countries, however, found terms to describe the acts and also included the technical aspect. For Germany, the term "Cybermobbing" seems adequate as students seem to have become familiar with it through the wide public use. Using the term "cyberbullying" is less common in Spain and Italy and we recommend using "virtual (or cyber-) bullying" in Italy and "harassment by internet or mobile phone" in Spain according to the country-specific preferences and perceptions. Country-specific terms are clearly needed in cross-national studies. Further, impersonation does not seem to be a part of the cyberbullying repertoire in the eyes of adolescents across the three countries. The definition criteria interact with each other; the cyber-specific criteria are not decisive of perceiving something as cyberbullying or not. Repetition and intention can be viewed as necessary for the definition. Power imbalance does not seem to make a contribution worth mentioning to the detection of cyberbullying. Moreover, impact of bullying acts on the victim should play a greater role for the definition.

Study 1 is one of the first studies to empirically investigate the relevance of conventional definition criteria and the adequacy of a widely used definition of cyberbullying. The results show that students put a focus on the impact on the victim rather than on bully-oriented criteria. The definition of cyberbullying should therefore be broadened. This study informs future research about which term to use to describe the research objective in a way that adolescents' understand the same as the researchers. It also shows that the often used taxonomy by Willard (2007) includes behavioral categories beyond cyberbullying which students do not perceive as cyberbullying. Study

1 has provided the basis for subsequent quantitative studies examining the cyberbullying definition (e.g., Menesini et al., 2012c) and shows which criteria might be problematic or ambiguous.

### 8.1.2 Study 2: Social-Behavioral correlates of cyberbullying

Study 2 assessed the relevance of cyberbullying in a German student sample and examined indications for potential risk factors (affective and cognitive empathy, relational aggression, social intelligence, and status in cyberbullying). Data was provided by a pilot study sample of 71 students from a college preparatory high school (Gymnasium). The sample was not gender-balanced. Students were from a 7$^{th}$, an 8$^{th}$ and a 10$^{th}$ grade and averagely aged 14.05 years. Cyberbullying and -victimization was assessed with an adaptation of the Chat Bully and Chat Victim Scales by Katzer and colleagues (2009a, 2009b) for the internet, cell phone and e-mail context. Affective empathy, social intelligence and relational aggression were assessed using peer-ratings; perspective-taking (cognitive empathy) by using self-reports. The results showed a considerable number of adolescents to be victims and perpetrators of cyberbullying (15.5% and 16.9%, respectively). Almost two thirds of cyberbullies reported they were also victimized through electronic means. Perpetrators as well as victims of cyberbullying exhibited significantly lower levels of empathy and higher levels of relational aggression as perceived by their classmates than non-involved students. No significant differences were found for social intelligence and cognitive empathy, i.e. perspective-taking. The results indicate that specific social skills or lack thereof might posit risk factors for cyberbullying.

Despite its exploratory and preliminary nature due to the small sample size, this study contributes to the field of cyberbullying by being the first publication on the associations between cyberbullying, cybervictimization and empathy. It provides a basis

for later studies to extend, replicate or disprove its results. Also, only one other study has reported on the links between cyberbullying and relational aggression using quantitative data since. Therefore, the study provided first cues that affective and cognitive empathy might be related to cyberbullying perpetration and victimization in differential ways by showing significantly lower scores for bullies and victims in affective empathy compared to non-involved students, but no significant differences in cognitive empathy. The results are especially noteworthy because the study was one of very few in the whole field using peer-reports.

### 8.1.3 Study 3: Is cyberbullying related to lack of empathy and social-emotional problems?

Study 3 continued and built on the results of Study 2 and examined the relationship between cyberbullying and empathy on the basis of short-term longitudinal data. The sample consisted of 77 students from 7$^{th}$ and 8$^{th}$ grades from a school in Bremen and was surveyed 5 months apart. Boys were slightly overrepresented (54.5%) and the mean age of participants was 12.53 years. Data were collected as part of a more comprehensive evaluation study, but only the data of participants of the non-treatment control group were analyzed in this study. Affective empathy was assessed using a sympathy measure as there is no clear distinction between the two concepts and sympathy can be seen as a result of empathy (Eisenberg, 2000; Eisenberg, Eggum, & Di Giunta, 2010). Further variables were perspective-taking, traditional bullying and victimization. This study furthermore extended the previous research questions by including additional potential outcomes such as social withdrawal and psychopathological symptoms. Four separate hierarchical quasi-poisson regressions were conducted to analyze sequential links from perspective-taking and affective empathy to cyberbullying and -victimization, respectively, and from cyberbullying

and -victimization to social withdrawal and psychopathological symptoms, respectively. Traditional bullying and victimization were controlled for. Neither affective nor cognitive empathy predicted cybervictimization. Cyberbullyingwas predicted by below average affective empathy, but not by perspective-taking. The interaction between affective and cognitive empathy did not reach statistical significance, but showed a tendency towards students with high levels of perspective-taking and concurrent low levels of affective empathy being more likely to cyberbully. Neither social withdrawal nor psychopathological symptoms were predicted by cyberbullying or cybervictimization.

This study allowed preliminary insight into short-term longitudinal links between a limited number of variables representing potential risk/protective factors or outcome, and cyberbullying and -victimization. Although no general claims can be made and results can only be viewed as impulses for further research, this study contributes to the very small number of (short-term) longitudinal studies on the influence of empathy on the likelihood of becoming a cyberbullying perpetrator or victim. It provides contrasting results to the many cross-sectional studies which have found associations between psychopathological symptoms and cyberbullying and cybervictimization. However, these results need to be interpreted cautiously and to be replicated within a larger sample.

### 8.1.4 Study 4: Emotional and behavioral problems in the context of cyberbullying

This study builds on the previous studies and examines hypotheses derived from cross-sectional results regarding the chronology over a time period of 3 months. It is investigated whether the variables play a role in detrimental outcomes of cyberbullying perpetration and victimization. A further aim was to test whether the dichotomy of

internalizing symptoms for victims versus externalizing symptoms for bullies can be upheld empirically. Internalizing symptoms were operationalized by depressiveness and loneliness, externalizing symptoms were assessed in the forms of reactive and instrumental aggression. At first measurement (t1), data was provided by 412 students averagely 13.35 years old and almost evenly distributed by gender (52.4% girls). 223 students also provided data at second measurement 3 months later (t2, 13.14 years, 48.9%). For cross-sectional comparisons, students were categorized into four groups: cyberbullies, cybervictims, cyberbully-victims and non-involved adolescents. There were no significant differences between the involvement groups regarding internalizing symptoms at t1. However, all groups involved in cyberbullying were significantly more instrumentally aggressive than non-involved students, and adolescents of the two perpetrator groups showed more reactive aggression than non-involved students. Cyberbullies-only were moreover more reactively aggressive than cybervictims-only.

Model comparisons indicated that a multi-group model divided by sex was more appropriate for analyzing longitudinal links across the two measurement waves. The interaction term between cyberbullying and cybervictimization was also included as a predictor. Expectedly, prediction paths for detrimental outcomes differed by sex. For girls, t1 cybervictimization predicted t2 depressiveness, but not loneliness. However, t2 loneliness was predicted by t1 depressiveness. This result might indicate indirect effects of cybervictimization on loneliness via depression. T1 cybervictimization further predicted reactive and instrumental aggression at t2, whereas t1 cyberbullying only predicted t2 reactive aggression. Showing both cyberbullying perpetration and victimization at t1, however, predicted lower levels of reactive aggression at t2, leading to the assumption that “acting out” might reduce aggression levels instead of leading to accumulated aggression levels. For boys, cybervictimization predicted neither internalizing nor externalizing symptoms. Boys with higher t1 cyberbullying scores

were less depressive and lonely 3 months later. Being high on both perpetration and victimization at t1 predicted increases in loneliness at t2 though.

Study 4 contributes to the current field of cyberbullying research by showing that there is no clear dichotomy between internalizing and externalizing symptoms in victims and perpetrators of cyberbullying and also by showing differential outcomes for boys and girls. It is one of very few studies to examine potential outcomes based on (short-term) longitudinal data rather than relying solely on cross-sectional associations. Indeed, some previous cross-sectional associations between cyberbullying and different outcome measures could partly be replicated longitudinally in the present study. Aggression, however, seems to be an important outcome for all involvement groups and underscores the need for action in order to prevent cyberbullying and -victimization from escalating further into aggressive behavior in real-life environments.

### 8.1.5 Study 5: Targeting cyberbullying in school

The last study of this dissertation introduced the preventive intervention "Medienhelden" ("Media Heroes") which was developed on the knowledge derived from the previous studies. It is one of the first manualized and evaluated programs tackling cyberbullying specifically. It builds on the Theory of Planned Behavior (Ajzen, 1991) and aims at fostering affective and cognitive empathy, among others. Therefore, this study analyzed the program's effects on cyberbullying perpetration and the two dimensions of empathy. The aim of this study was to analyze the effectiveness of two versions of the program. One version was a structured curriculum lasting about 10 weeks with 90-minutes sessions each week (long intervention). The second version was a structured one-day project day with 4 consecutive sessions of 90 minutes each (short intervention).

Data were assessed using a pretest-posttest-follow-up-control-group design. The study examined long-term effects and therefore used the first wave (January 2011) and the third wave (November/December 2011). Schools ideally provided the same number of treatment and non-treatment (control group) classes which were assigned to the conditions by the schools' principals or subject supervisors. After a training, teachers implemented the program in their classrooms. The majority of teachers liked the program overall much or very much. 722 adolescent students aged averagely 13.36 years provided data for both measurement waves. Boys were slightly underrepresented (46.3%). A multi-group latent change structural equation model was used for analyzing the program's effects over time.

Analyses of the means of the latent change variables showed significant increases over time in perspective-taking for the short and long intervention groups, a decrease in empathy for the control group, as well as a significant increase in cyberbullying for the control group and decrease in the long intervention group. Group contrasts showed a significant effect of the short intervention on perspective-taking compared to the control group and significant effects of the long intervention on empathy and cyberbullying compared to the control group. Analyses of latent correlations showed different correlation patterns in the three different conditions. While initial states of empathy and cyberbullying were significantly negatively correlated and change in empathy was positively correlated with change in perspective-taking in all three groups, change in cyberbullying was neither associated with change in perspective-taking nor change in empathy in the control group, but negatively correlated with change in perspective-taking in the short intervention, and negatively correlated with change in empathy in the long intervention group. In all groups, initial states of the variables were negatively correlated with their change scores.

This study was able to show that reducing cyberbullying in the long-term is possible by using a social-cognitively-oriented classroom-based manualized program. Also, this study was able to show differential effects according to the version of the program (short vs. long). The short program showed an effect on the cognitive dimension of empathy while the long program version led to a change in affective empathy. In each program version a significant association with a reduction of cyberbullying was found for the respective empathy dimension. Moreover, the more intense (i.e. longer lasting) program version showed a stronger effect on cyberbullying. The contribution of this study to the field of cyberbullying lies in the empirical evidence for the effectiveness of a cyberbullying preventive intervention. It is one of only very few to scientifically evaluate an interventive and preventive approach rather than only proposing theoretical action approaches.

## 8.2 Definition of cyberbullying

In the following sections the meaning of the dissertation findings will be discussed within the context of previous and current cyberbullying research. To begin with, I will discuss the results regarding the definition of cyberbullying.

First, it seemed important to validate the term “cyberbullying” because there still is controversy about the term and the definition of it. When researchers ask questions like “Have you been cyberbullied in the past 6 months?” it is essential to ensure that both parties understand the same thing. In focus groups and interviews, children, adolescents, and adults were asked whether they found the term “cyberbullying” useful (Grigg, 2010) and results were rather discouraging. Adolescents perceived the term as “vague, inadequate and restricted” because it does not cover all incidents which they perceived as cyberbullying. Participants, especially adolescents, were afraid that people

might think it was “just bullying” while in their perception other incidents go beyond conventional bullying such as the use of pictures and videos (p. 151). It seems that the target group itself wishes cyberbullying to be seen as something different than just an extension of bullying. When presenting behaviors typically considered to constitute forms of cyberbullying and asking students for an appropriate term to classify them under, German students found the term “cyberbullying” (Cybermobbing) quite fitting to describe these behaviors except for impersonation. Similarly, Italian students produced the term “virtual bullying”. Spanish students, however, did not refer to the digital context with their terms “harassment” and “abuse”. Using the same study design and materials, Estonian students produced the terms “internet bullying”, “cell phone bullying”, and “text bullying”, but did not summarize all these under the heading of “cyber” because for them cell phones do not represent the cyber context. Thus they simply agreed on “bullying” (Naruskov, Luik, Nocentini, & Menesini, 2012). It is therefore important to take into account cultural specificities and not to simply translate or adopt the English term cyberbullying in cross-national studies. For Germany, for example, using the term “Cybermobbing” seems more appropriate.

As was seen in Study 1, all of the definitional criteria have different and often opposing implications for the definition. For example, on the one hand students argued that anonymity could increase insecurity and fear because the victim does not know the person it is attacked by. On the other hand, some students argued that victimization by friends might be more hurtful. All criteria were discussed regarding different views, and arguments were found for each pole making a clear decision on which manifestation the definition criteria should take on for the definition difficult. In a study from Belgium using 53 focus groups, for example, students reported that they communicate with their friends in a different way than with others which might be perceived as hurtful or insulting by outsiders, but is often actually meant as a joke which supposedly both

parties of the communication are aware of (Vandebosch & Van Cleemput, 2008). So there might be further variables that influence whether or not a communication is perceived as harmful such as communication styles.

From the results of Study 1 and the other reported studies it also becomes clear that transferring the conventional definition criteria of traditional bullying to cyberbullying is problematic and not easily done.

It is hard to judge the *intention* of the perpetrator (Menesini & Nocentini, 2009). Students in our study linked the judgment whether an act should be called cyberbullying to the condition that the victim feel stressed or negatively impacted by it, regardless of the perpetrator's intention. An action may be perceived as intentional although it was not intended that way by the alleged perpetrator and the other way around. Again, personal characteristics of the target may influence the perception or attribution of intention such as a hostile attribution bias (Crick & Dodge, 1996), that is to assume hostile intentions in the actions of others, or rejection sensitivity, that is the tendency to expect rejection in (ambiguous) social situations (cf. Downey, Lebolt, Rincon, & Freitas, 1998). However, even if cyberbullying acts were unintentional and rather thoughtless such as putting pictures up on the internet without being aware that they might be hurtful, would this hurt the victim less, especially if it would not know about the intentions of the perpetrator? The damage may be done even if not intended. Would this be reason enough to deny a person the status of being a victim? It is likely that most of the prominent cases of teenagers cyberbullied by pictures of them being uploaded to the internet were unreflected and initially not intended to hurt the victim. Should these cases then be excluded from the array of cyberbullying acts? In other studies, such as the Belgian one, adolescents distinguished cyber jokes from cyberbullying by using the criterion of intention: A behavior should be called cyberbullying when intended to hurt the target (Vandebosch & Van Cleemput, 2008). Again, however, students more

strongly relied on the victim's perception and were aware that the victim's assessment of the intention might differ from the bully's actual intention. An investigation of the definitional criteria with quantitative data from different countries consistently showed intention to be perceived as the second most important criterion for cyberbullying apart from power imbalance (Menesini et al., 2012c). However, it interacts with anonymity so that when power imbalance is absent, incidents are more likely to be perceived as cyberbullying if they are intentional and non-anonymous. In Study 1 using qualitative data, intention was highly linked to power imbalance operationalized in the form of helplessness and the victim being upset. Students still think it is cyberbullying if the victim is negatively impacted even if this was unintended. Providing students with a definition in measurement instruments which relies on the criterion of intention might therefore lead to low victim-perpetrator-agreement because intention is not easily interpreted by the victim. However, including this criterion might better take into account the potential distress of a person targeted by cyberbullying rather than solely judging from a perpetrator-oriented perspective.

*Power imbalance* in cyberbullying is often operationalized as the victim not being able to have contents removed from the internet which were uploaded by others. Some researchers understand higher levels of media literacy of perpetrators or higher social status as indicators of power imbalance (Hinduja & Patchin, 2007; Menesini & Nocentini, 2009). However, cyberbullying acts are often rather simple in nature and advanced internet skills did not predict cyberbullying perpetration (e.g., Vandebosch & Van Cleemput, 2009). In our study, power imbalance was represented by the victim being upset and not knowing how to defend itself. Our results have shown, however, that this operationalization may not have been an adequate operationalization because the Italian adolescents argued that there always is a way to defend oneself and the German participants reported that it is unlikely that someone would not care (control

condition) about an incident like this. In the quantitative study by Menesini et al. (2012c) power imbalance was the most important criterion to define an incident as cyberbullying, possibly because this criterion, in the way it was operationalized, represented best what was most important to the adolescents, namely the consequences for the victim. More detailed analyses of the German data of Study 1 revealed that power imbalance also interacts with anonymity because if targets do not know the perpetrator they are not able to defend themselves or do not know who to defend against (Schultze-Krumbholz, Höher, Fiebig, & Scheithauer, under revision). We also found that the strength of evidence of pictures and videos puts the victim in a particularly powerless position because words and rumors can be countered or denied, but pictures – even if tampered with – are hard to disprove. Different behaviors should therefore be weighted according to their severity and the possible ways of distributing them further as well as according to their potential of harm.

*Repetition* has been included in the definition of cyberbullying because it is an indication of intention through methodical actions (Langos, 2012). This assumption was supported by the results from our focus groups. Students said that repeated behavior can impossibly be unintentional. Although not verbalized, the reason for this perception is probably the same as the one given by Langos. However, does this mean that single acts should not be counted as cyberbullying? This leads to the question how contents uploaded once for a wide access should be judged. The dissemination of this material cannot be influenced by the perpetrator anymore because it can be shared, posted, linked and downloaded countless times without control. Dooley et al. (2009) reinterpret this criterion arguing that even single acts lead to an expectation of further attacks and therefore already fulfill the criterion of repetition for the victim. However, this might also be said for traditional bullying and has not led to a change of its definition. Fawzi (2009) suggests that instead of counting the incidents, rather their effective duration

should be taken into account. Our results indicate that both ways would be adequate because students explained that repeated or ongoing cyberbullying is more serious than single and timely limited acts. Langos (2012) suggested dividing cyberbullying into direct (non-public and only targeted at the victim itself) and indirect (not targeted at the victim directly, but via acts in public venues) cyberbullying. This is supported by the results from Study 1. As described before, repetition interacted with intention.

Study 1 found the cyber-specific criteria not to be relevant for the distinction between bullying and non-bullying incidents, but for the assessment of the severity of the incident. More recent studies using quantitative data have come to slightly different findings. *Anonymity*, or rather the absence of anonymity, was part of the second dimension (in a multi-dimensional scaling analysis, imbalance of power being the first dimension) together with intentionality for the definition of cyberbullying in the eyes of adolescents themselves (Menesini et al., 2012c). Anonymity definitely raises insecurity because the target does not know who is behind the cyberbullying and cannot judge whether this person is actually dangerous (Naruskov et al., 2012) or a known person. Since cyberbullying is perceived as more severe when it threatens offline relationships and well-being (Ševčíková, Šmahel, & Otavová, 2012) this criterion cannot be disregarded despite the negating results of Study 1. Anonymity could play a role for power imbalance as the perpetrator has an advantage when the victim does not know who he or she is, especially if that person comes from the personal offline environment of the victim. Power imbalance might even lose its importance as a definitional criterion by anonymity (Fauman, 2008) because anonymity might lead to increased feelings of frustration and helplessness (Dooley et al., 2009), precisely those feelings which power imbalance is operationalized by in cyberbullying research.

Publicity describes the extent to which a cyberbullying incident is visible to others or whether the attack is more private such as sending cell phone text messages

only to the victim. In a previous study students indicated that public incidents are perceived as more severe (Slonje & Smith, 2008). In our study, publicity was not necessary to judge an incident as cyberbullying, but it influenced how severe an incident was perceived. This criterion might reduce the importance of repetition for an incident to have a large negative impact on the victim when the audience is extended beyond the parties involved because it may damage the reputation or relationships of the victim permanently. Publicity could therefore constitute an alternative criterion when repetition is absent. For example, each hit on one single embarrassing online content of the victim might be counted as a repetition of the victimization (Dooley et al., 2009).

An answer to many of the questions regarding the definition of cyberbullying could lie in including the victim's perspective and the experienced harm. This is also in line with the results by Kuhlmann et al. (2013) which showed proximal victim-related aspects to be more relevant for students perceptions of cyberbullying incidents than distal perpetrator-related aspects. The presented results showed that the simple transfer of the traditional bullying definition does not do justice to the specificities of the cyber context. A more fitting approach than presenting a theory-based, top-down definition (cf. Kuhlmann et al., 2013, p. 2784) might therefore be to build on students perceptions and develop a bottom-up definition. A step which is still lacking from Study 1 is a clear recommendation regarding a definition. As seen before, due to their closeness to traditional bullying definitions and a disregard of cyber-specific aspects, the definitions by Smith et al. (2008), Belsey (2005), and Hinduja and Patchin (2009) do not represent students' perceptions well. Tokunaga (2010) does not state how cyber-specific characteristics should be interpreted. Further, his additional characteristic of venue (inside vs. outside school) has not been empirically tested so far. So based on Study 1, knowledge from other empirical studies cited here, and an in-depth analysis of the

German focus group data, we suggest a definition of cyberbullying taking into account the five tested criteria:

> *Cyberbullying is an aggressive behavior [via modern communication media (internet, mobile phones)] by a person with actual harm of or the intention to harm a victim which cannot defend itself (due to the anonymity of the perpetrator or the strength of evidence of pictures/videos. The behavior can take place once over public communication channels or repeatedly over private communication channels. Public incidents and incidents among friends should be ascribed particular severity (Schultze-Krumbholz et al., under revision; translation by the author).*

Regarding the different types of cyberbullying there still was some disagreement whether all of them actually constitute cyberbullying. The German and Italian participants perceived impersonation to be legally relevant, but were not sure about it being cyberbullying whereas the Spanish adolescents considered all behaviors as cyberbullying. The different types of behaviors mostly led to different assessments of severity. Visual behaviors are consistently judged as the most severe behavior. In the study by Menesini et al. (2012c) only exclusion showed significantly lower rates of students labeling it as cyberbullying while the other three behavior types were equally perceived as cyberbullying. Thus the results from Study 1 are not quite in line with the quantitative data of a later study. However, the results generally show that the categorization of cyberbullying types is not satisfactory yet. Perhaps, this too should be generated in a bottom-up approach by collecting which behaviors students name when asked about what constitutes cyberbullying.

## 8.3 Potential risk and protective factors of cyberbullying

The present dissertation focused on cognitive and affective empathy or a lack thereof as potential precursors of cyberbullying perpetration (and victimization). To this end, Study 2 examined cross-sectional associations and Study 3 used longitudinal data to replicate or disprove the findings of Study 2. Study 2 further looked into social intelligence and relational aggression as risk factors, but these were not followed up on in the subsequent longitudinal studies.

The difference between Study 2 and other research on the relationship of empathy and cyberbullying is that we assessed affective empathy (which could be observed on indicators such as "helps friends in trouble", "comforts others when sad" and "notices quickly if others get hurt"; Kaukiainen, Björkqvist, Österman, Lagerspetz, & Forsblom, 1995) using peer-reports. Cognitive empathy was assessed using self-reports. We found that cyberbullies and cybervictims exhibited significantly lower levels of affective empathy than non-involved students, but did not differ regarding cognitive empathy (perspective-taking). In study 3, different measures were used to assess affective empathy, but perspective-taking was assessed using the same measure. Consistent in both studies, perpetrators showed lower levels of affective empathy. Also both studies did not show a significant relationship with a lack of perspective-taking for perpetrators. The interaction between affective and cognitive empathy marginally missed significance, but showed a tendency in the direction that participants with above average levels of perspective-taking and simultaneous below average scores of affective empathy were more likely to become perpetrators. The marginally non-significant interaction between affective empathy (more specifically the resulting sympathy) and perspective-taking indicates that students with low levels of affective empathy and

concurrently highly levels of perspective-taking exhibit more cyberbullying. This is in line with results by Ang and Goh (2010) who found a buffering effect of affective empathy compensating low levels of perspective-taking, at least for girls.

Our results that differences or significant prediction paths were only found for affective, but not for cognitive empathy is supported by results from Renati et al. (2012) who also found significant differences only for affective empathy.

Results of the dissertation studies were inconsistent regarding cybervictims. In contrast to Study 2, Study 3 did not find any indication that victims had lower levels of affective empathy before being victimized. Other studies have found contrary results, i.e. cybervictims showed higher levels of affective empathy than cyberbullies and higher scores of cognitive empathy than non-involved students and cyberbully-victims for mobile phone bullying (Almeida, Correia, Marinho, & Garcia, 2012). In this study, although cyberbullies did show lower levels of empathy, these differences did not reach statistical significance in a sample of over 1,700 Portuguese adolescents. Therefore, this study could not replicate the negative associations between the two dimensions of empathy and cyberbullying. Sticca et al. (2013) did not find empathy to be a longitudinal predictor of cyberbullying perpetration when antisocial behaviors and media use are taken into account. However, on a correlational basis, empathy at first measurement was negatively correlated with cyberbullying at both measurement waves, but not with cybervictimization.

Our results are more in line with previous studies using cross-sectional data which have found a co-occurrence of low empathy levels and cyberbullying perpetration. However, the reported contrary results indicate that more diverse variables should be included in the analyses as there might be mediation or moderation processes which have not been taken into account yet. Also, more longitudinal research is necessary to replicate these results because the only longitudinal studies by Sticca et al.

(2013) with more than 800 students and the present one with a little more than 70 students on this topic so far had contradicting results.

Results from the other dissertation studies also allow tentative conclusions although they were not specifically dedicated to the identification of risk or protective factors. For example, Study 5 showed that the baseline states of affective empathy were negatively correlated with cyberbullying perpetration in yet another sample lending further support at least to the assumption of co-occurrence of a lack of empathy and cyberbullying perpetration. However, in the non-intervention control group a change in cyberbullying was not accompanied by a change in empathy. Cyberbullying increased over time, but none of the two empathy dimensions decreased. It should be investigated further whether the empathy levels are already very low in these individuals or whether, for example, contagion effects related with social norms accepting cyberbullying in some classes might lead others to engage in cyberbullying who normally would not do so. Since empathy and perspective-taking are conceptualized as skills, a decrease in these skills seems improbable. However, the motivation to show affective empathy or perspective-taking might differ by contexts favorable of or penalizing cyberbullying perpetration. In Study 5 we were able to establish a link between cyberbullying change and empathy change in the intervention groups while there was none in the non-intervention group. Both established links were able to decrease cyberbullying, although the decrease was smaller in the short intervention group where only perspective-taking was linked to a change in cyberbullying while the change in cyberbullying was statistically significant in the long intervention group where affective empathy was linked to a change in cyberbullying. This might be in line with previous reported results and studies which have found no direct effects or difference of perspective-taking in relation to cyberbullying perpetration.

Regarding the other significant potential risk factor in Study 2, that is relational aggression, almost no comparisons can be made with other research from the field as only two other studies has examined relational aggression and its associations with cyberbullying. These studies have come to the same results as Study 2: Cyberbullies (Werner et al., 2010) and cybervictims were more relationally aggressive in cross-sectional analyses (Utsumi, 2010). However, this is not surprising as cyberbullying might be seen as a way to act out relational aggression or is in part itself relational aggression because relationships can be effectively damaged or persons can be excluded from social interactions with some of the types of cyberbullying. For example, a further study I conducted with a different sample was on the development and factorial structure of a German cyberbullying questionnaire based on the behavioral categories suggested by Willard (2007). The Willard-categories could not be replicated, but a clear factor comprising only relationally aggressive behaviors emerged among two other factors (Schultze-Krumbholz & Scheithauer, 2009b).

The cross-sectional results of Study 4 provided some further empirical insight into associations between cyberbullying, cybervictimization and different subtypes of aggression. All involvement groups showed significantly more instrumental aggression than non-involved students and both bullies and bully-victims exhibited higher scores of reactive aggression than non-involved students and partly more than victims. This might be an indication of the different meaning of power differential in cyberbullying. Perhaps, more aggressive adolescents are victimized as retaliation for what they do to others offline (Ybarra & Mitchell, 2004a). Instrumental aggression, i.e. using aggression to achieve personal goals, has shown associations with positive peer status (e.g., Price & Dodge, 1989). These popular individuals (at least boys) might then be more likely to become cybervictims as in the study of Badaly et al. (2013). Cyberbullies-only being more reactively aggressive might indicate that they perceive provocations, possibly in

real-life, which they might then react to in cyberspace as in the study by Law et al. (2012a). These individuals did not report to be cybervictims, therefore, no real provocation seems to exist, at least online. Cyberbully-victims possibly become cyberbullies because they react aggressively to their victimization. However, nothing is known about the chronology yet, whether cyberbully-victims are perpetrators or victims first or whether both groups exist and differ in their characteristics.

## 8.4 Potential impact of cyberbullying

Studies 3 and 4 specifically investigated potential outcomes of cyberbullying victimization, but also perpetration. A small number of variables representing internalizing and externalizing consequences were examined: depressiveness, loneliness, social withdrawal, psychosomatic symptoms, as well as reactive and instrumental aggression.

As reported in the introduction, there already are a number of studies linking depression or depressive symptoms to cyberbullying victimization as well as perpetration (e.g., Campbell et al., 2013; Finkelhor et al., 2000; Gámez-Guadix et al., 2013; Ybarra & Mitchell, 2004b). Study 4 assessed outcomes over a time period of three months. Model fits indicated that there are different paths by gender. Victimized girls showed higher levels of depressiveness (which was assessed on a sub-clinical level) whereas victimized boys reported no change in depressiveness. Previous studies on gender differences showed girls to exhibit more internalizing problems during adolescence than boys (e.g., Crick & Zahn-Waxler, 2003). Another reason why girls possibly suffer more from cybervictimization than boys is the effect it might have on their social relationships which girls place more value on than boys. Girls are more intimately connected to their peers (Claes, 1992) and show a stronger peer attachment as well as more self-disclosure within friendships (cf. Gorrese & Ruggieri, 2012).

Cyberbullying acts might therefore “hit closer to home”, for example when secrets are passed on. This might unsettle their faith in their friendships and relationships. However, over the short 3-months period used in Study 4, no significant increases in loneliness were directly associated with cybervictimization. However, loneliness was significantly associated with depression. Therefore, the link between cybervictimization and loneliness might be mediated by depression. Withdrawal from others might take a longer time and suspicion towards the social surroundings might also only develop in severe longer-lasting cases of cybervictimization whereas subclinical depressive reactions might be a common and short term reaction to experiencing cyberbullying.

In Study 3, we also found no significant prediction of social withdrawal by cybervictimization. After finding that only cybervictimization, but not traditional victimization predicted changes in depressive symptoms over time, Machmutow, Perren, Sticca, and Alsaker (2012) suspect that through the breadth of the potential audience, cybervictimization might be associated with higher levels of shame than traditional bullying. Ortega et al. (2009) also found girls to be more affected by cybervictimization on a wide range of negative emotions while boys were more likely to indicate that they did not feel bothered by the incident(s). They suspect that boys might not easily admit to being affected by or that they are not as acutely attuned to threats to their social relationships as girls. The finding that (female) victims of cyberbullying experience depressiveness as a consequence is in line with previous research (see above and the introduction section).

Regarding the impact on perpetrators, in Study 3, we did not find cyberbullying to predict either withdrawal or psychosomatic symptoms. In Study 4, girls with higher scores of cyberbullying did not report increased levels of internalizing symptoms (i.e. depressiveness and loneliness). However, male perpetrators reported lower levels of depressiveness. This is contrary to previous research which showed perpetrators to also

be negatively affected (e.g., Campbell et al., 2013). However, at least one study did not find cyberbullies to report more depression than non-involved students while cybervictims and cyberbully-victims did (Kowalski & Limber, 2013). That perpetrators even reported a decrease in depressiveness over time, however, is a new and inconsistent finding. It seems that in our study boys who bullied others felt better (i.e. less depressed) at a later time point. Since they also reported lower levels of loneliness, cyberbullying perpetration among German adolescents might possibly be associated with a more positive social standing. In international research the opposite association was shown so far (Badaly et al., 2013; Calvete et al., 2010; Schoffstall & Cohen, 2011), but as I showed in the introduction international research is not always unrestrictedly transferable to the situation in Germany (e.g., regarding gender differences). Since cyberbullying perpetration can be or often is hidden from others except when committed in groups, it is hard to compare with traditional bullying where bullying perpetration might serve to establish (Reijntjes et al., 2013) or maintain social dominance (Crick, Murray-Close, Marks, & Mohajeri-Nelson, 2009) by intimidating others or showing one's "strength" and is conducted in a more observable way. Therefore, studies on the association between social status measures and cyberbullying perpetration and victimization are needed, also specifically for Germany. Another explanation might be the retaliation hypothesis (Ybarra & Mitchell, 2004a), i.e. if the cyberbullies in our study were traditional victims more often, retaliating online might make them feel better. Unfortunately, we could not control for this in our analyses due to the relatively small sample. We found more loneliness in boys who were both a victim and perpetrator of cyberbullying. This might also be connected to social standing. Badaly et al. (2013) found male perpetrators' popularity to decrease over time. Also, male victims reported a decrease in popularity and social acceptance although this was not

significant. However, in persons who are both perpetrators and victims this might accumulate or multiply.

As was reported in Study 4, the model for girls explained much more variance in the outcome variables than for boys (between 40% and 82% vs. between 18% and 36%, respectively). It is therefore likely that there are further mechanisms for boys concerning cyberbullying, cybervictimization, and related outcomes which have not been taken into account in Study 4.

Neither bullies nor victims (except for bully-victims) reported increased levels of loneliness in Study 4. This is in line with results from Study 3 which did not find cyberbullying or cybervictimization to predict social withdrawal.

Interestingly, externalizing symptoms were only found to be associated with cyberbullying and –victimization for girls. While there were no significant paths for any of the involvement groups for boys, victimized and perpetrating girls showed higher levels of aggression while girls who were both showed lower levels of aggression. Specifically, female bully/victims showed less reactive aggression which led us to the assumption that after "acting out" they might not be inclined to act aggressively anymore. Victimized girls in turn reported higher levels of instrumental as well as reactive aggression at second measurement. It would be interesting to know if subsequently they also have become bully-victims at a later time. Although the items specifically asked about behaviors and not fantasies, the female participants might still have used the aggression items to actually describe internalized emotional states or fantasies (see also Musher-Eizenman et al., 2004). Previous studies have shown that victims experience anger, among others, after being victimized (Carter, 2011; Techniker Krankenkasse, 2011). In the study by Ortega et al. (2009) more girls belonged to the affected category showing all kinds of emotions including anger, while more boys belonged to the not-bothered category. Thus, more female victims experienced anger

than male victims. This is in line when the results of the present study that showed girls to report more aggression (or aggressive thoughts). Further, previous research has shown peer victimization to be associated with anger and aggressive responses (cf. Champion & Clay, 2007). A meta-analysis on the association of proactive (also used synonymously for instrumental aggression) and reactive aggression with peer victimization, among others, showed that there are differential associations. High victimization was associated more strongly with reactive aggression while proactive aggression was related to lower victimization (Card & Little, 2006). But as Card and Little (2006) also showed the two types of aggression are highly correlated. Accordingly, in the study by Law et al. (2012a) participants did not clearly differentiate between reactive or proactive aggression. Possibly, the victims in our study do not perceive (thoughts or plans about) retaliation to be solely reactive. The formulation of the instrumental aggression items might also fit for retaliatory intentions, for example, "to get what I want" might also be understood as "to get them to stop bullying me" with stopping the bullying being what the victim really wants to achieve. This way, the difference would no longer be clear between instrumental and reactive aggression. Also consistent with Law et al. (2012a) are the higher levels for reactive aggression of perpetrating girls. It seems that perpetrators perceive their actions as reactions to perceived provocations. Over time this might lead to a vicious cycle of justifying repeated online aggression. This should be tested with models assessing bi-directional links between cyberbullying and subtypes of aggression.

In any case, it is important to not let aggression levels escalate and also not to let them spread to real-life environments where either the victim might retaliate in a harmful way, such as the case of the "Facebook murder" in the Netherlands (Winsie Hau; see Introduction), or the perpetrator(s) might resort to physical acts of violence as in a case in Germany where the 17 year-old boyfriend of a victim confronted the

cyberbullies on the street and was later caught and beaten unconscious by the bullies (Jüttner, 2011).

## 8.5 Implications for the prevention of cyberbullying

Studies 1 to 4 have paved the way for Study 5 and the development of the preventive intervention "Medienhelden" against cyberbullying. "Medienhelden" specifically works on the primary and universal first level (cf. Mrazek & Haggerty, 1994; Perren et al., 2012b) and ideally targets classes and students before the emergence of (new) cyberbullying incidents and addresses online risks as well as classroom variables, trains specific social skills and conveys strategies for safe internet use. By presenting students with specific strategies on how to terminate an ongoing cyberbullying episode it also works on the second level, the level of combatting a current situation. By raising awareness of cyberbullying among students and teachers the program also seeks to indirectly reduce negative outcomes and raise social support of the victims (level 3). However, the potential program effects on levels 2 and 3 were not investigated and reported in the present studies. The findings only apply to the first level on which new (further) cyberbullying incidents are prevented.

Medienhelden also touches on a variety of strategies presented in the Introduction. For one, technical strategies are facilitated to defend against or terminate specific cyberbullying incidents. Personal strategies to be conducted by the victim on their own, such as confronting the perpetrator, are not encouraged based on the findings presented in the Introduction. However, since the direct social environment, the school class including the teacher as well as the parents, is sensitized, turning to classmates and school personnel, but also to parents is encouraged by the program. "Medienhelden" is not part of a general anti-bullying effort like the Noncadiamointrappola (Menesini et al., 2012b) or the KiVa program (Salmivalli et al., 2011), which clearly is a drawback on

the practical side because it would be easier for schools to implement both at the same time instead of having to manage organizational efforts twice. However, "Medienhelden" can theoretically be combined with other efforts, especially with the fairplayer.manual (Scheithauer & Bull, 2008) as there are some structural similarities between these two programs, although no empirical or practical experience yet exists about this specific combination.

The results from Study 5 support the effectiveness of "Medienhelden" against cyberbullying by promoting affective and cognitive empathy. The results showed that there were different mechanisms between the three groups. In the group receiving no treatment, the change in cyberbullying over time was not associated with changes in the empathy dimensions. However, in both intervention groups "Medienhelden" was able to link one empathy dimension to a change in cyberbullying. The program achieved a change in the cognitive dimension of empathy in the short version. This indicates that one day may not suffice for knowledge and the mostly cognitive contents to transfer to and solidify in the participants' emotions, but gaining knowledge about cyberbullying, strategies to prevent and fight cyberbullying, the affected adolescents' feelings, and the social undesirability of this behavior prevented a further increase in cyberbullying as observed in the control group. This is in line with previous research on bullying programs and prevention efforts in general (Ttofi & Farrington, 2011) which have shown longer-lasting intervention to have more positive effects.

Besides actually reducing cyberbullying Medienhelden also increased the motivation to show empathy towards others. However, there were no noteworthy effects on perspective-taking which is rather surprising as one should expect the long intervention to show effects over and above the short intervention. Instead, it actually shows different effects. However, as the research on the association between cyberbullying and the different empathy dimensions showed, affective empathy is more

important to prevent adolescents from perpetrating cyberbullying (cf. Renati et al., 2012; Topcu & Erdur-Baker, 2012). On the other hand, Ang and Goh (2010) showed that boys were only less likely to cyberbully if they were high on both empathy dimensions. Further analyses into gender-specific effects of "Medienhelden" are needed. Still, as the program is a universal program and cyberbullying is a phenomenon with perpetration rates around 20% or less and outcome variables were aggregated across the whole sample, the effects can be interpreted as satisfying. "Medienhelden" as one of the very few first approaches to addressing cyberbullying systematically and as a school-based program is promising. Also, the effects were found for the program being implemented by teachers instead of external experts. Therefore sustainable actions by schools seem possible if teachers adhere to the manualized procedures.

Summarizing, we recommend to at least implement a one-day intervention if resources do not allow implementing the longer lasting curriculum. The project day was able to at least level off cyberbullying perpetration and affective empathy levels while these developed negatively when doing nothing. However, the need for further analyses beyond these first indications of the program's effectiveness becomes apparent.

Regarding the research questions, I presented in detail how different types of cyberbullying and the definition criteria were perceived by adolescents, that some of them are perceived the way they were intended by researchers, but that some others are interpreted differently or further criteria are suggested. I also showed that German adolescents use the term "Cybermobbing", among others, to describe behavior types conceptualized as cyberbullying. The second research questions asked whether the two dimensions of empathy and different subtypes of aggression are potential risk factors for cyberbullying perpetration and victimization. The results clearly showed an important role of a lack of affective empathy, especially for becoming a cyberbullying

perpetrator. Relational and instrumental aggression was increased in cyberbullying perpetrators and victims and perpetrators moreover exhibited increased levels of reactive aggression. Lack of affective empathy may be judged as a potential risk factor. For aggression subtypes the present results need to be verified longitudinally. The third research question aimed at potential consequences of cyberbullying perpetration and victimization, specifically at depressiveness, loneliness, social withdrawal, psychopathological symptoms and different subtypes of aggression. The results I presented indicated a gender-specific impact as well as an impact specific for different involvement groups. I did not find social withdrawal and psychopathological symptoms to be significantly predicted by either cyberbullying or cybervictimization. However, cybervictimization was associated with higher depressiveness in girls whereas cyberbullying was linked to decreased depressiveness in boys. Loneliness was only relevant for male cyberbully-victims and aggression subtypes were only significantly predicted by cyberbullying and cybervictimization in girls. The research question was therefore partly supported and the analyses showed depressiveness, loneliness, and aggression subtypes to be (potential) consequences of cyberbullying and cybervictimization. The final research question asked whether a preventive intervention implemented in a classroom context targeting cognitive and affective empathy can reduce cyberbullying. The results I presented showed that the Medienhelden program can reduce cyberbullying in its long version and that it can level off cyberbullying levels in its short version whereas cyberbullying increased among students who did not take part in this program.

# 9 Limitations and outlook

Like most other research, the present dissertation has strengths and limitations. A clear strength is the use of different samples to analyze similar research questions. Unfortunately, I was not always able to use identical measures for the same constructs due to projects-specific constraints. The findings might therefore not always be comparable. Especially prevalence rates of cyberbullying and cybervictimization are affected by this. However, comparability would have been especially desirable for the results from the studies with very small samples. This is another limitation. Due to the convenience nature of the sample acquisition, the samples are not representative and are partly very small. Special analysis methods were used to take into consideration this circumstance. Still, especially the marginally significant results might have been more clear and unambiguous in larger samples. This seems to be a general problem of cyberbullying research so far because the whole field suffers from the exploratory nature of the research, small samples and convenience sampling (Li, Smith, & Cross, 2012). In the future, more large and representative studies should be conducted, preferably also using longitudinal data, and efforts are necessary to investigate the transferability of modern advanced analysis methods to the very specific type of data provided by cyberbullying research. These efforts have already begun and first such studies are slowly being published or are currently under way.

The present dissertation also suffers from the general limitations of survey studies. For one, experimental designs are needed to inform statements on causality. Also, ways need to be found to slacken the strong dependence on direct self-report measures which underlie social desirability and other processes. However, since cyberbullying is at least in parts a covert behavior and not all victims are victimized by their class- or schoolmates, peer reports and nominations would also only depict a snippet of the picture. Using measures asking students whether they know a victim of

cyberbullying is also problematic because unless these students are asked to indicate a name or other personal information, one cannot be sure that the same persons are not counted repeatedly thus distorting prevalence estimates. We can only hope that guaranteeing confidentiality encouraged students to answer as truthfully as possible. Surveying 4th to 6th graders, Salmivalli (2002) was able to show that for traditional bullying self-reporting victimization decreases with age while peer-reported victimization remains stable. Thus, the rates of victimization reported here are more likely to be underestimated than overestimated given that the same mechanism applies to the phenomenon of cyberbullying. The downside to anonymity in the surveys is, however, for students to over-report their own involvement in cyberbullying if this behavior was perceived as "cool" in the class.

The focus of the dissertation was on adolescent individuals only. However, cyberbullying does not only affect students in secondary school, but probably also primary school students, and adults as well as persons from their closer social environment such as teachers, parents or friends seeking to help the victim. The target groups should and need to be extended. Community and society factors should also be examined in future research to examine in how far policy-makers also have opportunities for action.

Accordingly to the previous limitation, "Medienhelden" strongly focuses on the individual student and to a lesser extent on teachers and parents. In a future edition of the program this focus should be expanded. Also, many of the exercises aim at bullies to realize the damaging effects of their actions and at empowering victims to terminate incidents of cybervictimization and to better protect themselves. However, Pfetsch, Mohr, and Ittel (eingereicht) recommend developing measures for bystanders to increase the likelihood of their defending the victim and reporting incidents. "Medienhelden"'s effectiveness should be examined separately for the different roles

involved in cyberbullying to account for suggestions like these and to inform future modifications of the program.

Despite the limitations listed here as well as in the studies themselves this dissertation and its research studies has contributed and will contribute to the body of cyberbullying research which is still far from exhaustive. The findings have provided a basis for a prevention program against cyberbullying which has been shown to be effective in a first trial. The basic research finding may inform further basic research. It will also be the foundation of further work of the author to use already available data as well as for collecting new data and delving deeper into some of the main research questions to identify underlying mechanisms, use more sophisticated methods to identify the parts of variance specifically explained by cyberbullying and to contribute to building a theoretical framework for understanding cyberbullying. Especially the studies with small sample sizes left open a number of questions which might be answered using this data. For example, we might try to replicate the results on psychopathological symptoms and social withdrawal to determine whether non-significant results were really due to non-existent differences or due to low power owed to the sample size. Findings on the prevention program can inform future efforts to target cyberbullying regarding how a preventive intervention should be designed and what works to effectively prevent cyberbullying. This might hopefully also be an inspiration to recognize the importance of basing interventions on theoretical knowledge and evaluating it empirically to foster children's and adolescents' well-being in a new communication space.

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# Curriculum vitae

The curriculum vitae is not included in the online version of this dissertation due to data protection concerns.

# Erklärung

Hiermit versichere ich, dass ich die vorliegende Arbeit selbstständig verfasst habe. Andere als die angegebenen Hilfsmittel habe ich nicht verwendet. Die Arbeit ist in keinem früheren Promotionsverfahren angenommen oder abgelehnt worden.

Berlin, den 17.12.2013 Anja Schultze-Krumbholz