Feeling Cybervictims' Pain—The Effect of Empathy Training on Cyberbullying

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As the world's population increasingly relies on the use of modern technology, cyberbullying becomes an omnipresent risk for children and adolescents and demands counteraction to prevent negative (online) experiences. The classroom-based German preventive intervention "Medienhelden" (engl.: "Media Heroes") builds on previous knowledge about links between cognitive empathy, affective empathy, and cyberbullying, among others. For an evaluation study, longitudinal data were available from 722 high school students aged 11–17 years ($M = 13.36$, $SD = 1.00$, 51.8% female) before and six months after the implementation of the program. A 10-week version 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 cognitive empathy and significant effects of the long intervention on affective empathy and cyberbullying reduction. The results suggest the long-term intervention to be more effective in reducing cyberbullying and promoting affective empathy. Without any intervention, cyberbullying increased and affective empathy decreased across the study period. Empathy change was not generally directly linked to change in cyberbullying behavior. "Media Heroes" provides effective teaching materials and empowers schools to address the important topic of cyberbullying in classroom settings without costly support from the outside. Aggr. Behav. 42:147–156, 2016.   © 2015 Wiley Periodicals, Inc.

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INTRODUCTION

Cyberbullying is a form of aggressive online behavior, which uses digital means to harass, humiliate, or insult others. Tokunaga (2010, p. 278) synthesized existing definitions into 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." Cyberbullying is conceptually different from traditional school bullying due to 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 given the unknown identity of the perpetrator (Mishna, Saini, & Solomon, 2009; Slonje & Smith, 2008). Law and colleagues, for example, were able to show functional and structural differences between cyberbullying and traditional bullying (Law, Shapka, Domene, & Gagné, 2012; Law, Shapka, Hymel, Olson, & Waterhouse, 2012). Schultze-Krumbholz et al. (2014)

identified different structures of involvement groups using the empirical approach of latent class analysis.

Cyberbullying has been linked to media-specific risk factors and correlates such as risky self-disclosure, sharing of passwords, and deviant online behavior such as visiting chatrooms with violent, pornographic, or extremist content (Katzer, Fetchenhauer, & Belschak, 2009; Mishna, Khoury-Kassabri, Gadalla, & Daciuk,

2012; Sengupta & Chaudhuri, 2011; Weber, Ziegele, & Schnauber, 2013). Moreover, Sticca and Perren (2013) were able to show that adolescents and teachers perceive cyberbullying as more threatening than traditional bullying. Anonymity, publicity and the digital nature of cyberbullying incidents caused students to rate these as more severe than traditional bullying incidents. Thus, it seems plausible to develop cyberbullying-specific interventions to also support students solely involved in bullying in the cyber context while at the same time addressing the shared risk factors of traditional and cyberbullying.

The need to address cyberbullying as a part of youths' life is reflected in the prevalence rates as well as in negative outcomes suggested by previous studies. Across 80 studies from different countries, Modecki, Minchin, Harbaugh, Guerra, and Runions (2014) computed mean prevalence rates of 15.2% for cyberbullying victimization and 15.5% for cyberbullying perpetration based on meta-analytic data. The majority of targets of cyberbullying feel moderately affected with anger being the predominant emotion (Ortega et al., 2012). Other studies found victims of cyberbullying to show severe signs of stress and anxiety (Campbell, Spears, Slee, Butler, & Kift, 2012; Finkelhor, Mitchell, & Wolak, 2000), academic problems (Beran & Li, 2007), loneliness (Şahin, 2012), depression (Perren, Dooley, Shaw, & Cross, 2010; Schultze-Krumbholz, Jäkel, Schultze, & Scheithauer, 2012; Sontag, Clemans, Graber, & Lyndon, 2011), problems in physical health and somatic symptoms (Gradinger, Strohmeier, & Spiel, 2009; Sourander et al., 2010), and higher levels of suicidal ideation and suicide attempts (Hinduja & Patchin, 2010). Victims of cyberbullying are 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). Higher levels of anxiety and depression have also been found for young people who cyberbully (Sontag et al., 2011; Ybarra & Mitchell, 2004a, 2004b). The negative correlates and consequences of cyberbullying for both victimized and perpetrating students highlights the need for action as all involved roles are at risk for enduring and significant negative outcomes.

Concept of the Preventive Intervention "Media Heroes"

The German program "Medienhelden" (engl.: "Media Heroes") is a universal, modularized, and theoretically based preventive intervention for the school context. It builds on previous knowledge about potential risk and protective factors such as cognitive and affective empathy.

Previous, mainly cross-sectional, research on the association between cyberbullying, affective empathy (responding emotionally to others' affective states) and cognitive empathy (understanding the emotions of other on a cognitive level; Hoffman, 1977) suggests a negative relation for cyberbullying perpetration. Steffgen, König, Pfetsch, and Melzer (2011) showed that adolescents who cyberbullied displayed less affective empathy than non-bullies in a large adolescent sample from Luxemburg. Similar results were obtained in Italy (Renati, Berrone, & Zanetti, 2012) and Germany (Schultze-Krumbholz & Scheithauer, 2013). A study using peer reports of empathy replicated these results showing both perpetrators and targets of cyberbullying to be perceived as significantly less affectively empathic by their peers (Schultze-Krumbholz & Scheithauer, 2009). Pfetsch, Müller, and Ittel (2014) found lower scores of both cognitive and affective empathy for adolescents who cyberbully compared to noninvolved students. Addressing cognitive and affective empathy might therefore be an adequate means to combat and prevent cyberbullying as it can inhibit aggressive and antisocial behavior in general (Miller & Eisenberg, 1988).

Following the Theory of Planned Behavior (Ajzen, 1991), "Media Heroes" aims at changes in attitudes and beliefs through the transfer of knowledge by providing the students with definitions, the legal background of cyberbullying acts as well as the impact of cyberbullying on the victim and promoting empathy with the victim (see Fig. 1). Students are also made aware that their subjective norms—the beliefs about how others expect them to behave—might not be an adequate representation of the actual norms in the classroom through closer interaction with their classmates in role plays and discussions. "Media Heroes" further aims at improving social and online skills by fostering cognitive and affective empathy, media literacy, and providing specific action alternatives. For example, the program promotes cognitive and affective empathy through empathy training by presenting students 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. "Media Heroes" relies mainly on social learning (e.g. role-play, model learning) and the application of well-established cognitive-behavioral methods (e.g. positive reinforcement, moral reasoning). According to Ajzen (1991, p. 186), attitudes, subjective norms, and perceived behavioral control combine to form an
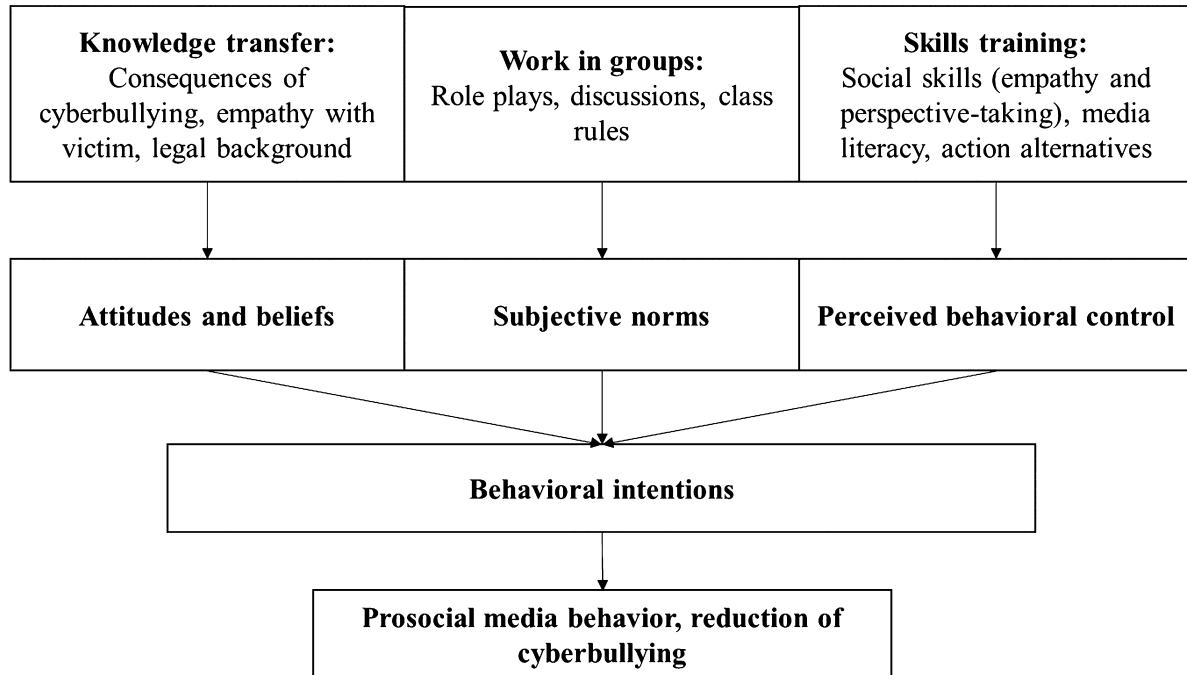
Knowledge transfer: Consequences of cyberbullying, empathy with victim, legal background	Work in groups: Role plays, discussions, class rules	Skills training: Social skills (empathy and perspective-taking), media literacy, action alternatives
Attitudes and beliefs	Subjective norms	Perceived behavioral control

Behavioral intentions

Prosocial media behavior, reduction of cyberbullying

Fig. 1. Conceptual model underlying the "Media Heroes" program, based in the Theory of Planned Behavior (Ajzen, 1991).

intention towards a certain action, which can predict behaviors "with considerable accuracy." A test of the adequacy of this model for "Media Heroes" can be found elsewhere (Zagorscak, Schultze-Krumbholz, Wölfer, & Scheithauer, Fig. 1).

Implementation of the Preventive Intervention "Media Heroes"

Based on the findings reported above, "Media Heroes" was evaluated 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.

"Media Heroes" is intended for implementation in classrooms and covers ten weeks with sessions of 90 min each as part of a curriculum (subsequently referred to as "Media Heroes" curriculum or long intervention). Reacting to schools' needs for time-efficient programs, a shortened one-day-version (4 sessions of 90 min) was also developed that offers an economic alternative (subsequently called "Media Heroes" project day or short intervention). In general, the short version covers the same contents except for legal aspects of cyberbullying. The materials are structured to first give an overview of the sessions' learning goals and the sessions' structure including methods and materials required. Each following session starts with a review of the previous session's content, then moves on to the current session's content before ending with a short evaluation and a homework assignment. Session topics range from the students' media usage, information about cyberbullying and its consequences, empathy training to internet safety and legal backgrounds. Contents of both program versions are reported in more detail by Wölfer et al. (2014). "Media Heroes" provides teachers with all materials needed to carry out the intervention on their own. A training in advance is recommended in which teachers learn about the scientific background of cyberbullying as well as discuss and practice the methods and exercises of the program. Thereafter, teachers carry out "Media Heroes" within their usual classroom environment in a standardized form with the help of the "Media Heroes" manual (Schultze-Krumbholz, Zagorscak, Siebenbrock, & Scheithauer, 2012) and are thus enabled to implement the program on their own ensuring program sustainability.

RESEARCH QUESTIONS

Based on previous research results, the present paper examines the effects of a classroom-based cyberbullying-specific preventive intervention using empathy training. For the objectives of the present study, cognitive and affective empathy are examined separately (but not independently).

We examined the following two hypotheses:

1. A preventive intervention implemented in the school environment and addressing affective and cognitive empathy reduces cyberbullying and increases these social skills in the long term in adolescents.

2. A longer term (10 90-min sessions in 10 weeks) intervention is more effective than a short-term (1 day) intervention.

Further, we wanted to explore whether change in the empathy dimensions is directly linked to decreases in cyberbullying.

METHOD

Selection Process and Allocation to Treatment Conditions

A self-selective sample including five schools participated in this study. The schools represented high ($n = 2$), medium ($n = 2$) and low ($n = 1$) socio-economic backgrounds. The participating schools were informed in advance to provide control-group classes for each class participating in the program. Principals and/or subject supervisors were asked to assign 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).

Procedure

To answer the present hypotheses, a pretest-follow-up-control-group design was used. Data were collected before the preventive intervention (January 2011) and approximately six 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.

Before implementing the preventive intervention program "Media Heroes," teachers received a training of 8 hr in two days. 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.

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 part of students' ethics classes), participation in the evaluation was voluntary. Only students with parents' and own consent were allowed to take part in the study.

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%). Overall, drop-out rates did not differ significantly between the implementation groups ($\chi^2 = 1.035$, $df = 2$, $P = .596$). A logistic regression predicting drop-out by gender, age, implementation group as well as cognitive empathy, affective empathy, and cyberbullying behavior at the first occasion revealed only age ($z = 4.605$, $P < .001$) and affective empathy at the first occasion ($z = -2.233$, $P = .026$) as significant predictors of drop-out. Overall, the *Nagelkerke Pseudo-R²* was 0.064 in the regression predicting drop-out. Descriptive characteristics of the sample can be found in Table I.

Intervention conditions were balanced with regard to gender ($\chi^2 = 1.225$, $df = 2$, $P = .458$), but not in terms of socio-economic background ($\chi^2 = 85.499$, $df = 4$, $P = .000$). There was no short intervention in the low SES group, and in the medium SES group there were more students involved in "Media Heroes" than in the control group. Although intervention conditions differed significantly with regard to age of the participants (*Welch's* $F = 3.982$, $df = 2$, $P = .020$), this difference was only four months on average and it can be assumed that students with this age difference are very likely to attend the same grade levels and are therefore still homogenous.

Measures

Cyberbullying. The European Cyberbullying Intervention Project Questionnaire (ECIPQ; Brighi et al., 2012) was used. It was self-constructed for the present research project and comprises 11 self-report items for cyberbullying behavior (e.g. "I said nasty things to someone or called them names using texts or online

TABLE I. Sample Characteristics

Category	% or M	n or SD
Age (years; range 11–17)	13.36	1.00
Sex		
Male	46.3	334
Female	51.8	374
Not indicated	1.9	14
School type		
College preparatory high school	78.7	568
General high school	21.3	154
Intervention type		
Control group	49.0	354 (16 classes)
Short intervention (project day)	18.8	136 (7 classes)
Long intervention (curriculum)	32.1	232 (12 classes)

messages"). Students were asked to answer how often they cyberbullied 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 $\alpha_{t2} = .91$.

Cognitive empathy. Students rated their own cognitive empathy 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 perspective-taking subscale of the Interpersonal Reactivity Index (IRI; Davis, 1980; German translation: Lamsfuss, Silbereisen, & Boehnke, 1990). Response categories ranged from 1 (*never true*) to 5 (*almost always true*). Internal consistencies were good with $\alpha_{t1} = .85$ and $\alpha_{t2} = .89$.

Affective empathy. 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 considered the 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 $S_2 = S_1 + C_{2-1}$, where S_1 represents the latent state of the first occasion, S_2 represents the latent state of the second occasion, and C_{2-1} represents the difference between these two latent states. This decomposition makes C_{2-1} 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 allows the analysis of mean differences in latent change as well as 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.

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 for the latent changes. 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 2. Three parcels per construct were computed from the means across items after preliminary analysis. While the distributions of the parcels for cognitive as well as affective empathy were approximately normally distributed, those indicating cyberbullying behavior were skewed (absolute skew was larger than 5.24 for all indicators). Additionally, the parcels indicating cyberbullying behavior showed very little variability in the observed values. These parcels were therefore recoded with three categories and treated as ordinal variables in the SEM. The mean and variance adjusted weighted least squares estimator proposed by Muthén, du Toit, and Spisic (1997) was used to estimate the model, because it has been shown to outperform maximum likelihood estimators in cases with variables with few categories (Beauducel & Herzberg, 2006). All analyses were done using Mplus Version 7 (Muthén & Muthén, 1998–2012).

RESULTS

To ensure the interpretability of the latent change scores and their comparisons between the three groups, measurement invariance assumptions were imposed (e.g., Marsh & Hocevar, 1985; Raju, Laffitte, & Byrne, 2002; Widaman & Reise, 1997). The model incorporating strict longitudinal invariance and strict invariance across groups showed very good overall model fit ($\chi^2 = 510.220$, df $= 465$, $P = .072$, RMSEA $= .020$, CFI $= .986$). Descriptive statistics using manifest scores for the first measurement wave can be found in Table II.

Mean Structure

At the first occasion, the means of the three constructs investigated here did not differ significantly across the three groups ($\Delta\chi^2 = 4.414$, df $= 6$, $P = .621$). Table III shows the means of the latent change variables for each of the three groups. Model comparisons revealed differences in mean change between groups ($\Delta\chi^2 = 23.239$, df $= 6$, $P < .001$). Group contrasts investigating the location of these differences showed a significant
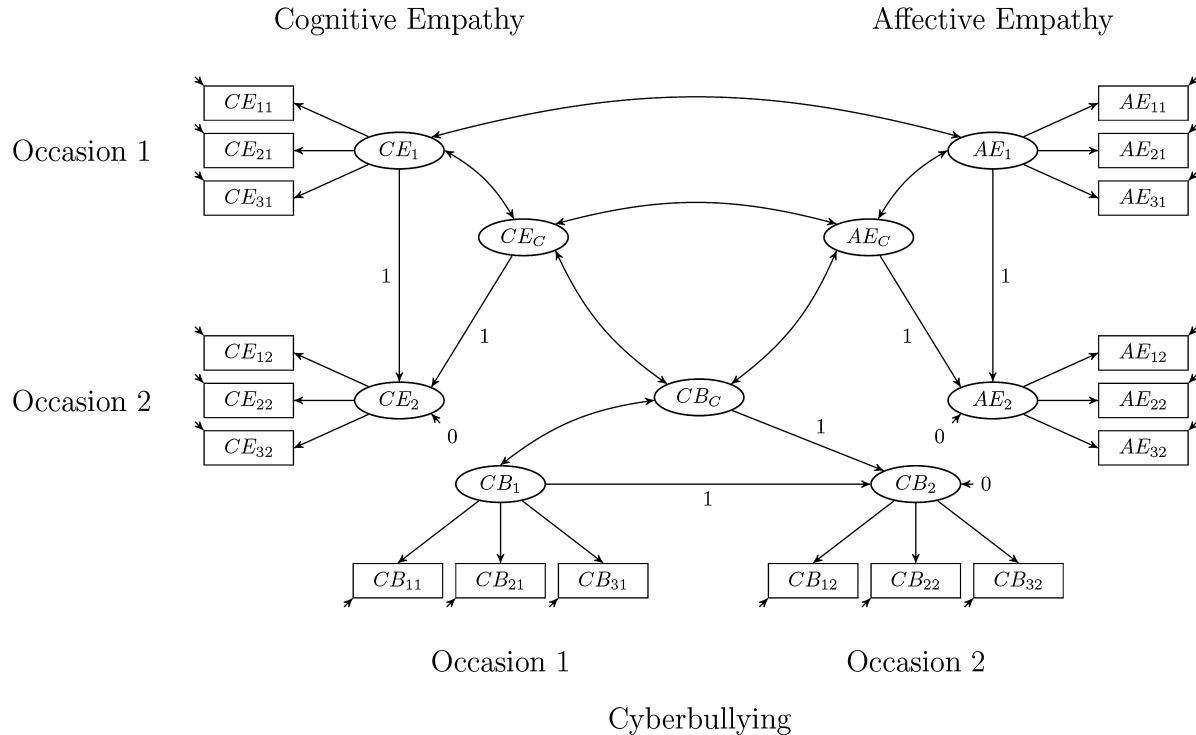
Cognitive Empathy   Affective Empathy

Occasion 1

Occasion 2

Occasion 1   Occasion 2

Cyberbullying

Fig. 2. Path diagram of the model used (*CE* = cognitive empathy, *AE* = affective empathy, *CB* = 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 *CB₁* with *AE₁* and *CE₁* are omitted for clarity.

intervention effect of the short-term intervention on cognitive empathy ($D_{IGS} = 0.221$, S.E. $= 0.082$, $P = .007$), while the effect of the long-term intervention did not reach statistical significance ($D_{IGL} = 0.132$, S.E. $= 0.076$, $P = .082$). The short-term intervention had no significant effect on the change of affective empathy ($D_{IGS} = 0.123$, S.E. $= 0.090$, $P = .170$), while the long-term intervention did ($D_{IGL} = 0.136$, S.E. $= 0.069$, $P = .049$). The same pattern was found for cyberbullying ($D_{IGS} = -0.220$, S.E. $= 0.139$, $P = .113$; $D_{IGL} = -0.444$, S.E. $= 0.153$, $P = .004$).

Latent Correlations

Model comparison using the Wald-Test showed that a model assuming the same correlations across groups fit the data significantly worse than a model with

unrestrained correlation matrices ($\chi^2 = 1249.327$, *df* $= 30$, $P < .001$). Table IV shows the latent correlations in each of the three groups.

Across all constructs and groups initial states are negatively correlated with changes pertaining to the same construct, meaning individuals with initially lower scores increase more strongly on the same construct than study participants with initially higher scores. Additionally, change in affective empathy is significantly associated with change in cognitive empathy in all three groups. Differential correlative patterns were found for the change in cyberbullying. In the control group, the change in cyberbullying was not associated with change in either cognitive or affective empathy. In the short-term intervention, which induces a significant mean change in cognitive empathy, change in cyberbullying is

TABLE II. Descriptive Statistics Regarding the Mean Scores Over All Items of the Three Constructs at First Measurement

	CG			IGS			IGL		
	M	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*
Cognitive empathy	3.245	0.650	347	3.136	0.660	131	3.188	0.711	225
Affective empathy	4.123	0.938	347	4.097	0.986	128	4.019	1.017	227
Cyberbullying	0.079	0.217	350	0.081	0.184	136	0.101	0.289	228

CG, control group; IGS, short intervention group; IGL, long intervention group.

TABLE III. Latent-Change Means of the Three Groups on the Three Constructs

	Estimate	Standard Error	*P*-Value	d
	Cognitive Empathy			
CG	.027	.040	.494	.059
IGS	.248	.073	.001	.519
IGL	.159	.065	.015	.375
	Affective Empathy			
CG	−.108	.047	.020	−.227
IGS	.015	.077	.846	.037
IGL	.028	.050	.577	.058
	Cyberbullying			
CG	.109	.084	.196	.199
IGS	−.111	.112	.322	−.203
IGL	−.335	.126	.008	−.639

CG, control group; IGS, short intervention group; IGL, long intervention group.
The *P*-value is two-sided.

TABLE IV. The Latent Correlations for the Different Intervention Groups

	CE_1	AE_1	CB_1	CE_C	AE_C	CB_C
	Control Group					
CE_1	1					
AE_1	.448***	1				
CB_1	−.086	−.131	1			
CE_C	−.360***	−.105	−.033	1		
AE_C	.046	−.372***	−.066	.177*	1	
CB_C	−.136	−.121	−.344**	−.072	−.161	1
	Short Intervention					
CE_1	1					
AE_1	.648***	1				
CB_1	−.242**	−.390***	1			
CE_C	−.521***	−.260**	−.035	1		
AE_C	−.248*	−.363**	.152	.466***	1	
CB_C	.109	.162*	−.350*	−.335***	−.216	1
	Long Intervention					
CE_1	1					
AE_1	.503***	1				
CB_1	−.194**	−.400**	1			
CE_C	−.385***	−.155*	.051	1		
AE_C	−.156*	−.425***	.237**	.269**	1	
CB_C	.027	.031	−.429***	−.093	−.211	1

CE, cognitive empathy; AE, affective empathy; CB, cyberbullying; 1, first measurement occasion; C, latent change score.
*$P < .05$.
**$P < .01$.
***$P < .001$.

negatively correlated with change in cognitive empathy, while it is not significantly associated with change in affective empathy. In the long-term intervention group, change in cyberbullying is not significantly correlated with change in either cognitive or affective empathy.

DISCUSSION

Data were analyzed on two levels: first, mean changes within groups were examined and second, the associations between the constructs in each group were examined in more detail in order to link changes in empathy with improvements in cyberbullying behavior. There were no changes in affective empathy or cyberbullying in the control group (CG) that did not receive any intervention. However, readiness to show affective empathy decreased significantly over the almost one-year period between measurement waves. Decreases in readiness to show affective empathy across adolescence have also been shown in the study by Volland et al. (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 at the time of the study. Although affective empathy did not significantly increase within any of the intervention groups (as can be seen in Table III), the intervention effect of the long intervention (IGL) 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 affective empathy levels across the time of the study. Students in the IGL decreased significantly regarding

their levels of cyberbullying perpetration and showed a significant increase in cognitive empathy. However, compared to the control group the intervention effect on cognitive empathy was not significant, whereas it was significant 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 this cognitive change 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 significant positive outcomes regarding cyberbullying perpetration.

The association between cyberbullying and affective empathy was replicated in the latent correlations on a significant level for two out of three groups, showing that lower levels of affective empathy are related to higher scores of cyberbullying behavior. Previous studies have shown young people who cyberbully to be less empathic (Schultze-Krumbholz & Scheithauer, 2009; Steffgen et al., 2011). Our study also showed that cognitive empathy is also not consistently related to being involved in cyberbullying-perpetration. This is in line with findings from previous research (e.g., Renati et al., 2012). For affective as well as cognitive empathy, the significant

associations with cyberbullying can be found in the intervention groups, but not in the control group. However, as reported in the results section regarding the mean structure, there were no significant mean differences, which might indicate group differences in cognitive and affective empathy at the first measurement occasion.

Further interpreting the latent correlations, the increase of cyberbullying in the control group is not related to changes in either cognitive or affective empathy. Therefore, we cannot conclude that a possible age-related decreased readiness to show empathy is connected to higher levels of antisocial behavior (cyberbullying). Rather, the negative correlation between cyberbullying at T1 and cyberbullying change indicates that students with higher levels of cyberbullying increase less and students with lower levels increase more strongly across the study period. In contrast, higher initial levels of cyberbullying seem to be associated with a stronger decrease in the intervention groups. Thus, in the control group, students seem to align themselves to one another's behavior. This might be an indication for group processes in cyberbullying such as norms in a classroom. For the short intervention group, students who increased in cognitive empathy decreased in their cyberbullying scores as indicated by the negative correlation between the respective change variables. For the long intervention group no such relationship was shown between change in empathy and change in cyberbullying, which contradicts previous research findings on the association between (affective) empathy and cyberbullying. Nonetheless, cyberbullying was reduced in this group, but a change in empathy does not seem to be the (direct) underlying mechanism of this change in cyberbullying.

Although the short intervention was not enough to significantly reduce cyberbullying for the whole group, it was sufficient for those whose cognitive empathy skills were enhanced to also reduce their cyberbullying behavior. This finding indicates 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 cognitive empathy and not on affective empathy and the long intervention also significantly changed cognitive empathy, but only showed an intervention effect for affective empathy (and cyberbullying). The project day seems to foster (only) the cognitive components, but still shows long-term effects.

Returning to the aims of the study and its hypotheses, we can conclude regarding hypothesis 1 that a classroom-based preventive intervention addressing cognitive and affective empathy is successful in improving these social skills depending on the chosen version. Regarding hypothesis 2, a longer term intervention was more effective, in that we were able to show that the version of the program using intense methods over a period of ten weeks significantly reduced cyberbullying while students who did not take part in "Media Heroes" even showed a decrease in social competences and an increase in cyberbullying. These effects were shown on a long-term basis. Concerning the question of whether the same effects could also be achieved using a 1-day rather than 10-week intervention, this evaluation study suggests that a short-term intervention is not effective in reducing cyberbullying, but that it can effectively enhance cognitive empathy.

Our exploration of mechanisms of change, i.e. a direct link between empathy and change in cyberbullying, did not show this direct link to be responsible for a behavioral change since change in empathy is not directly correlated with change in cyberbullying although the program achieves both at the same time. Therefore, more research is needed to explore the intervention mechanisms achieved by "Media Heroes." This might help to making the short version more effective and to find a compromise between schools' needs and scientifically founded prevention and intervention.

It is especially noteworthy that the present effects were achieved by a classroom-based intervention, which was implemented by the classroom teachers and not by external experts. The target group was universal and not specifically constricted to at-risk students or students who already showed a history of involvement in cyberbulling. Longer-term effects beyond the six 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 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. For this purpose, "Media Heroes" might be a helpful tool for raising empathy within whole classrooms. Some of the applied teaching methods also have the potential to positively influence the atmosphere within a classroom.

LIMITATIONS

A limitation of the present evaluation 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 to take 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 is partly anonymous. Peer-reports would most probably underestimate the problem even more than self-incriminations and the effects of associated social desirability in self-reports 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 strength of the present study is the examination of long-term effects (6 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 an indication of the long-term effectiveness of "Media Heroes" and long-term changes in students' social skills and behavior. Teachers are effectively able to implement a preventive intervention against cyberbullying within their classrooms. Thus, "Media Heroes" provides schools with the necessary materials and empowers them to address this important topic on their own without costly support from external personnel.

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