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Mobbing unter Schülern – psychosoziale Korrelate und Prävention

vorgelegt von
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Abstract

Mobbing unter Kindern und Jugendlichen ist ein häufig vorkommendes Phänomen, in das täglich viele Schüler und Schülerinnen involviert sind. Andauerndes Mobbing geht mit einem immensen Leidensdruck für die Betroffenen einher und kann ausschlaggebend für körperliche und psychische Belastungen sowie langfristige psychische Krankheiten sein. Während viele Entstehungsfaktoren für psychische Krankheiten nur sehr schwer von außen beeinflussbar sind, stellt sich bei Mobbing in der Schule die Frage, ob dieses und die damit einhergehenden Belastungen reduziert bzw. vermieden werden können.

Die vorliegende Arbeit stellt dar, warum Mobbing und der dadurch ausgelöste Stress ein so folgenschweres Problem für die Betroffenen und deren Gesundheit sein kann. Zudem wird anhand eines sozialpsychologischen Modells erklärt welche Ansätze im Schulkontext wichtig wären, um Mobbing zu reduzieren und adäquat einzuschreiten. Im Rahmen der Dissertation wurde des norwegische Olweus Mobbing-Präventionsprogramm (OBPP) erstmalig im deutschen Sprachraum eingeführt und evaluiert. Die vier präsentierten wissenschaftlichen Studien beschäftigen sich neben der Programmwirksamkeit über zwei Jahre auf Schüler- und Lehrerebene mit den Zusammenhängen zwischen Mobbing und Psychopathologie im Längsschnitt. Zudem werden Unterschiede und Gemeinsamkeiten von Cybermobbing und Schulmobbing analysiert.

Studie 1 evaluiert das norwegische Olweus Mobbing-Präventionsprogramm an 23 deutschen Schulen. Die Schulen, die die 18-monatige Implementierungsphase des Programms abgeschlossen haben (N = 16), zeigen eine Reduktion der Mobbingrate um 25 %. **Studie 2** analysiert weitere Effekte des Programms auf Lehrerebene. Ergebnisse zeigen, dass das Interventionsverhalten der Lehrer nach kompletter Programmimplementierung signifikant zunimmt. Auf die subjektive Belastung der Lehrer hat das Programm keinen Einfluss. **Studie 3** geht auf Gemeinsamkeiten und Unterschiede von Cybermobbing und Schulmobbing ein. Dabei zeigt sich, dass auch Cybermobbing alleine in deutlichem Zusammenhang mit psychischer Belastung steht. Für Schüler, die sowohl in der Schule als auch im Internet gemobbt werden, zeigen sich additive Effekte. **Studie 4** betrachtet im Längsschnitt den Zusammenhang zwischen Mobbing und Psychopathologie. Dabei wird deutlich, dass psychische Belastungen mit dem Beginn einer Mobbingsituation stark zunehmen. Wird Mobbing beendet, sinkt auch die psychische Belastung, allerdings deutlich langsamer.

Inhaltsverzeichnis

Abkürzungen und Bezeichnungen

A-Level Schulen	Gruppe der Gymnasien
B-Level Schulen	Gruppe der Haupt- und Realschulen
Certified schools	Gruppe der Schulen, die nach der kompletten Programmteilnahme eine sechsmonatige Zertifizierungsphase angeschlossen haben
Completer	Gruppe der Schulen, die das Programm komplett abgeschlossen haben (18 Monate)
Cyber only (co)	Gruppe von Schülern, die nur im Internet in Mobbing involviert sind
Dual involvement	Gruppe von Schülern, die sowohl in der Schule als auch im Internet in Mobbing involviert sind
HBSC-Studie	Health Behaviour in School-aged Children Study; größte europäische Kinder- und Jugendgesundheitsstudie, die im Vierjahresrhythmus stattfindet
HPA-Achse	Hypothalamus-Hypophysen-Nebennierenrinden-Achse
HRQL	Health Related Quality of Life; deutsch: Lebensqualität
ITT	Intention to treat; Gruppe der Schulen, die mit dem Programm begonnen haben
LGCM	Latent Growth Curve Model; deutsch: Wachstumskurven
Non-completer	Gruppe der Schulen, die das Programm vorzeitig abgebrochen haben
NSSI	non-suicidal self-injury; deutsch: nicht suizidales selbstverletztendes Verhalten
OBPP	Olweus Bullying Prevention Program; deutsch: Olweus Mobbing-Präventionsprogramm
OBQ-R	Olweus Bullying Questionnaire Revised; deutsch: Olweus Mobbing-Fragebogen
OR	odds ratio; deutsch: Chancenverhältnis
PTBS	Posttraumatische Belastungsstörung
RCT-Design	Randomized Controlled Trial; deutsch: randomisierte kontrollierte Studie
School only (so)	Gruppe von Schülern, die nur in der Schule in Mobbing involviert sind
Whole school approach	Ansatz für die gesamte Schulgemeinschaft

Liste der wissenschaftlichen Veröffentlichungen zur publikationsbasierten Dissertation

Manuskript 1

Ossa, F. C., Jantzer, V., Eppelmann, L., Parzer, P., Resch, F., & Kaess, M. (2021). Effects and moderators of the Olweus bullying prevention program (OBPP) in Germany. *European child & adolescent psychiatry*, 30(11), 1745-1754.

Manuskript 2

Jantzer, V., **Ossa, F.C.,** Lerch, S., Resch, F. & Kaess, M. (2023). The importance of implementation fidelity for teacher-related changes within the Olweus Bullying Prevention Program. *International Journal of Bullying Prevention*, 1-13.

Manuskript 3

Ossa, F. C., Jantzer, V., Neumayer, F., Eppelmann, L., Resch, F., & Kaess, M. (2022). Cyberbullying and school bullying are related to additive adverse effects among adolescents. *Psychopathology*, 1-11.

Manuskript 4

Jantzer, V., **Ossa, F. C.,** Eppelmann, L., Parzer, P., Resch, F., & Kaess, M. (2021). Under the skin: does psychiatric outcome of bullying victimization in school persist over time? A prospective intervention study. *Journal of Child Psychology and Psychiatry*, 63(6), 646-654.

Spezifikation des Eigenanteils der Publikationen mit mehreren Autoren

Manuskript 1

F. C. Ossa war maßgeblich an der Entwicklung, Übersetzung und Anpassung des OBPP in Deutschland beteiligt. Die Materialerstellung und Fragebogenkonstruktion lagen u. a. in ihrem Verantwortungsbereich. F. C. Ossa war an der Rekrutierung und Datenerhebung der Schulen beteiligt. Gemeinsam mit der Forschungsgruppe entwickelte sie die Fragestellung und wertete die Analysen aus. F. C. Ossa schrieb den ersten Entwurf des Manuskripts, arbeitete die Kommentare und Anmerkungen der anderen Autoren ein und führte den Revisionsprozess des Manuskripts durch.

Manuskript 2

F. C. Ossa entwickelte die Materialien für die Lehrerbefragung und war an der Rekrutierung der Schulen sowie der Datenerhebung beteiligt. F. C. Ossa unterstütze V. Jantzer bei der Entwicklung der Fragestellung und der Interpretation der Auswertungen. F. C. Ossa unterstützte V. Jantzer beim Verfassen des Manuskriptes durch fachliche Anregungen und kommentierte ausführlich das verfasste Manuskript sowie den Revisionsprozess.

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Manuskript 4

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Liste weiterer wissenschaftlicher Veröffentlichungen, die nicht Gegenstand der vorliegenden Dissertation sind

Ossa, F. C., Bering, R., & Pietrowsky, R. (2013). Häufigkeit und Intensität von Alpträumen bei traumatisierten im Vergleich zu nicht traumatisierten Kindern und Jugendlichen. *Zeitschrift für Kinder-und Jugendpsychiatrie und Psychotherapie.*

Ossa, F. C., Pietrowsky, R., Bering, R., & Kaess, M. (2019). Symptoms of posttraumatic stress disorder among targets of school bullying. *Child and adolescent psychiatry and mental health*, 13(1), 1-11.

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Tabellenverzeichnis

1. Einleitung

Etwa 30 % bis 50 % der Kinder und Jugendlichen werden mindestens einmal in ihrem Leben Opfer von Mobbinghandlungen (Lereya, Copeland, Costello, et al., 2015; Ossa et al., 2019). Mobbing tritt in allen sozialen Schichten und Schulformen auf (Tippett & Wolke, 2014). Während man lange Zeit Mobbing als normales soziales Phänomen unter Jugendlichen betrachtete, zeigen wissenschaftliche Studien in den letzten 30 Jahren mehr und mehr die schädlichen Auswirkungen von Mobbing auf. Vor allem psychische Belastungen wie Angststörungen und Depressionen, sowie selbstschädigendes Verhalten und Suizidalität sind unter Schülern, die von Mobbing betroffen sind, um ein Vielfaches erhöht (Klomek et al., 2010; Wolke & Lereya, 2015). Die Folgen reichen zum Teil bis ins Erwachsenenalter und gehen mit einem erhöhten Versorgungsbedarf für die Gesellschaft einher (Jantzer et al., 2019; Wolke & Lereya, 2015). Unter den Auswirkungen leiden aber nicht nur die Betroffenen, auch Mobbingtäter zeigen psychopathologische Korrelate (Cañas et al., 2020; Gradinger et al., 2009; Olweus, 1993) und das mittlere Leistungsniveau sinkt für die gesamte Klassengemeinschaft (OECD, 2017). Auch der Amoklauf von Winnenden und Wendlingen im März 2009 („Munition und Mobbing“, 2010) machte auf traurige Art und Weise auf den hohen Leidensdruck und die schwerwiegenden Konsequenzen aufmerksam. Mobbingprävention sollte daher für die Gesellschaft von hoher Priorität sein. In Norwegen führte in den 80er Jahren der Suizid dreier Jugendlicher dazu, dass eine landesweite Kampagne gegen Mobbing entwickelt, ausgerollt und evaluiert wurde. Prof. Olweus arbeitete dabei nach einem *whole-school approach* ein Ansatz, der die gesamte Schulgemeinschaft einschließt (Olweus, 1993, 1994). Die Ergebnisse zeigten deutliche Abnahmen der Mobbingraten auf Seiten der Betroffenen und auf Seiten der Täter auch noch fünf Jahre nach Programmeinführung (Olweus, 1994; Olweus & Limber, 2009). Das Programm, das später zum bekannten *Olweus Mobbing-Präventionsprogramm (OBPP)* wurde, weitete sich auf die skandinavischen Länder aus und wird mittlerweile auch in großen Teilen der USA eingesetzt (Limber et al., 2018; Olweus & Limber, 2010). Es zählte 2011 zu den wirksamsten evidenzbasierten Mobbing-Präventionsprogrammen an Schulen (Ttofi & Farrington, 2011).

Im deutschen Sprachraum fehlte und fehlt es bisher an evidenzbasierten Interventions- und Präventionsprogrammen, die sich nicht nur auf einzelne Schüler oder Klassen beziehen. Im Rahmen der vorliegenden Dissertation wurde daher das OBPP erstmalig im Original ins Deutsche übersetzt und in enger Zusammenarbeit mit dem norwegischen Team um Prof. Dan Olweus und Reidar Thyholdt in Deutschland implementiert. Die Implementierungsphase wurde durch jährliche Schüler- und Lehrerbefragungen wissenschaftlich evaluiert. Dadurch konnte die Frage nach der Wirksamkeit des OBPP in Deutschland beantwortet werden. Darüber hinaus lieferte die Evaluationsstudie weitere Erkenntnisse bzgl. psychosozialer Korrelate im Quer- sowie im Längsschnitt und es konnten wichtige neue Aspekte bzgl. des direkten Zusammenhangs zwischen Mobbingveränderung und der Veränderung psychischer Belastung gewonnen werden.

Die Dissertationsschrift geht auf Formen, Häufigkeiten und Ursachen von Mobbing ein. Anhand des Stressmodells zur allostatischen Belastung (McEwen & Seeman, 1999) werden die psychosozialen Korrelate und Folgen von Mobbing erläutert. Aufrechterhaltende Faktoren sowie die sozialpsychologischen Ansatzpunkte zur Mobbingreduktion werden anhand des 5-Stufen Modells des Hilfeverhaltens von Latané und Darley (1970) erklärt. Der Stellenwert schulumfassender Prävention, am Beispiel des OBPP, wird dargestellt. Ein Überblick über den aktuellen Stand der Forschung sowie deren Limitationen wird gegeben und die daraus resultierenden Hypothesen der Dissertationsschrift vorgestellt. Zur Beantwortung der Forschungsfragen, liegt der Dissertation eine Wirksamkeitsstudie an 23 Schulen in Baden-Württemberg zu Grunde, in der N = 6561 Schüler jährlich zwischen 2015 und 2018 mit Selbstbeurteilungsbögen befragt wurden. Die daraus resultierenden vier wissenschaftlichen Publikationen werden vorgestellt. Abschließend werden die gewonnenen Erkenntnisse kritisch diskutiert und Implikationen für zukünftige Forschung und Praxis aufgezeigt.

2. Theoretischer Hintergrund

2.1. Definition von Mobbing

Ursprünglich beschreibt das aus dem Englischen von *mob* abgeleitete Wort Mobbing, „den Mob, Pöbelhaufen, der über jemanden herfällt“ (Ott & Bowi, 2010). Für gewalttätige Angriffe durch Einzelpersonen wurde der Begriff *bullying* (aus dem Englischen *bully* = brutaler Kerl, Tyrann) geprägt (Scheithauer et al., 2003). Hierzulande setzte sich jedoch der Begriff Mobbing im Sprachgebrauch durch, u. a. da kein äquivalenter Begriff in deutscher Sprache gefunden werden konnte (Ehlert, 2006; Olweus, 1996). Die beiden Begriffe werden heutzutage synonym gebraucht. In der vorliegenden Arbeit wird der Begriff Mobbing verwendet und ist als gleichwertig mit dem englischen Begriff bullying zu verstehen. Im Jahr 2014 einigte sich eine Kommission aus Wissenschaftlern auf eine international einheitliche Definition von Mobbing unter Schülern im Alter von fünf bis 18 Jahren. Demnach ist Mobbing

> […] jegliches ungewollte aggressive Verhalten durch einen anderen Jugendlichen oder eine Gruppe von Jugendlichen, die nicht Geschwister oder romantische Partner sind. Mobbing ist durch einen beobachtbaren oder wahrgenommenen Machtunterschied charakterisiert und die Aggression tritt wiederholt auf oder wird mit hoher Wahrscheinlichkeit wiederholt. Mobbing kann dem Betroffenen körperlichen, psychischen oder sozialen Schaden zufügen oder die schulischen Leistungen negativ beeinflussen. (Gladden et al., 2014)

Die drei Kernkomponenten, die auf den Arbeiten von Prof. Olweus gründen (Olweus, 1993, 1994) sind dabei: (1) ungewolltes aggressives Verhalten, dass (2) wiederholt und über einen längeren Zeitraum auftritt und (3) eine Überlegenheit des/der Täter(s) beinhaltet (Machtungleichgewicht). Die Betroffenen nehmen die Geschehnisse demnach nicht als Spaß wahr und wünschen sich, dass dieses ungewollte Verhalten aufhört (Gladden et al., 2014). Es grenzt sich dadurch deutlich von freundschaftlichen Rangeleien ab, bei denen der Begriff häufig fälschlicherweise gebraucht wird. Die Definition setzt einen vorsätzlichen und intentionalen Gebrauch verletzender Verhaltensweisen von Seiten des Täters voraus, unabhängig davon, ob der Täter die durch das Mobbing verursachte Verletzung auch beabsichtigt. Die Verhaltensweisen finden zudem wiederholt und über einen längeren Zeitraum statt. Das schließt einmalige Streitereien oder Konflikte aus. Die Wiederholung muss nicht zwangsläufig durch denselben Täter geschehen, aber für den Betroffenen als zusammenhängend wahrgenommen werden (Gladden et al., 2014). Als Cut-off für Mobbinghäufigkeit hat sich in der Wissenschaft mindestens *zwei- bis dreimal im Monat* durchgesetzt (Solberg & Olweus, 2003). Seltener auftretende Ereignisse werden in den meisten Studien nicht als Mobbing gewertet (Jantzer et al., 2019; Solberg & Olweus, 2003). Andere Autoren zählen Vorfälle erst dann zu Mobbing, wenn diese mindestens wöchentlich und über einen Zeitraum von sechs Monaten auftreten (Leymann, 2009). Daraus ergibt sich vermehrt die Einteilung in *schweres/chronisches* (mindestens wöchentlich, mindestens über sechs Monate) und *moderates* (mindestens zwei- bis dreimal im Monat) Mobbing (Ossa et al., 2019; Scheithauer et al., 2003; Solberg & Olweus, 2003), wobei das Kriterium *Dauer* nicht immer berücksichtigt wird. Das Machtungleichgewicht

impliziert, dass der Täter/die Täter Kontrolle über den Betroffenen gewinnen bzw. die Fähigkeit des Betroffenen sich zu wehren limitiert ist. Dabei geht es nicht darum den Betroffenen als „schwach“ und den/die Täter als „stark“ darzustellen (Gladden et al., 2014). Der Kern dabei ist, dass es dem Betroffenen nicht möglich ist, die Übergriffe aus eigener Kraft zu stoppen oder den/die Täter zum Aufhören zu bewegen (Ttofi & Farrington, 2011). Dieses Kriterium grenzt Mobbing damit zu Konflikten unter gleich starken Schülern ab und stellt klar, dass Mobbing eine Form des Missbrauchs (*peer abuse*) ist (Olweus, 1993, 1994). Der Betroffene kann sich nicht aus eigener Kraft wehren und braucht daher Hilfe von außen. Laut Olweus liegt die Handlungsverantwortung etwas gegen Mobbing zu tun deshalb bei den Erwachsenen (Olweus, 1993).

2.2. Erscheinungsformen

Bei Mobbing wird zwischen *direktem* (aggressives Verhalten in Anwesenheit des Betroffenen z. B. durch Schläge oder Beleidigungen) und *indirektem* Mobbing (ohne Anwesenheit des Betroffenen, z. B. durch Verbreiten von Gerüchten, Isolation oder dem Ausschluss aus Gruppen) unterschieden. Zudem lassen sich vier Kategorien bilden: *körperliches Mobbing* (z. B. Schläge), *verbales Mobbing* (Beleidigungen, Spitznamen), *relationales Mobbing* (Verhaltensweisen mit dem Ziel den Betroffenen sozial zu isolieren) und *Sachbeschädigung* (Gladden et al., 2014; Olweus, 1994; Wolke, 2019). Neben Mobbing in der Schule findet Mobbing seit einigen Jahren auch digital über elektronische Medien (Telefon, Handy, Internet) statt. Dieses sogenannte *Cybermobbing* kann - außer direkter körperlicher Gewalt - alle Formen des Schulmobbings beinhalten (Beleidigungen, Ausgrenzung, Diskreditierung usw.). Erschwerend kommt hinzu, dass Cybermobbing rund um die Uhr und auch außerhalb des Schulkontexts stattfinden kann. Die Täter können anonym bleiben, was die Hemmschwelle senkt und bei den Betroffenen Angst, Unsicherheit und das Gefühl der Machtlosigkeit erhöht. Fotos oder Kommentare können zudem in kurzer Zeit eine große Audienz erreichen und lange Zeit sichtbar bleiben (Hinduja & Patchin, 2010; Slonje et al., 2013; Sticca & Perren, 2013).

2.3. Prävalenzen

Eine große Studie an 200 000 Schülern aus 40 europäischen Ländern berichtet durchschnittlich 12.6 % Mobbingopfer, 10.7 % Täter und 3.6 % Täter-Opfer (Schüler, die sowohl gemobbt werden als auch andere mobben). Dabei variieren die Zahlen der Beteiligten je nach Land und Geschlecht stark (4.8 % - 45.2 %). Mädchen sind in den meisten Studien häufiger von Mobbing betroffen, während Jungen häufiger Täter sind (Craig et al., 2009). Eine Metaanalyse über 80 Studien von Modecki et al. (2014) berichtet von 35 % Schulmobbing (sowohl für Opfer als auch für Täter) und 15 % Cybermobbing (sowohl für Opfer als auch für Täter). Unterschiede in Definitionskriterien und Messmethoden erschweren das genaue Abschätzen der Häufigkeiten (Gaffney, Farrington, Espelage, et al., 2019). Auch das Alter spielt eine Rolle. So nimmt Mobbing von der Grundschule bis hin zur 7. Klasse in den meisten Studien zu und in den höheren Klassen tendenziell wieder ab (Craig et al., 2009; Fischer et al., 2020). Für

Deutschland berichtet die aktuellste *Health Behaviour in School-aged Children* Studie (HBSC) an elf- bis 15-jährigen Schülern (N = 4197) und einem Bezugszeitraum der letzten Monate von 8.6 % betroffenen Mädchen, 8.0 % betroffenen Jungen, 1.8 % weiblichen Tätern und 6.0 % männlichen Tätern. 1.1 % geben an Täter-Opfer zu sein (Fischer et al., 2020). Die Lebenszeitprävalenz dafür, Opfer von Mobbing geworden zu sein, liegt bei 30 % bis 46 % (Idsoe et al., 2012; Ossa et al., 2019; Wolke & Lereya, 2015). Die Prävalenzen für Cybermobbing liegen in den meisten Studien unter denen von Schulmobbing (Modecki et al., 2014), wobei der Großteil (65 % - 90 %) der von Cybermobbing betroffenen Schülern auch in der Schule gemobbt wird (Kowalski & Limber, 2013; Olweus, 2012; Wolke et al., 2017). Zusammenfassend sind 20 % bis 25 % der Schüler aktuell entweder als Opfer, Täter oder Täter-Opfer in Mobbinggeschehen involviert.

2.4. Messmethoden

Eine einheitliche internationale Messmethode für Mobbing gibt es nicht, in der Wissenschaft hat sich aus ökonomischen Gründen jedoch meist der Selbstbeurteilungsbogen durchgesetzt. Auch wenn andere Verfahren, wie z. B. Verhaltensbeobachtung, Peer-Ratings, Elterneinschätzung oder Interviews, detailliertere Antworten geben können, sind diese in großangelegten Studien kaum umzusetzen. Als inzwischen gut validiertes Erhebungsinstrument für die Klassen drei bis zwölf findet seit über 20 Jahren der *Olweus Bullying Questionnaire Revised* (OBQ-R) Anwendung (Breivik & Olweus, 2015; Limber et al., 2018; Olweus, 1996). Der anonyme Selbstbeurteilungsbogen besteht aus 57 Fragen und erhebt eigene Mobbingerfahrungen als Betroffener oder als Täter, sowohl in der Schule als auch über das Internet. Zusätzlich werden die Umstände der Mobbingsituation erhoben sowie das eigene Verhalten nach erfahrenem oder beobachtetem Mobbing, die eigene Einstellung ggü. Mobbing und die Einschätzung zur Intervention anderer Schüler und der Lehrkräfte. Der Zeitraum bezieht sich dabei auf die vergangenen drei Monate. Der Fragebogen enthält sowohl globale Items („Wie oft wurdest du in den letzten drei Monaten in der Schule gemobbt?“; „Wie oft warst du selbst in den letzten drei Monaten daran beteiligt, einen oder mehrere Schüler zu mobben?“) als auch jeweils neun spezifische Items („Gib im Folgenden bitte an, ob Du in den letzten drei Monaten in der Schule auf eine oder mehrere der folgenden Arten gemobbt wurdest:“ z. B. „Ich wurde lächerlich gemacht, es wurden gemeine Dinge zu mir gesagt oder ich wurde auf gemeine und verletzende Weise gehänselt“; „Andere Schüler haben mich absichtlich ausgegrenzt, mich aus dem Freundeskreis ausgeschlossen oder mich vollkommen ignoriert“). Die fünf Antwortkategorien umfassen: (1) „ich wurde in den letzten drei Monaten in der Schule nicht gemobbt bzw. das ist mir in den letzten drei Monaten nicht passiert“, (2) „nur selten“, (3) „zwei oder drei Mal pro Monat“, (4) „ungefähr einmal pro Woche“, (5) „mehrmals pro Woche“. Als Cut-off für eine Mobbingsituation ist mindestens „zwei oder drei Mal pro Monat“ festgelegt, damit das Definitionskriterium der Wiederholung erfüllt ist. Da die reine Auswertung des globalen Items die Häufigkeit eher unterschätzt, wird empfohlen den Fragebogen auch spezifisch auszuwerten (Solberg & Olweus, 2003). Beide Methoden finden in der Forschung und in der vorliegenden Arbeit Anwendung.

2.5. Ursachen

Die Entstehung von Mobbing ist multifaktoriell begründet. Dabei spielen *individuelle Faktoren*, die *soziale Umwelt* und die *Möglichkeiten/Rahmenbedingungen* eine wichtige Rolle (siehe Abbildung 1).

2.5.1. Individuelle Faktoren

Physische Merkmale wie Brillenträger, schwächlich oder adipös als Prädiktoren auszumachen ist schwierig. Häufig werden zwar äußerliche Unterschiede bei Betroffenen gefunden, allerdings kommen diese Auffälligkeiten genauso häufig bei Schülern vor, die nicht gemobbt werden. Besondere Merkmale können demnach zwar Anlass für weiteres Mobbing geben, stellen aber primär keine Ursache dar (Olweus, 1993). Unter betroffenen Jungen finden sich gehäuft sowohl schwächere und kleinere, da sich diese nicht so gut wehren können (Olweus, 1993), als auch besonders gutaussehende Jugendliche, da diese eine Konkurrenz bzgl. romantischer Beziehungen darstellen (Lereya et al., 2014; Volk et al., 2015). Andere Studien betonen, dass die Selbstwahrnehmung eine entscheidende Rolle dafür spielt, ob jemand leichter von Mobbing betroffen wird oder nicht (Lee et al., 2018). Allerdings wird gerade die positive Selbstwahrnehmung durch Mobbing stark angegriffen und so sind manche Folgen von Mobbing (unsicher, aggressiv, weinerlich, keine Freunde) gleichzeitig auch wieder auslösend. Diese reziproke Beziehung zeigt, dass Mobbing nicht nur bei vulnerablen Personen auftritt, sondern die Vulnerabilität auch erhöhen kann. Dysfunktionale Kognitionen und Schemata (z. B. „ich bin wertlos“) können im Sinne der *kognitiven Triade* von Beck diese Dynamik aufrechterhalten. Demnach neigen Betroffene in belastenden Situationen dazu, sich selbst, ihre Umwelt und ihre Zukunft negativ zu bewerten (Triade). Dabei können negative Gedanken und Bewertungen zu wiederkehrenden Enttäuschungen und Ablehnungen führen (Beck, 2009). Nach Olweus (1993) kann jeder gemobbt werden, sobald bestimmte Entstehungsbedingungen vorhanden sind. Unter Täter-Opfern finden sich gehäuft hyperaktive Kinder und Jugendliche und bei Tätern werden zum Teil geringe Empathie und Rücksichtslosigkeit gegenüber den Gefühlen anderer berichtet (Zych et al., 2019). Die meisten Studien erlauben jedoch nur Spekulationen darüber, welche individuellen Charakteristika die Wahrscheinlichkeit in Mobbing involviert zu sein erhöhen.

2.5.2. Soziale Umweltbedingungen

Entgegen der Annahme, dass nur ein oder zwei Schüler als Betroffener und Täter an Mobbing beteiligt sind, betrifft Mobbing meist eine komplette Klassengemeinschaft. So sind neun von zehn Schülern in ein Mobbinggeschehen involviert, entweder als Betroffene, Täter, Mitläufer, Handlanger, Verteidiger oder Zuschauer. Mobbing ist somit ein Gruppenphänomen (Salmivalli et al., 1996; Schäfer & Korn, 2004). Die sozialen Normen und Werte einer Klasse und Schule haben daher einen großen Einfluss auf das Mobbinggeschehen. Auf dieses kann, im Gegensatz zu den meisten individuellen Faktoren, auch

von außen positiv und korrigierend Einfluss genommen werden. Im Folgenden werden einige sozial- und lernpsychologische Mechanismen im Hinblick auf Mobbing betrachtet.

Soziale Normen: Jede Gruppe hat implizite und explizite Regeln für akzeptables Verhalten, Werte und Überzeugungen der Mitglieder (Cialdini et al., 1991). Wenn in einer Schule oder Klasse verbale und körperliche Aggression, Mobbing oder ein rauer Umgangston akzeptiert werden, wird es schnell für die Gruppe zur „Normalität". Daher ist es wichtig prosoziale Normen im Klassenkontext zu implementieren.

Normativer sozialer *Einfluss/normative Konformität*: Menschen sind soziale Wesen, die emotionale Unterstützung, Zuneigung und Kontakte brauchen. Werden Menschen dieser Dinge längere Zeit beraubt, kann dies traumatisch wirken (Baumeister & Leary, 1995). Non-konformes Verhalten kann zu Ablehnung durch die Gruppe führen (Abrams et al., 2000). Ablehnung möchten Menschen vermeiden (Baumeister & Leary, 1995). Daher verhält sich der Mensch häufig konform, um akzeptiert und gemocht zu werden. Gerade unter Jugendlichen, bei denen die Peer-Group eine wichtige Rolle spielt, ist der normative soziale Einfluss bzw. Druck besonders hoch. Es zeigt sich konformes Verhalten, auch wenn das Verhalten nicht der persönlichen Einstellung entspricht. In einer Mobbingsituation machen daher viele Zuschauer einfach mit oder lachen mit, um sich der Gruppe anzupassen und nicht aufzufallen. Selbst dann, wenn sie selbst die gehässige Einstellung gegenüber dem Betroffenen nicht teilen.

Soziale Ansteckung: Hierbei werden Emotionen, Einstellungen oder Verhalten von einer Person (Initiator) auf eine andere Person (Rezipient) übertragen (Levy et al., 1998). In der Schule sind die Initiatoren meist beliebt und sozial anerkannt. Andere Kinder und Jugendlichen lassen sich durch das Verhalten (sei es positiv oder negativ) anstecken (Levy et al., 1998).

Verantwortungsdiffusion: Dieses Phänomen beschreibt, dass das Gefühl, für Hilfe verantwortlich zu sein, bei jedem Zuschauer umso stärker abnimmt, je mehr die Zahl der Zuschauer zunimmt. Dies führt häufig dazu, dass Mobbing mitten auf dem Schulhof unter der Audienz vieler Zuschauer stattfinden kann und niemand einschreitet (Latané & Darley, 1970).

Pluralistische Ignoranz: Die Annahme von Zuschauern, dass alles in Ordnung sei, weil niemand sonst besorgt wirkt, zählt zu Pluralistischer Ignoranz. In einer mehrdeutigen, unsicheren Situation nehmen sich Menschen gegenseitig als Vorbild und versuchen aus der Reaktion der Mitmenschen Informationen über die Umwelt zu gewinnen. Wirkt keiner besorgt, wird angenommen, dass alles in Ordnung ist. Dabei wird übersehen, dass die anderen Personen evtl. genauso unwissend bzgl. der Situation sind, wie der Beobachter selbst (Miller & McFarland, 1987). Gemeinsam mit der Verantwortungsdiffusion kann dies dazu führen, dass in einer Mobbingsituation keiner eingreift, da die Zuschauer unbesorgt scheinen und sich jeder Einzelne dem passiven Verhalten der anderen anpasst.

Modellernen: Die kognitive Lerntheorie/Theorie des Modellernens von Bandura (1977) beschreibt, Lernvorgänge, die aufgrund von Beobachtungen des Verhaltens von Vorbildern gemacht werden.

Übertragen auf Mobbing bedeutet das, dass Mobbing nachgeahmt wird, wenn die Täter sozial anerkannt sind (Olweus & Limber, 2010). Zudem wirkt sich auch die Reaktion der Lehrer auf das Verhalten aus. Wird Mobbing von diesen Rollenvorbildern ignoriert und findet kein Einschreiten statt, erhöht dies die Wahrscheinlichkeit, dass Schüler ähnlich reagieren und auch passiv bleiben (Olweus & Limber, 2010).

2.5.3. Möglichkeiten/Rahmenbedingungen

Die schulischen Rahmenbedingungen (feste Klassen, Schulpflicht, Konkurrenz) spielen eine weitere Rolle im Mobbinggeschehen, denn Mobbing tritt primär dort auf, wo externe Gründe eine starre Gruppenzusammensetzung bestimmen, wie in Schulklassen, Gefängnissen, beim Militär oder im Arbeitskontext (Ireland & Archer, 1996; Schäfer, 2007). In offeneren Organisationsstrukturen, wie an Universitäten ist Mobbing deutlich weniger nachweisbar (Schäfer, 2007). Daher ist es wichtig, im Kontext Schule besonders auf die Möglichkeiten der Täter zu achten und diese ggf. einzuschränken. So bieten eine unzureichende Pausenaufsicht und ein unübersichtlicher Pausenhof erst Gelegenheit zu Mobbing (Olweus, 1993). Ein uneinheitliches Vorgehen unter Lehrern sowie mangelnde Kommunikation kann zudem dazu führen, dass Lehrer Mobbingsituationen nur ein- oder zweimal wahrnehmen und als Konflikt interpretieren. So dauert es lange bis die summierten Vorfälle zusammengetragen werden. Hierdurch kann Mobbing schnell über einige Monate andauern und sich verfestigen, bevor es als solches erkannt und ernst genommen wird (Olweus, 1993). Hinzukommt, dass ca. ein Drittel der Betroffenen aufgrund von Scham Niemandem davon erzählt . Auch das führt dazu, dass Mobbing häufig lange Zeit unbemerkt sowie das Verhalten der Täter ohne Konsequenz bleibt. Die Sozialpsychologie berichtet, dass die Konsequenz auf unerwünschtes Verhalten im Idealfall rasch und zuverlässig eintreten sollte, um eine Wirkung zu haben (Bower & Hilgard, 1981). Unmittelbare Konsequenz auf Mobbing ist im Schulalltag selten gegeben und so wird Mobbing viel zu lange geduldet. Täter ziehen daraus Bestätigung, Macht und soziale Anerkennung. Jedes nicht einschreiten eines Lehrers wirkt dabei als positiver Verstärker wodurch negatives Verhalten unbewusst belohnt wird (Pepler et al., 1998).

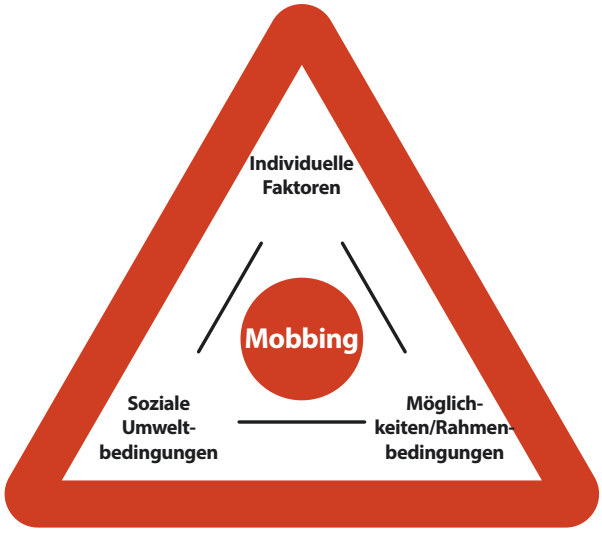

Abbildung 1: Ursachendreieck zur Entstehung von Mobbing. Mobbing ist multifaktoriell begründet und kann durch individuelle Faktoren, soziale Umweltbedingungen sowie Möglichkeiten/Rahmenbedingungen begünstigt und aufrechterhalten werden (eigene Darstellung).

Während die Schule auf individuelle Faktoren von Betroffenen und Tätern den geringsten Einfluss hat, kann Prävention zielgerichtet an der sozialen Umwelt und den schulischen Rahmenbedingungen ansetzen. Hierauf wird unter Kapitel 2.7. Bezug genommen.

2.6. Folgen und biopsychosoziale Korrelate

Neben schulvermeidendem Verhalten und Leistungsproblemen (Nakamoto & Schwartz, 2010) zeigen Studien unter Mobbingbetroffenen deutlich höhere Raten von Psychopathologien darunter u. a. Depressionen (z. B. OR = 1.95) (Klomek et al., 2019; Takizawa et al., 2014), Angststörungen (z. B. OR = 1.65) (Siegel et al., 2009; Takizawa et al., 2014), psychische Probleme (z. B. OR = 1.94) (Schreier et al., 2009; Sourander et al., 2016), nichtsuizidales selbstverletzendes Verhalten (NSSI; z. B. OR = 11.75) (Jantzer et al., 2015), Suizidalität (z. B. OR = 6.0) (Jantzer et al., 2015; Klomek et al., 2019; Takizawa et al., 2014), Kopf- und Bauchschmerzen (z. B. OR = 1.67) (Gini & Pozzoli, 2009; Sigurdson et al., 2014) oder Alpträume (z. B. OR = 2.0) (Wolke & Lereya, 2014) im Vergleich zu nicht-betroffenen Gleichaltrigen. Zudem häufen sich bei Betroffenen traumaassoziierte Symptome (Idsoe et al., 2012; Ossa et al., 2019). So zeigten eigene Daten, dass Schüler, die regelmäßig (mind. wöchentlich/mind. sechs Monate) gemobbt wurden vergleichbar hohe Symptome einer Posttraumatischen Belastungsstörung (PTBS) aufwiesen wie gleichaltrige Patienten einer Trauma-Ambulanz (Ossa et al., 2019). Lereya et al., (2015) berichten, dass 24 % bis 36 %, also ca. ein Drittel, der Jugendlichen, die in der Schule gemobbt werden, als Folge dessen mit 18 Jahren unter psychischen Beschwerden leiden.

Der Mensch als soziales Wesen hat ein natürliches Bedürfnis zu einer Gruppe dazuzugehören *(need to belong)* und ist emotional auf seine Mitmenschen und sein soziales Netz angewiesen (Baumeister & Leary, 1995). Werden an den Menschen Anforderungen gestellt, die herausfordernd, bedrohlich oder schädlich sind und die die eigenen Bewältigungsmöglichkeiten beanspruchen oder überfordern,

empfindet dieser Stress (Lazarus & Folkman, 1986; Selye, 1976). Mobbing und die damit verbundene körperliche oder emotionale Bedrohung, schädigende Verhaltensweisen des Gegenübers oder der damit verbundene Ausschluss aus einer Gruppe ist in diesem Sinne ein sehr stressreiches Lebensereignis (Swearer & Hymel, 2015; Wolke & Lereya, 2015). Stress löst im Gehirn eine komplexe endokrinologische Reaktion aus u. a. die Aktivierung des *Sympathikus* und der *Hypothalamus-Hypophysen-Nebennierenrinden-Achse* (*HPA-Achse*). Durch Stresshormone wie Adrenalin, Noradrenalin und Cortisol wird der Organismus mobilisiert die bedrohliche Situation zu bekämpfen (*fight*) oder befähigt aus dieser zu entfliehen (*flight*). Die Systeme sind sehr komplexe Regelkreise, die auf den Umgang mit Kurzzeitstress ausgelegt sind (Hüther et al., 1999; Kaluza, 2018; Kirschbaum & Hellhammer, 1999). Unkontrollierbare Dauerbelastung wirkt sich destabilisierend auf das Regelwerk aus, weshalb Mobbing als chronischer Stressor und die damit verbundene erhöhte Adrenalin- und Cortisolausschüttung negativen Einfluss auf verschiedene physiologische Funktionen haben kann (Glaser & Kiecolt-Glaser, 2005; Hüther et al., 1999; McEwen, 2006). So zeigen Studien bei Mobbingbetroffenen veränderte HPA-Achsen Aktivitäten und damit veränderte Reaktionen auf Stress (González-Cabrera et al., 2017; Ouellet-Morin et al., 2011). Die dadurch ausgelöste verminderte Kapazität stressreiche Ereignisse zu verarbeiten, kann wiederum das Risiko für stress-assoziierte Krankheiten wie Depressionen oder NSSI erhöhen (Roberts & Lopez-Duran, 2019).

Während einige Betroffene nur moderate Stressreaktionen nach Mobbing zeigen, bilden andere starke Folgereaktionen wie z. B. Depressionen oder PTBS aus (Wolke & Lereya, 2015). Nach dem *biopsychosozialen Modell* ist die Art und Schwere der körperlichen und psychologischen Reaktion nach Mobbing eine dynamische Interaktion von *biologischen* (z. B. genetische und neurobiologische Faktoren, Persönlichkeit, Alter), *psychischen* (z. B. dysfunktionale Kognitionen und Schemata, Resilienz, Coping) und *sozialen Faktoren* (z. B. Familiäre Situation, Normen, Bildung) (Engel, 1977; Offidani et al., 2013; Wittchen & Hoyer, 2011). Die Stressreaktion auf Mobbing kann demnach z. B. durch Resilienzfaktoren und Copingmechanismen modifiziert werden. So wirken sich gute Schulleistungen, soziale Skills, stabile familiäre Verhältnisse, guter Kontakt zu den Eltern und prosoziale Freunde stabilisierend auf die Gesundheit bei Mobbing aus (Sapouna & Wolke, 2013; Ttofi et al., 2014). Nach dem *Modell der allostatischen Belastung* nennt sich der Versuch der Anpassung an stressreiche Situationen *Allostase* (siehe Abbildung 2). Überbeanspruchungs- und Abnutzungseffekte, die nach wiederholter Stressexposition auftreten, oder ineffiziente Adaptationsversuche führen zu *allostatischer Belastung,* die wiederum Krankheiten auslösen kann (Guidi et al., 2021; McEwen, 2006). Bei Mobbing spielen besonders soziale Stressoren eine wichtige Rolle wie Ausgrenzungserfahrungen und Herabsetzungssituationen, in denen die Person beschämt und erniedrigt wird oder sich entsprechend fühlt (Olweus, 1993). Studien zeigen, dass gerade dies die Stressoren sind, die das System besonders belasten (Kudielka et al., 2007; McEwen & Seeman, 1999). Da die physiologisch ausgelöste Stressreaktion (*fight or flight*) zudem laut Mobbing-Definition *(no fight)* und aufgrund der Schulpflicht *(no flight)* nicht ausgelebt werden kann, verstärkt

diese eingeschränkte Verhaltensmöglichkeit die erlebte Hilflosigkeit dem Stressor gegenüber (Baldwin, 2013; Seligman, 1972). Allostase ist nicht möglich, was wiederum die Erfahrungen, die Wahrnehmung neuer Reize sowie die hormonelle Antwort des Gehirns beeinflusst (Bovin et al., 2008; McEwen, 2006). Da es zudem nicht die kurzen, heftigen Belastungen sind, die den Körper aus dem Gleichgewicht bringen, sondern die langwierigen, schleichenden Dauerbelastungen, die die Systeme ausnutzen und die Widerstandskräfte auslaugen, wird Mobbing zu einem folgenschweren Stressor (McEwen & Seeman, 1999).

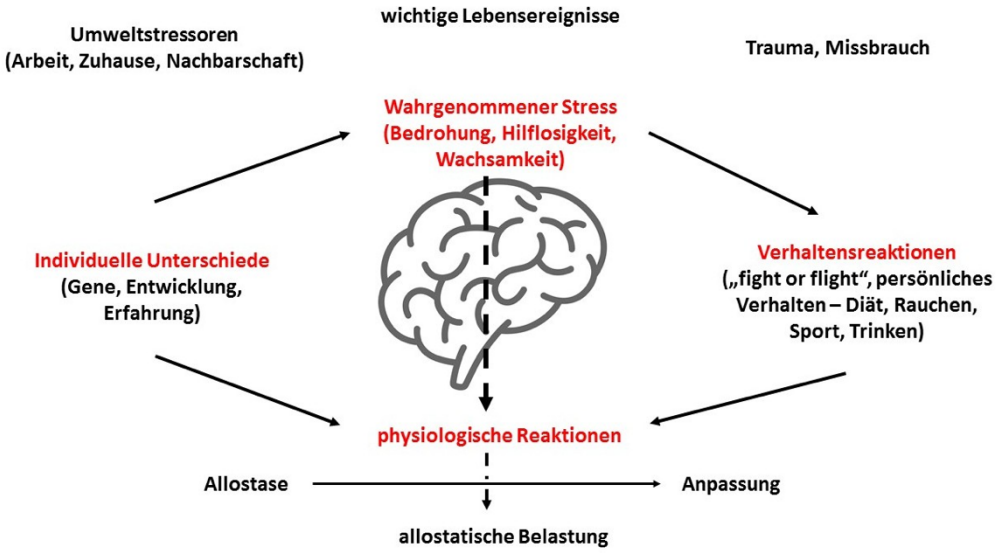

Abbildung 2: Biopsychosoziales Stressmodell und die Entwicklung *allostatischer Belastung*. Der *wahrgenommene Stress* wird durch *individuelle Unterschiede* beeinflusst und löst sowohl eine *Verhaltensreaktion* als auch *physiologische* Reaktionen aus, mit dem Ziel *Allostase* und *Anpassung* herbeizuführen. Ineffiziente Adaptation oder kumulierende Stressoren summieren sich mit der Zeit zu einer *allostatischen Belastung*. Diese Überlastung von neuronalen-, hormonellen- und immunologischen Reaktionen des Körpers kann schädliche Auswirkungen auf eine Vielzahl von Organen haben, sowie zu physischen und mentalen Krankheiten führen. In Anlehnung an: McEwen und Seeman (1999); deutsche Abbildung entnommen aus: Kammer (2023).

Die Pubertät ist als Übergangsphase für sich genommen schon eine kritische Phase erhöhter Vulnerabilität (Roberts & Lopez-Duran, 2019). Das Zentralnervensystem ist in dieser Zeit für Stress und Glucocorticoide weit sensitiver als im Erwachsenenalter (Dahl & Gunnar, 2009; Romeo & McEwen, 2006). Mobbing während der Schulzeit und der damit verbundene Dauerstress kann daher zu physiologischen und psychologischen Veränderungen im Gehirn führen, die kurz- aber auch langfristige Folgen für die Gesundheit haben können (Felitti et al., 1998; Kavanaugh et al., 2017). So finden sich bei einem Teil der Mobbingbetroffenen auch dauerhafte gesundheitliche Beschwerden selbst lange nach Abschluss der Schulzeit (Sourander et al., 2016; Wolke & Lereya, 2015). Mobbingbetroffene zeigen im Erwachsenenalter doppelt so häufig Depressionen (Sourander et al., 2016), einen schlechteren Ausbildungsstand (Nakamoto & Schwartz, 2010), weniger Einkommen (Brown & Taylor, 2008) und weniger glückliche Beziehungen und Partnerschaften (Sigurdson et al., 2014) im Vergleich zu nichtinvolvierten Personen.

Swearer und Hymel (2015) benennen Mobbing als stressreiches Lebensereignis für alle Beteiligten. So zeigen auch Täter Auffälligkeiten wie schlechtere Schulleistung oder antisoziale Verhaltensweisen z. B. Alkohol- und Drogenkonsum (Peleg-Oren et al., 2012). Studien geben jedoch Hinweise darauf, dass im Gegensatz zu den Opfern bei Tätern schon vor den Mobbingtaten psychopathologische Unregelmäßigkeiten vorlagen. Tätersein ist also, nach aktuellem Kenntnisstand, mehr als früher Indikator für spätere Delinquenz zu sehen, statt als Ursache (Klomek et al., 2015; Wolke et al., 2013). Während sich die Gruppe der Täter-Opfer dabei langfristig als besonders belastet zeigt (Lereya, Copeland, Zammit, et al., 2015) erfreuen sich „reine Täter" meist einer guten Gesundheit, sowohl körperlich (Copeland et al., 2014) als auch, durch ihre soziale Stellung und Beliebtheit bedingt, psychisch (Sourander et al., 2016).

Neben dem Leid für Betroffene und deren Familien hat die Gesellschaft durch einen erhöhten jugendpsychiatrischen und therapeutischen Versorgungsbedarf, vor allem nach chronischem Mobbing, enorme Kosten zu tragen (Evans-Lacko et al., 2017; Sourander et al., 2016). Pro Jahr und Betroffenem umfassen die Mehrkosten für Therapie, Medizin und Arbeitsausfall mehr als 5 000 € (Jantzer et al., 2019). So postulieren Wissenschaftler vermehrt, Mobbing als generelles gesellschaftliches Gesundheitsproblem wahr zu nehmen und entsprechend zu handeln (Gini & Pozzoli, 2009). Bei der Entstehung von Krankheiten werden dysfunktionale Beziehungen zu Gleichaltrigen häufig noch vernachlässigt, da das Hauptaugenmerk auf dem Elternhaus liegt (Wolke, 2019). Jugendliche verbringen jedoch ab dem Schuleintritt einen Großteil des Tages unter Gleichaltrigen (Rutter, 1979). Während viele Stressoren des Lebens nur beding beeinflussbar sind, stellt sich die Frage, ob der *Stressor Mobbing* durch Prävention im Jugendalter reduziert werden kann. Die damit verbundene allostatische Entlastung sollte einen Beitrag zur Reduktion psychischer Krankheiten im Jugend- und Erwachsenenalter leisten und zu einer gesünderen Gesellschaft beitragen. Durch die vorliegende Promotionsarbeit werden diesbezüglich neue Erkenntnisse gewonnen (Manuskript 1 und 4).

2.7. Mobbing-Prävention und Intervention

In den letzten Jahren wurde das Problem Mobbing und seine Folgen sowohl in den Medien als auch in der Wissenschaft vermehrt thematisiert. Gerade Suizidalität nach stattgefundenem Mobbing oder der Amoklauf von Winnenden und Wendlingen im März 2009 schaffte es in die Schlagzeilen („Munition und Mobbing", 2010). Neben dem großen Leid für die Betroffenen zeigt sich auch, dass Mobbing schwerwiegende Konsequenzen nach sich ziehen kann, die die Gesellschaft als Ganzes betreffen und Handlung erfordert. In Norwegen löste in den 80er Jahren der Suizid dreier Jugendlicher eine landesweite Kampagne gegen Mobbing aus, welche später unter dem Olweus Mobbing-Präventionsprogramm bekannt wurde (Olweus, 1994; Olweus & Limber, 2009). Prof. Olweus legte dabei, neben Ansätzen zur Intervention bei bereits stattgefundenem Mobbing, den Fokus vor allem auf die Prävention und die Ausbildung der Lehrkräfte. Von Anfang an wurden die Schüler durch regelmäßige Fragebogenerhebungen zur Mobbinghäufigkeit befragt. Die ersten Studien aus Bergen und Oslo waren sehr vielversprechend

und zeigten eine Mobbingreduktion zwischen 23.6 % und 42.7 %. Auch fünf Jahre nach Einführung des Programms waren die Zahlen um bis zu 40 % niedriger als das Ausgangsniveau (Olweus & Limber, 2009). Das OBPP breitete sich im skandinavischen Raum und seit Mitte der 90er auch in den USA aus (Limber et al., 2018; Olweus & Limber, 2009). Studien zeigen allerdings sehr gemischte Ergebnisse: so werden zum Teil sehr hohe Reduktionen der Mobbingrate (bis zu 45 %), gar keine Reduktion oder nur Reduktion der Anzahl der Täter, aber nicht der Betroffenen berichtet (Bauer et al., 2007; Hanewinkel, 2004; Olweus & Limber, 2010; Pepler, 2004). Olweus und Limber (2010) erklären dies u. a. dadurch, dass nicht alle Schulen das Programm wie empfohlen umsetzten. So würden sich einige Lehrkräfte nur wenige Programm-Komponenten heraussuchen und viele Schulen einfache und schnelle Lösungen bevorzugen, anstatt eine dauerhafte und langwierigere Änderung der sozialen Normen anzustreben. Zudem räumen die Autoren auch methodische Schwächen wie zu kleine Stichproben ein, was den Bedarf an größeren und systematischen Untersuchungen verdeutlicht (Limber et al., 2018).

In den letzten 40 Jahren entwickelten sich weitere unterschiedliche Präventionsprogramme, die zum Teil auf der Arbeit von Dan Olweus gründen, zum Teil andere Ansätze verfolgten wie z. B. *Kiva* (Salmivalli et al., 2013) oder *Friendly Schools* (Cross et al., 2011). Ein Großteil der Programme wurden und werden dabei nur mangelhaft evaluiert. Das birgt die Gefahr, dass Schulen zwar Präventionsstrategien anwenden, die sie beschäftigt halten, die jedoch letztlich nicht wirkungsvoll sind (Olweus & Limber, 2009; Woods & Wolke, 2003). Eine großangelegte Metastudie von Ttofi und Farrington (2011) zeigte anhand von 44 Studien, dass Mobbing durch schulische Prävention im Schnitt um 17 % bis 20 % reduziert werden kann. Dabei zeigten Studien, die nach dem OBPP arbeiteten, die höchste Wirksamkeit. Programme, die sich nur auf Schülerebene bezogen, zeigten langfristig keine Wirkung.

2.7.1. Das Olweus Mobbing-Präventionsprogramm

Die Ziele des OBPP sind, existierendes Mobbing in der Schule zu reduzieren sowie neu auftretendes Mobbing zu verhindern. Dabei setzt das Programm, wie im Ursachendreieck unter Kapitel 2.5. beschrieben, darauf, Möglichkeiten und Rahmenbedingungen für Mobbing zu minimieren sowie soziale Umweltbedingungen zu schaffen, die einen Schwerpunkt auf prosoziales Verhalten und gutes Miteinander legen. Schüler, Lehrer und Eltern sollen befähigt werden Mobbing frühzeitig zu erkennen und gemeinsam daran arbeiten es zu beenden. Das Programm arbeitet mit der ganzen Schulgemeinschaft (*whole school approach*) daran, das Schulklima zu verbessern und die Gegebenheiten positiv zu strukturieren. Die Implementierungsphase des Programms erstreckt sich über mindestens 18 Monate. Dabei werden nach und nach Bausteine auf Individueller-, Klassen- und Schulebene etabliert: z. B. regelmäßige Studiengruppen der Lehrer, regelmäßige Klassenstunden, strukturierte Pausenaufsicht, Einzelgespräche bei Mobbingvorfällen mit Schülern und Eltern sowie die jährliche Erhebung von Mobbing zur Verlaufsdokumentation (siehe auch Supplements zu Manuskript 1 table A1 und A2). Die Studiengruppen der Lehrer nehmen dabei eine zentrale Rolle ein, da Olweus die Handlungsverantwortung bei Mobbing

einzuschreiten bei den Erwachsenen sieht (Olweus, 1993; Olweus & Limber, 2009). Diese Studien- und Supervisionsgruppen finden ein- bis zweimal im Monat für jeweils 90 Minuten statt. Dabei trifft sich möglichst das gesamte Schulpersonal in Kleingruppen und arbeitet das *Handbuch für das Schulpersonal* durch (Olweus, 2015b). Die Erwachsenen werden darin ausgebildet Mobbing zu erkennen und direkt und gezielt zu intervenieren. Handlungsverantwortung und Handlungssicherheit werden vermittelt und eingeübt. Die Pausenaufsicht wird neu strukturiert, sowie die Kommunikation und Vernetzung untereinander verbessert. Zudem fordert es die Erwachsenen dazu auf, mit den Schülern positive, vorbildliche und warmherzige Beziehungen zu pflegen und konsequent, frühzeitig und einheitlich bei Mobbing oder Mobbingverdacht einzuschreiten. Auf Klassenebene finden wöchentlich 15- bis 45-minütige Klassenstunden mit den Schülern statt, in denen mithilfe verschiedener Unterrichtsmaterialien wie Diskussionsrunden und Rollenspielen die Schüler bzgl. der Thematik sensibilisiert und prosoziale Normen im Klassen- und Schulkontext etabliert werden. Im Anschluss an die 18-monatige Implementierungsphase kann sich eine sechsmonatige Zertifizierungsphase anschließen. Die daraus resultierende Zertifizierung zur *Olweus-Schule* gilt für zwei Jahre und kann regelmäßig erneuert werden. So wird das Programm dauerhaft im Schulalltag verankert sowie die Qualität sichergestellt.

2.7.2. Ansatzpunkte und Wirkungsweise von Prävention

Prävention zielt darauf ab, Mobbing zu beenden und zu verhindern. Dies setzt voraus, dass bei Verdacht auf Mobbing direkt, zielsicher und konsequent eingegriffen wird. Zum einen sinkt dadurch die Wahrscheinlichkeit, dass sich die Mobbingsituation verfestigt, zum anderen wird dadurch die neue Norm (z. B „So gehen wir hier nicht miteinander um“) etabliert und vorgelebt. Der Betroffene erfährt soziale Unterstützung und wird in seiner Not wahrgenommen. Da sich die Betroffenen selten selbst Hilfe suchen, gilt es das Hilfeverhalten der Zuschauer zu erhöhen (Leff et al., 1999). Denn obwohl Lehrer und Schüler häufig um Mobbing an ihrer Schule wissen, tun die meisten nichts dagegen (Atlas & Pepler, 1998; Mishna et al., 2005). Viele sehen im Alltag aus Zeitmangel, Unsicherheit oder falschem Wissen über Mobbing hinweg (Bradshaw et al., 2013; Mishna et al., 2005). Diese und weitere Hürden bei Mobbing einzuschreiten, sowie die sozialpsychologischen Ursachen (Kap. 2.5.) und dadurch implizierten Ansatzpunkte für Prävention lassen sich anhand des Ablaufdiagramms für Hilfeleistung nach Latané und Darley (1970) darstellen (siehe Abbildung 3). Demnach durchlaufen Menschen fünf Entscheidungsschritte, bevor sie jemandem in einem Notfall helfen. (In Anlehnung an: Aronson et al. (2008, S. 368)).

1. Das Ereignis bemerken: Um in einem Notfall helfen zu können, muss der Notfall bemerkt werden. Sind Personen in Eile oder abgelenkt, werden kritische Ereignisse gar nicht erst wahrgenommen. Für die Schule bedeutet dies z. B., dass die Pausensituation so gestaltet werden sollte, dass die Pausenaufsicht einen guten Überblick hat, um möglichst viele Ereignisse wahrnehmen zu können. Zudem sollte die Pausenaufsicht nicht abgelenkt sein, sondern sich auf die Aufsicht der Schüler konzentrieren können.

2. Das Ereignis als Notfall interpretieren: Um in einer Notfallsituation einzugreifen, muss der Notfall auch als solcher identifiziert werden. Die Lehrpersonen müssen darauf geschult sein Mobbing zu erkennen und zwischen Konflikten oder wilden Spielen zu unterscheiden (Olweus, 1996, 2015b). Zudem müssen sie verinnerlicht haben, dass Mobbing kein Spaß oder Konflikt zwischen gleichstarken Parteien ist, sondern für die Betroffenen Schüler ein Notfall, bei dem Hilfe von außen nötig ist.

3. Verantwortung übernehmen: Wird eine Notfallsituation wahrgenommen und als solche interpretiert, muss es nun zu einer Verantwortungsübernahme kommen. Sind viele andere Personen, wie auf einem Pausenhof, zugegen, besteht die Gefahr der Verantwortungsdiffusion (siehe auch Kapitel 2.5.2.). Prävention muss daran arbeiten, jedem einzelnen die persönliche Verantwortung bewusst zu machen. Gerade im OBPP wird betont, dass die Handlungsverantwortung bei den Erwachsenen liegt und jeder Schüler fähig ist Hilfe zu holen.

4. Angemessene Hilfeleistung kennen: Um angemessen helfen zu können, braucht es Kompetenz. Diese wird den Erwachsenen in den Supervisionsgruppen sowie den Schülern in den regelmäßigen Klassenstunden vermittelt. Durch Rollenspiele werden Handlungsmöglichkeiten trainiert. Ziel ist es, dass sich jeder sicher fühlt und weiß, was in einer Mobbingsituation zu tun ist. Denn obwohl Mobbing im Schulalltag weit verbreitet ist, fühlen sich viele Lehrer unsicher adäquat in Mobbingsituationen einzuschreiten oder diese neben ihren anderen Aufgaben zufriedenstellend zu klären (Bauman & Hurley, 2005; Bradshaw et al., 2013; Mishna et al., 2005).

5. Anwendungsentscheidung: Bevor Personen in einer Notfallsituation einschreiten, bedenken sie das Kosten-Nutzen Risiko. Wenn das Risiko zu hoch ist (z. B. Gefahr für einen selbst, Beschämung), ist die Wahrscheinlichkeit hoch, dass nicht geholfen wird. Dies spiegelt sich auch darin wider, dass Programme, die alleine darauf ausgelegt sind Gleichaltrige zum Eingreifen zu motivieren, selten zum gewünschten Erfolg führen (Cowie et al., 2002; Ttofi & Farrington, 2011). Denn für Gleichaltrige ist das Eingreifen häufig mit hohen Kosten verbunden. So besteht z. B. die Gefahr selbst zur Zielscheibe zu werden oder der Druck sich normativ konform zu verhalten (siehe Kapitel 2.5.2.). Daher ist es u. a. wichtig, Schülern adäquate Hilfemöglichkeiten zu geben, ohne dass sie sich selbst in Gefahr bringen. Auch für Lehrer besteht die Gefahr, sich vor einer großen Gruppe von Schülern zu blamieren. Somit sollte Prävention an einer gemeinsamen Haltung arbeiten und dem Bewusstsein, dass sich auch Lehrer in kritischen Situationen gegenseitig unterstützen. Letztlich bleibt es eine moralische Frage, ob einem Notleidenden geholfen wird oder nicht. Durch Aufklärung über Mobbing und dessen Folgen kann das Gewissen und die Aufmerksamkeit geschult werden (Bauman & Hurley, 2005).

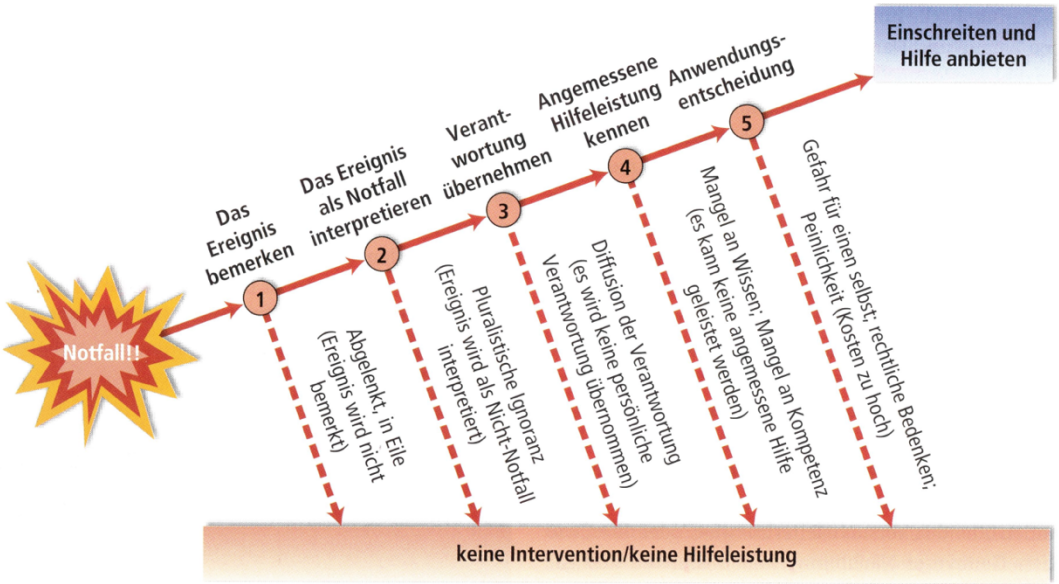

Abbildung 3: Ablaufdiagramm für die Entscheidung eines Zuschauers einzugreifen: Fünf Schritte zur Hilfeleistung (nach Latané und Darley, (1970), Abbildung entnommen aus: *Sozialpsychologie* von E. Aronson et al. (2008), S. 368; PEARSON EDUCATION DEUTSCHLAND GMBH, Copyright, 2008).

Das Verhalten und die Einstellung von Menschen zu verändern ist ein langandauernder Prozess, es braucht immer wieder Erinnerung und das Einüben neuer Verhaltensweisen (Lally et al., 2010). Deshalb benötigt das OBPP ebenfalls Zeit und Kommittent der gesamten Schule. So kann Prävention erfolgsversprechend sein (Ttofi & Farrington, 2011), setzt aber auch die Einsicht und Einsatzbereitschaft einer Schulgemeinschaft voraus.

2.7.3. OBPP in Deutschland

Für die zugrundeliegende Evaluationsstudie wurden 2014 mit dem Leiter von Olweus International, Rydar Thyholdt mehrere Schulungstage in Heidelberg abgehalten. Die Originalmaterialien (Handbuch für das Schulpersonal, Elternbroschüre, Fragebogen, Film) wurden aus dem Norwegischen ins Deutsche übersetzt bzw. synchronisiert (Olweus, 2015b, 2015a; Olweus & Solberg, 2015). Nach einer Kick-off Veranstaltung im September 2014 wurde mit der Rekrutierung begonnen. Diese startete mit dem Vorhaben eines *Randomized Control Trial Designs* (RCT). Von 89 weiterführenden Schulen aus Heidelberg und dem Rhein-Neckar-Kreis, wurden zufällig 30 gezogen und zur kostenlosen Programmteilnahme per Post, E-Mail und telefonisch eingeladen. Aufgrund der geringen Rücklaufquote und der langwierigen Entscheidungsprozesse der Schulen wurde der Rekrutierungsraum stückweise erweitert (Mannheim, Karlsruhe, später Stuttgart und Freiburg). Bedingt durch zeitliche und finanzielle Limitationen musste das RCT-Design schließlich in eine kontrollierte Wirksamkeitsstudie abgeändert werden (siehe auch Supplements zu Manuskript 1 figure A1). Schulen, die sich für eine Programmteilnahme entschieden, wählten ein bis zwei Lehrkräfte aus, die sich als Olweus-Coach ausbilden ließen. Diese Ausbildung fand in Heidelberg unter der direkten Leitung von Rydar Thyholdt statt (insgesamt sieben Tage, verteilt auf drei Termine). Die Olweus-Coaches gründeten an ihrer Schule Supervisionsgruppen, in denen die gesamte Lehrerschaft in Kleingruppen regelmäßig zusammenkam. Die Klassenlehrer wiederum gaben ihr

Wissen zeitversetzt an die Schüler weiter. Bevor das erste Coaching stattfand, nahmen alle Schüler an einer anonymen Fragebogenerhebung teil. Die Schülerbefragung wurde jährlich wiederholt. Neben dem zum Programm gehörigen OBQ-R, wurde die Schülerumfrage um Fragen bzgl. Psychopathologie und Risikoverhalten ergänzt, um weitere Forschungsfragen beantworten zu können. Auch die Lehrer nahmen vor Beginn des Coachings und dann im Abstand von drei Monaten an anonymen Lehrerbefragungen teil.

3. Forschungshypothesen

Die Wirksamkeit des OBPP ist vielversprechend (Ttofi & Farrington, 2011). Bereits 1994 gab es den Versuch das Programm im deutschen Schulsystem zu implementieren. Die Umsetzung wich allerdings zu stark vom Original ab und so konnte das OBPP in Deutschland nicht erfolgreich eingeführt werden (Hanewinkel, 2004; Olweus & Limber, 2010). Viele der aktuellen Programme wurden oder werden nicht wissenschaftlich begleitet. So gab es bis 2014 in Deutschland kein evidenzbasiertes Mobbing Präventionsprogramm, dass die ganze Schulgemeinschaft eingeschlossen hat *(whole school approach)*. Im Rahmen der vorliegenden Dissertation wurde zum Ziel gesetzt, das OBPP so originalgetreu wie möglich in das deutsche Schulsystem einzuführen und zu evaluieren. Dabei liegt die Forschungsfrage zugrunde, ob das OBPP auch im deutschen Schulsystem erfolgreich Mobbing reduzieren kann.

Folgende Hypothesen werden in Manuskript 1 überprüft:

1. Die Rate der Mobbingopfer an den Schulen ist nach einjähriger Implementierungsphase (12-Monats-follow-up) niedriger als vor Einführung des OBPP (Baseline).
2. Die Rate der Mobbingtäter an den Schulen ist nach einjähriger Implementierungsphase (12-Monats-follow-up) niedriger als vor Einführung des OBPP (Baseline).
3. Die Reduktion der Mobbingraten (sowohl auf Opfer- als auch auf Täterseite) bleiben auch nach zwei Jahren stabil (24-Monats-follow-up).
4. Die Reduktion der Mobbingraten (sowohl auf Opfer- als auch auf Täterseite) sind von der Implementierungsdauer des OBPP an den Schulen abhängig (*Dosage-Response*). Schulen, die das Programm erfolgreich implementieren (*completer*) zeigen höhere Reduktionen als Schulen, die das Programm vorzeitig abbrechen (*non-completer*).

Neben den Auswirkungen auf Schülerebene soll zudem überprüft werden, ob das Programm auch Einfluss auf Lehrerebene hat. Im sozialen Bereich zählt der Lehrerberuf zu einem der stressreichsten Berufe (Johnson et al., 2005). Lehrer berichten, dass vor allem Problemverhalten der Schüler und zusätzlicher Bedarf an Unterstützung für bedürftige Schüler den Beruf sehr belastend machen (Richards, 2012). Als Folge der Mobbingprävention und -reduktion ist mit weniger Problemverhalten unter Schülern zu rechnen, was die Lehrkräfte entlasten sollte. Zudem besteht unter Lehrern Unsicherheit, wie man am Besten in eine Mobbingsituation eingreift (Bradshaw et al., 2013; Mishna et al., 2005). Olweus und

Limber (2010) berichten, dass die Kompetenz der Lehrkräfte bei Mobbing zu intervenieren durch das OBPP erhöht und das Schulklima verbessert wird. Studien berichten jedoch bisher unterschiedlich große Effekte (Black & Washington, 2008; Limber et al., 2018; Pepler, 2004). Dabei wurde jedoch meist nur die Schülerperspektive berücksichtigt. Die Lehrer selbst zu ihrer Interventionsbereitschaft zu befragen, ist bisher selten Teil der Studien (van Verseveld et al., 2019). Daher soll die Forschungsfrage beantwortet werden, ob das OBPP auch positive Auswirkungen auf Lehrerebene hat.

Folgende Hypothesen werden in Manuskript 2 überprüft:

1. Die Interventionsbereitschaft der Lehrer in Mobbingsituationen ist nach zweijähriger Durchführung des OBPP (Postline) höher als vor Einführung des Programms (Baseline).
2. Die allgemeine Berufsbelastung der Lehrer ist nach zweijähriger Durchführung des OBPP (Postline) niedriger als vor Einführung des OBPP (Baseline).
3. Das allgemeine Schulklima ist nach zweijähriger Durchführung des OBPP (Postline) besser als vor Einführung des OBPP (Baseline).
4. Die positiven Effekte sind von der Implementierungsdauer und -tiefe des OBPP an den Schulen abhängig (*Dosage-Response*). *Certified*-Schulen (24 Monate Implementierungsdauer, zentrale Anforderungen erfüllt) zeigen höhere Effekte als *completer*-Schulen (18 Monate Implementierungsdauer). Bei *non-completern* werden keine Verbesserungen erwartet.

Neben Mobbing in der Schule wird in den letzten Jahren auch vermehrt über das Handy oder das Internet gemobbt (*Cybermobbing*). Dabei zeigen Studien, dass die meisten Schüler, die im Internet gemobbt werden, auch in der Schule Mobbing erleben (Olweus, 2012; Wolke et al., 2017). Daher wird die Belastung meist dem Anteil des Schulmobbings zugeschrieben. Studien zeigen jedoch unterschiedliche Ergebnisse, ob und inwieweit Cybermobbing alleine einen negativen Einfluss auf die Schüler hat (Bonanno & Hymel, 2013; Gini et al., 2018; Hase et al., 2015; Vieno et al., 2015). Zudem stellt sich die Frage, ob Cybermobbing bei bereits in der Schule gemobbten Schülern im Sinne einer Poly-Viktimisierung die Belastung verstärkt (Gini et al., 2018) oder ob der größte Teil der Belastung durch das Schulmobbing aufgeklärt wird (Hase et al., 2015). Neben den Betroffenen steht auch das Tätersein im Zusammenhang mit psychischer Belastung oder Risikoverhaltensweisen (Bauman et al., 2013; Cañas et al., 2020; Gradinger et al., 2009). In Manuskript 3 wird daher auch das Profil der Täter sowohl von Schulmobbing als auch von Cybermobbing betrachtet. Dabei soll untersucht werden welchen Einfluss Cybermobbing auf das Wohlergehen der involvierten Schüler hat.

Folgende Hypothesen werden in Manuskript 3 überprüft:

1. Schüler, die nur in der Schule gemobbt werden *(school-only)* unterscheiden sich im Bereich der psychischen Belastung, des Risikoverhaltens und in selbstverletzenden Verhaltensweisen nicht von Schülern, die nur im Internet gemobbt werden *(cyber-only)*.
2. Schüler, die sowohl in der Schule als auch im Internet gemobbt werden *(dual involvement)* zeigen sich im Bereich der psychischen Belastung, des Risikoverhaltens und in selbstverletzenden Verhaltensweisen auffälliger, als Schüler, die nur in der Schule gemobbt werden *(school-only).*
3. Täter, die nur in der Schule andere Schüler mobben *(school-only)* unterscheiden sich im Bereich der psychischen Belastung, des Risikoverhaltens und in selbstverletzenden Verhaltensweisen nicht von den Schülern, die nur im Internet mobben *(cyber-only).*
4. Schüler, die sowohl in der Schule als auch im Internet Täter sind *(dual involvement)* zeigen sich im Bereich der psychischen Belastung, des Risikoverhaltens und in selbstverletzenden Verhaltensweisen auffälliger, als Schüler, die nur in der Schule mobben *(school-only).*

Der direkte Zusammenhang zwischen Mobbing und psychischer Belastung (kurz- und langfristig) ist inzwischen durch viele Studien belegt, auch wenn weiterhin ein hoher Bedarf an Längsschnittstudien besteht (Klomek et al., 2019; Reijntjes et al., 2010; Sourander et al., 2016). Chronisches Mobbing geht dabei meist mit höheren Belastungen einher als kürzer andauernde Mobbingepisoden (Klomek et al., 2019; Moore et al., 2017). Ob sich Gesundheit und Lebensqualität aber auch wieder verbessern lassen, sobald Mobbing aufhört, ist bisher noch wenig erforscht. Die vorrangige Frage ist also, ob ein schulbasiertes Mobbing-Präventionsprogramm auch präventiv auf die Entwicklung psychischer Störungen wirkt.

Folgende Hypothesen werden in Manuskript 4 überprüft:

1. Die Reduktion oder das Beenden der Mobbingsituation innerhalb eines Jahres führt zu einem Rückgang der psychischen Belastung und zu einem Anstieg der Lebensqualität unter betroffenen Schülern.
2. Die Zunahme oder das neue Auftreten von Mobbing innerhalb eines Jahres führt zu einem Anstieg der psychischen Belastung und zu einer Reduktion der Lebensqualität unter den betroffenen Schülern.
3. Anhaltendes Mobbing (eine unveränderte Mobbingsituation) innerhalb eines Jahres zeigt einen kumulativen negativen Effekt und führt somit zu einem Anstieg der psychischen Belastung und einer weiteren Reduktion der Lebensqualität unter den betroffenen Schülern.

4. Beitrag der vorliegenden Forschungsarbeit (Manuskripte 1 - 4)

Die Daten für die folgenden Manuskripte wurden im Rahmen der Einführung des OBPP an weiterführenden Schulen in Baden-Württemberg erhoben. Das Präventionsprogramm wurde von jährlichen Schülerumfragen (online und anonym) begleitet. Die etwa eine Stunde dauernde Schülerumfrage (Selbstbeurteilungsfragebogen) bestand aus zwei Teilen: dem zum Programm gehörenden *OBQ-R* (Breivik & Olweus, 2015; Olweus, 2015b) und einem optionalen zweiten Teil, der den *KIDSCREEN-10* (The KIDSCREEN Group Europe, 2006) zur Erhebung der Lebensqualität (HRQL - health related quality of life), den *SDQ* (Strengths and Difficulties Questionnaire – Fragebogen zu Stärken und Schwächen) in der Kurzversion (Goodman, 2001; Klasen et al., 2000), Fragen zu Risikoverhalten (Zigaretten-, Alkohol- und Drogenkonsum, Schulabsentismus) basierend auf dem *Global School-based Student Health Survey* (WHO, 2013), Fragen zu Internetspielsucht, basierend auf den neun Diagnosekriterien des *DSM-V* (American Psychiatric Association, 2013) und Fragen zu selbstverletzenden Verhaltensweisen (Suizidgedanken, Suizidversuche und NSSI) basierend auf dem *„self-injurious thoughts and behaviors interview“* (Nock et al., 2007) enthielt. Die Schüler, die auch den zweiten Teil der Umfrage ausfüllten, generierten einen individuellen achtstelligen Code, der es möglich machte, die Antworten bei wiederholter Messung den Schülern anonym zuzuordnen. Für Codes, die aufgrund von Tippfehlern nicht eindeutig zugeordnet werden konnten, wurde folgende Matching-Prozedur angewandt: Fragebögen mussten von der gleichen Schule und dem gleichen Geschlecht stammen, die Klassenstufe der Post-Erhebung durfte nicht niedriger als die der Pre-Erhebung sein, die Levenstein-Distanz der Codes durfte nicht größer als zwei sein.

Wie in Kapitel 2.4. beschrieben, lässt sich der OBQ-R auf zwei unterschiedliche Weisen auswerten: Durch Auswertung des globalen Items oder durch Auswertung und Zusammenfassung der spezifischen Items. In der Literatur und Evaluation der Programme findet meist die Auswertung des globalen Items Anwendung (Limber et al., 2018; Olweus & Limber, 2009). Daher bezieht sich die Berechnung der Prävalenzen für Manuskript 1 und Manuskript 4 auf die Auswertung des globalen Items. Auch wenn die Kategorisierung durch eine einzelne Frage ökonomisch ist und sich leicht mit der internationalen Literatur vergleichen lässt, führt diese Auswertung tendenziell eher zu einer Unterschätzung der Prävalenzen (Solberg & Olweus, 2003). In Manuskript 3 wird die Kategorisierung daher nach Auswertung der spezifischen Items vorgenommen.

Die Lehrerschaft erhielt vor dem Start und am Ende der Programmeinführung eine Prä-Post-Befragung, ebenfalls online und anonym. Zusätzlich fanden alle drei Monate anonyme Lehrerbefragungen (online) zur Programmintegrität und zum Programmverlauf statt. Die Olweus-Coaches nahmen alle drei Monate an einem Telefoninterview mit der Forschungsgruppe teil. Dabei wurden sie zur praktischen Umsetzbarkeit des Programms, dem aktuellen Stand, Herausforderungen und der Programmintegrität an der Schule befragt.

4.1. Manuskript 1: Effects and moderators of the Olweus bullying prevention program (OBPP) in Germany

Ossa, F. C., Jantzer, V., Eppelmann, L., Parzer, P., Resch, F., & Kaess, M. (2020). Effects and moderators of the Olweus bullying prevention program (OBPP) in Germany. *European child & adolescent psychiatry*, 30(11), 1745-1754.

Das vorliegende Manuskript stellt die erste quasi-experimentelle Wirksamkeitsstudie des Olweus Mobbing-Präventionsprogramms im deutschen Schulsystem dar. Überprüft wurde, ob die Einführung des OBPP nach einem Jahr zu einer Reduktion der Mobbingzahlen auf Opfer- und Täterseite führt und ob Effekte auch noch nach zwei Jahren zu finden sind. Insgesamt wurden 1210 weiterführende Schulen (Hauptschulen, Realschulen, Gesamtschulen, Gymnasien) mit einer Größe von mindestens 100 Schülern zur Teilnahme am Programm eingeladen. 195 Schulen (16.1 %) zeigten Interesse und stellten einen engeren Kontakt her. 23 Schulen starteten mit der Implementierung des Programms (Intention to treat (ITT): 13 Schulen im Jahr 2015 (erste Kohorte) und 10 Schulen im Jahr 2016 (zweite Kohorte)). Die Rekrutierungsrate lag insgesamt bei 1.9 %. Alle Schüler der Schulen wurden zur Umfrage eingeladen, wobei sich die Auswertung der Evaluationsstudie auf die Schüler der Klassenstufe fünf bis neun beschränkt (n = 6485), da in diesem Alter die höchsten Mobbingraten und auch die höchsten Programmeffekte zu erwarten sind (Limber et al., 2018; Olweus & Limber, 2009). Die Teilnehmerrate bei der Baseline lag bei 88.8 % (n = 5759). Nach Durchführung der Baseline (t0: vor den Sommerferien) wurde das OBPP nach den Sommerferien eingeführt. Ein Jahr nach der Baseline fand wieder eine Schülerbefragung (t1, 12-Monats-follow-up) statt, ebenso ein weiteres Jahr später (t2, 24-Monats-follow-up). Die Programmimplementierung erstreckt sich über 18 Monate und war somit zum Zeitpunkt t1 noch nicht vollständig abgeschlossen. 16 der 23 Schulen beendeten erfolgreich die Implementierungsphase (*completer*). Sieben Schulen brachen die Programmteilnahme im Laufe der 18 Monate aus unterschiedlichen Gründen ab (*non-completer*). Trotz der abgebrochenen Programmteilnahme, führten fünf der sieben Schulen die Schülerbefragung zu allen Messzeitpunkten durch. Zwei Schulen führten nur t0 und t1 durch. Für die Analysen wurden Haupt- und Realschulen in eine Gruppe zusammengefasst (*B-Level*), ebenso wurden die Klassenstufen fünf bis sieben (Alter 10 - 13 Jahre) und acht bis neun (Alter 14 - 16 Jahre) in zwei Altersgruppen zusammengefügt.

Die Ergebnisse zeigten eine signifikante Interaktion zwischen Messzeitpunkt und Programmintegrität bezogen auf die Mobbingreduktion ($\chi^2_{(2)} = 7.62$, $p = 0.022$). Während die *completer* Schulen einen signifikanten Rückgang der Mobbingrate über die Zeit zeigten ($\chi^2_{(2)} = 15.17$, $p < 0.001$), konnte in der Gruppe der *non-completer* keine Veränderung der Mobbingrate festgestellt werden ($\chi^2_{(2)} = 4.64$, $p = 0.099$). Für die Aussage der Wirksamkeit des OBPP ist eine ausreichende Implementierung Grundvoraussetzung. So wird als eine Ursache für die große Wirksamkeitsspanne des Olweus Programms in der Literatur eine teilweise schlechte Programmintegrität beschrieben (Limber et al., 2018; Olweus & Limber, 2010). Daher beziehen sich die weiteren Analysen ausschließlich auf die 16 *completer* Schulen.

Veränderung der Opferrate: Zwischen t0 und t1 sank die Mobbingrate um 24.87 % (von 9.14 % auf 6.87 %; OR = 0.74; 95 % CI 0.62 – 0.88; $p = 0.001$). Dieser Programmeffekt blieb auch zu t2 stabil (Reduktion von t0 zu t2 um 25.26 %, Mobbingrate: 6.83 %, OR = 0.73; 95 % CI 0.61 – 0.88; $p = 0.001$).

Veränderung der Täterrate: Zwischen t0 und t1 sank die Anzahl der Täter um 28.25 % (von 6.16 % auf 4.42 %; OR = 0.70; 95 % CI 0.55 – 0.89; p = 0.004). Dieser Programmeffekt blieb auch zu t2 stabil (Reduktion von t0 zu t2 um 24.86 %, Täterrate: 4.63 %; OR = 0.72; 95 % CI 0.57 – 9.2; p = 0.009).

Moderatoren Geschlecht, Klassenstufe, Schulform, Kohorte: In der anschließenden Moderatorenanalyse ergab sich eine signifikante Interaktion zwischen Geschlecht und Messzeitpunkt ($\chi^2_{(2)} = 10.85$; p = 0.004). Während unter den Mädchen die Mobbingrate deutlich zurück ging (um 32.13 % zu t1 und um 42.44 % zu t2), zeigte sich unter den Jungen keine Veränderung der Mobbingrate über die Zeit (siehe auch Tabelle 1). Ebenso zeigte sich eine signifikante Interaktion zwischen Klassenstufe und Messzeitpunkt ($\chi^2_{(2)} = 7.12$; $p = 0.028$). Während die Mobbingraten in den Stufen fünf bis sieben über die Zeit kontinuierlich sanken, zeigte sich in den Stufen acht bis neun nur zwischen t0 und t1 ein Rückgang der Mobbingrate, nicht aber zum Zeitpunkt t2 (siehe auch Tabelle 1). Die Variablen Schulform und Kohorte zeigten keinen moderierenden Einfluss auf die Mobbing- oder Täterhäufigkeiten ($p > .05$).

Tabelle 1 Prävalenzen der Mobbingopfer und -täter (%) der *completer* Schulen zu t0, t1 und t2 getrennt für die Moderatoren Geschlecht, Klassenstufe und Schulform, sowie die relative Veränderung der Mobbingraten über die Zeit (%) zwischen t0 und t1 (t0 - t1), sowie zwischen t0 und t2 (t0 - t2). Positive Werte entsprechen dabei einer Mobbingreduktion. In Anlehnung an Ossa et al. (2020).

	Opfer					**Täter**				
	t0	t1	t2	t0 - t1	t0 - t2	t0	t1	t2	t0 - t1	t0 - t2
Geschlecht										
Jungen	8.54	7.11	7.95	16.76	6.91	8.61	6.14	6.65	28.62**	22.67*
Mädchen	9.75	6.61	5.61	32.13**	42.44***	3.70	2.60	2.41	29.64	34.90*
Klassenstufe										
5 - 7	10.00	7.79	6.43	22.05*	35.74***	5.29	3.91	3.53	26.14	33.41*
8 - 9	8.07	5.62	7.40	30.41**	8.36	7.23	5.10	6.15	29.42*	14.97
Schulform										
A	7.51	6.08	7.04	19.01	6.30	5.25	3.79	5.46	27.84	-4.00
B	9.92	7.26	6.74	26.87**	32.02***	6.60	4.73	4.27	28.29*	35.25**
Gesamt	9.14	6.87	6.83	24.87**	25.26**	6.16	4.42	4.63	28.25**	24.86**

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

Zusammenfassend lässt sich die Wirksamkeit des OBPP im deutschen Schulsystem bestätigen. Sowohl die Opfer- als auch Täterzahlen sanken nach Programmeinführung und die Effekte blieben über zwei Jahre stabil. Schulen, die die die Programmteilnahme abgebrochen hatten, zeigten keine Veränderungen in der Mobbingrate. Demnach sind die gefundenen Effekte mit hoher Wahrscheinlichkeit auf die Programmteilnahme zurückzuführen. Die Effekte für Opfer- und Täterreduktion lagen nach einem Jahr

zwischen 24.87 % und 28.25 %. Diese Ergebnisse sind sehr vielversprechend, liegen sie doch deutlich über dem Ergebnis einer Metaanalyse, die eine durchschnittliche Reduktion von 15 % bis 20 % berichtet (Gaffney, Farrington, & Ttofi, 2019). Unter den weiblichen Betroffenen konnte die Mobbingrate nach zwei Jahren sogar um 42.44 % gesenkt werden, dafür blieben die Raten der Jungen unverändert. Dieser Geschlechtereffekt wurde bisher noch nie so deutlich bei der Arbeit mit dem OBPP beschrieben. Möglich ist, dass bestimmte Aktivitäten des Programms (z. B. Hilfe holen) besser für Mädchen geeignet sind. Hilfe holen kann unter Jungen zu einer reduzierten Peer-Akzeptanz führen, was daher eher vermieden wird (Kochenderfer-Ladd & Skinner, 2002). Möglich ist, dass daher mehr Mobbing unter Mädchen aufgeklärt und bearbeitet werden konnte. Trotz der sichtbaren Wirksamkeit des OBPP schmälert die Rekrutierungs- und auch Abbruchsrate den Erfolg des Programms im deutschen Schulsystem. Die Hürden an einem solch umfassenden und zeitintensiven Programm teilzunehmen, waren für den Großteil der Schulen zu hoch. Zudem schränkt das fehlende RCT-Design die Aussagekraft ein. Um langfristig und dauerhaft Mobbing an Schulen zu reduzieren, scheint es eine systemische und politisch gewollte Veränderung zu benötigen. Die Notwendigkeit und den Gewinn von Mobbingprävention vertiefen die Manuskripte 3 und 4 der vorliegenden Dissertation.

4.2. Manuskript 2: The importance of implementation fidelity for teacher-related changes within the Olweus Bullying Prevention Program (OBPP)

Jantzer, V., Ossa, F. C., Lerch, S., Resch, F., & Kaess, M. (2023). The importance of implementation fidelity for teacher-related changes within the Olweus Bullying Prevention Program (OBPP). *International Journal of Bullying Prevention,* 1-13.

Das vorliegende Manuskript stellt Veränderungen auf Lehrer- und Schulebene durch Einführung des OBPP dar. Untersucht wurde, ob die Einführung des OBPP zu einer Erhöhung der Interventionsbereitschaft der Lehrkräfte in Mobbingsituationen führt, ob die wahrgenommene Berufsbelastung der Lehrer nach Einführung des Programms sinkt und ob sich das allgemeine Schulklima durch das Programm verbessert. Dabei wurden die höchsten Veränderungen bei den Schulen mit dem höchsten Implementierungslevel erwartet (*Dosage-Response*). Die Lehrerschaft wurde für die zehnminütige anonyme online Befragung per E-Mail eingeladen. Die Baseline fand vor den Sommerferien statt, bevor das OBPP eingeführt wurde. Es wurden N = 901 Lehrer angeschrieben und die Teilnehmerrate lag bei 68.26 %. Zwei der 23 Schulen waren Gemeinschaftsschulen mit einem Haupt- und Realschulzweig. Während die Schüler eindeutig einer der beiden Schulformen zuzuordnen waren (wie in Manuskript 1, 2 und 4), arbeiteten die Lehrer der Schulen zum Teil übergreifend. Für die Auswertung auf Lehrerebene wurden diese beiden Schulen deshalb zu einer Schule zusammengefasst, sodass die Anzahl der Schulen in diesem Manuskript n = 21 ergibt. Nach 18 Monaten arbeiteten noch 14 Schulen mit dem Programm, sieben Schulen brachen das Programm während der ersten 18 Monate ab (*non-completer*). Zum Zeitpunkt der Postline (+24 Monate) wurden n = 820 Lehrer von 19 Schulen zur Befragung eingeladen, mit einer Teilnehmerrate von 47.32 %. Zwei der *non-completer* Schulen nahmen an der Postline Befragung nicht teil (siehe auch Manuskript 1). Nachdem die Wirksamkeitsstudie (Manuskript 1) abgeschlossen war, konnten sich die

teilnehmenden Schulen optional zu Olweus-Schulen zertifizieren lassen *(certified)*. Dafür mussten diese mindestens sechs Monate weiter intensiv mit dem Programm arbeiten und einen Kriterienkatalog erfüllen. Sieben der 14 *completer* Schulen ließen sich zertifizieren, was eine besonders intensive Arbeit mit dem OBPP widerspiegelt. Daraus ergeben sich drei Gruppen abhängig vom Implementierungslevel: sieben *non-completer* (die, die Programmteilnahme abgebrochen haben), sieben *completer* (die mind. 18 Monate mit dem Programm gearbeitet und an drei Umfragen teilgenommen haben), sieben *certified* Schulen (die mindestens weitere sechs Monate mit dem Programm gearbeitet und an einem Zertifizierungsprozess teilgenommen haben).

Interventionsbereitschaft: Nach zwei Jahren Arbeit mit dem OBPP gaben die Lehrer signifikant häufiger an, in eine Mobbingsituation einzugreifen und zu intervenieren als vor der Programmteilnahme ($p < .001$; OR = 1.78; 95 % CI = 1.39 - 2.29). Die Kontrastberechnung ergab, dass dieser positive Anstieg jedoch nur bei den *completer* ($p < .001$; OR = 2.41; 95 % CI = 1.65 - 3.51) und *certified* Schulen zu finden ist ($p = .004$; OR = 1.76; 95 % CI = 1.19 - 2.60). Die *non-completer* zeigten keinen Anstieg der Interventionsbereitschaft ($p = .569$; OR = 0.83; 95 % CI = 0.44 - 1.58). In einem weiteren Schritt gingen vier Schulcharakteristika (Schulträgerschaft, Schulgröße, Einwohnerzahl des Schulortes, Mobbingrate zur Baseline) separat als Kovariaten in das Modell ein. Statistisch konnten keine Einflüsse der Kovariaten ausgemacht werden.

Berufliche Belastung: Es zeigte sich keine Veränderung der Lehrerbelastung über die Zeit ($F(5,997) = 1.58$; $p = .163$). Das OBPP konnte also die gefühlte berufliche Belastung der Lehrer, die sich aus der Beantwortung dreier Items zusammensetzte, nicht verbessern (Items Belastung: „Wie stressig empfinden Sie aktuell Ihren Beruf?“; „Wie belastend empfinden Sie aktuell Ihren Beruf?“; „Wie viel Freude macht Ihnen aktuell Ihr Beruf?“ (invertiert)).

Schulklima: Nach zwei Jahren Arbeit mit dem OBPP zeigte sich über alle Schulen gerechnet keine signifikante Veränderung des Schulklimas ($p = .448$; B = 0.62; 95 % CI = -0.98 - 2.21). Die Kontrastberechnung ergab jedoch eine Verbesserung des Klimas unter den *certified* Schulen ($p = .003$; B = 3.46; 95 % CI = 1.14 - 5.78). Die *completer* Schulen zeigten keine Veränderung ($p = .713$; B = 0.42; 95 % CI = -1.82 - 2.67) und unter den *non-completern* verschlechterte sich das Schulklima sogar ($p = .035$; B = -5.51; 95 % CI = -10.64 - (-0.38)). Die Verschlechterung konnte aber wiederum durch die Kovariate Schulgröße aufgeklärt werden ($p = .051$), da auch die Schulgröße mit Veränderung im Schulklima assoziiert ist. Die *non-completer* Gruppe bestand tendenziell aus kleineren Schulen, deren Verschlechterung zwischen Baseline ($p = .077$; B = −.89, 95 % CI = −1.87 – 0.10) und Postline ($p = .051$; B = −1.34, 95 % CI = −2.68 – 0.01) weniger ausgeprägt war als die der größeren Schulen.

Zusammenfassend zeigt das OBPP neben Erfolgen auf Schülerebene (Manuskript 1) auch positive Effekte auf Lehrerebene. Die Interventionsbereitschaft der Lehrkräfte stieg und das allgemeine Schulklima verbesserte sich zwischen t0 und t1. Wie auch in Manuskript 1 zeigen die Daten, dass die

positiven Ergebnisse mit Dauer und Treue der Implementierung in direktem Zusammenhang stehen. Die *certified* Schulen zeigten die besten Resultate. Zudem unterstreichen die Ergebnisse, dass Veränderungen auf Verhaltensebene und auch im wahrgenommenen Schulklima Zeit brauchen. Je länger mit dem Programm gearbeitet wurde, umso wahrscheinlicher waren positive Veränderungen. Zudem entsprechen die Ergebnisse der Studie von Kollerova et al. (2021), die besagt, dass positive Kollaboration und Kommunikation unter den Lehrern die Einstellung gegenüber Mobbing und dadurch auch die Bereitschaft, aktiv in Mobbinggeschehen einzugreifen, verändern kann. Beides wurde durch das Programm gefördert. Zudem wurde während der Programmdurchführung das Wissen über Mobbing und die Handlungsmöglichkeiten erweitert und trainiert. Nach dem Modell von Latané und Darley (1970) erhöhen gerade diese Punkte letztlich das Hilfeverhalten einer Person (siehe Kapitel 2.7.2). Eine kausale Aussage, ob die vollständige Programmteilnahme zu besseren Resultaten führt, oder ob Schulen mit besserem Klima eher fähig sind das Programm zu Ende zu führen, lässt sich durch die fehlende Kontrollgruppe nicht treffen. Möglich sind auch positive Rückkopplungen, bei denen Schulen, die schneller positive Veränderungen wahrnehmen motivierter sind das Programm fortzuführen. Trotzdem legt der Zusammenhang zwischen Intensität der Implementierung und dem Outcome die Schlussfolgerung nahe, dass die Resultate auf das Programm zurückzuführen sind (Haataja et al., 2014). Die Belastung der Lehrkräfte veränderte sich nicht signifikant. Das OBPP brachte für die Schulen auch neue Arbeit mit sich und die Umsetzung benötigte Zeit und Ressourcen. Dies könnte erklären, warum sich die Lehrer im ersten Schritt nicht entlastet gefühlt haben. Eine wahrgenommene Entlastung der beruflichen Situation könnte daher noch mehr Zeit benötigen, bis die Einarbeitung des OBPP in den Schulalltag zur Routine geworden ist. Zudem spielen in einem Lehreralltag auch andere Stressoren (wie Klassenzusammensetzung oder Motivation) eine Rolle, die den Beruf belastend machen können und die in dieser Studie als moderierende Einflussfaktoren nicht erhoben wurden (Herman et al., 2020).

4.3. Manuskript 3: Cyberbullying and school bullying are related to additive adverse effects among adolescents

Ossa, F. C., Jantzer, V., Neumayer, F., Eppelmann, L., Resch, F., & Kaess, M. (2023). Cyberbullying and school bullying are related to additive adverse effects among adolescents. *Psychopathology*, 1-11.

Das dritte Manuskript beschäftigt sich sowohl mit dem jeweils spezifischen als auch dem gemeinsamen Einfluss von Schul- und Cybermobbing auf die Gesundheit von Kindern und Jugendlichen. Dabei werden nicht nur die Betroffenen, sondern auch die Täter betrachtet. Die Daten wurden im Rahmen der Wirksamkeitsstudie des OBPP (Manuskript 1) erhoben. Dem vorliegenden Manuskript liegen die Daten der Baseline zugrunde, wobei alle Klassenstufen (5 - 13) der 23 Schulen in die Auswertung mit eingingen. Von den N = 7651 eingeladenen Schülern, nahmen N = 6561 an der Fragebogenerhebung teil (Teilnehmerrate: 85.8 %). Während bei der Haupteffektstudie (Manuskript 1) für die Auswertung das globale Item herangezogen wurde, liegt für das folgende Manuskript die spezifische Auswertung zu Grunde. Dadurch steigen die Gruppengrößen und die Ergebnisse werden aussagekräftiger. Dies erklärt die

unterschiedlichen Häufigkeiten im Vergleich zu Manuskript 1, dessen Auswertung sich zudem auf die Klassenstufen fünf bis neun beschränkt.

Für die Auswertung wurden die Schüler in vier Gruppen geteilt: *cyber-only* (nur Cybermobbing), *school-only* (nur Schulmobbing), *dual involvement* (in Cyber- und Schulmobbing involviert) und *non-involement* (nicht in Mobbing involvierte Schüler). Daraus ergaben sich folgende Häufigkeiten für die Opfer: *cyber-only* (1.9 %), *school-only* (17.2 %), *dual-involvement* (5.7 %) und für die Täter: *cyber-only* (0.6 %), *school-only* (11.9 %) und *dual-involvement* (2.9 %). Es wurden 75 % der Cybermobbingopfer auch in der Schule gemobbt und 82 % der Cybermobbingtäter auch in der Schule zum Täter.

Cybermobbing vs. Schulmobbing: Um die unterschiedlichen Einflüsse von Cybermobbing und Schulmobbing detailliert zu untersuchen, wurden aus den Fragen zur mentalen Gesundheit (SDQ und Kidscreen) und den Risikoverhaltensweisen jeweils ein Profil gebildet. Darin zeigten sich in der Gruppe *school only* signifikant mehr Beziehungsprobleme zu den Mitschülern als in der Gruppe *cyber only*, und zwar auf Opfer- ($\chi^2_{(1)} = 21.37$; $p < 0.001$) wie auch auf Täterseite ($\chi^2_{(1)} = 9.27$; $p = 0.01$). In den anderen Subskalen des SDQ und dem Kidscreen zeigten sich keine Unterschiede. Bezüglich des Risikoprofils zeigten die Opfer von Cybermobbing einen höheren Alkohol- und Drogenkonsum als die Opfer von Schulmobbing (OR = 2.31 – 2.78, $p < 0.05$). Die Täter unterschieden sich im Risikoprofil nicht voneinander ($\chi^2_{(7)} = 8.10$, $p = 0.32$). Zudem zeigten sich Schüler der *cyber only* Gruppe deutlich belasteter als Schüler, die nicht in Mobbing involviert waren. So berichteten Schüler der *cyber only* Gruppe z. B. doppelt so häufig Suizidgedanken (26.5 %) im Vergleich zur *non-involvement* Gruppe (11.5 %). Für die genauen Vergleiche zwischen dem Einfluss von *schoolbullying only (so)* und *cyberbullying only (co)* siehe in Tabelle 2 und 3 die Spalten „co vs. so".

Spezifisches vs. duales Mobbing: Bezüglich der psychischen Belastung zeigten sich deutlich additive Effekte. Schüler, die in beiden Settings von Mobbing als Opfer betroffen waren, zeigten eine schlechtere allgemeine Gesundheit und mehr Risikoverhaltensweisen als Schüler, die nur in einem Setting Mobbing erlebten. So lag z. B. die odds ratio [OR] für Suizidversuche, bei Schülern, die sowohl in der Schule als auch im Internet gemobbt wurden (*dual involvement*) mit OR = 0.18 ($p < .001$) fünffach über der *school only* Gruppe. Unter den Tätern zeigten sich bei *dual involvement* dreifach erhöhte Risikoverhaltensweisen wie Drogenkonsum und Schulabsentismus (OR = 0.3, $p < .001$) und doppelt so häufig Suizidgedanken (OR = 0.5, $p < .05$) im Vergleich zu *school only* Tätern. Detaillierte Werte sind Tabelle 2 und 3 den Spalten „co vs. dual" bzw. „so vs. dual" zu entnehmen.

Tabelle 2 Mittelwertunterschiede des SDQ und des KIDSCREEN-10, zwischen *cyber only* und *school only* und zwischen *school only* und *dual involvement,* sowie *cyber only* und *dual involvement* (negative Werte entsprechen höheren Werten in der zweiten Gruppe). In Anlehnung an: Ossa et al. (2023).

SDQ	Opfer			Täter		
Subskalen+KS10	co vs. so	so vs. dual	co vs. dual	co vs. so	so vs. dual	co vs. dual
Emotionale Probleme	0.16	-0.71***	-0.55***	0.28	-0.21*	0.08
Verhaltensprobleme	0.10	-0.48***	-0.38***	0.20	-0.85***	-0.65***
Hyperaktivität	0.19	-0.23***	-0.05	-0.07	-0.18	-0.25
Beziehungsprobleme	-0.42***	-0.50***	-0.91***	0.48*	-0.26**	0.22
KIDSCREEN-10	0.15	-0.46***	-0.32**	0.36	-0.13	0.23

Sidak-korrigierte p-Werte *$p < .05$; **$p < .01$; $p < .001$***
co = cyber only; so = school only; dual = involvement in school- and cyberbullying

Tabelle 3 Odds Ratios zwischen *cyber only* und *school only* und zwischen *school only* und *dual involvement* sowie *cyber only* und *dual involvement* für Selbstverletzung und Risikoverhaltensweisen (Werte < 1 entsprechen höheren Werten in der zweiten Gruppe). In Anlehnung an: Ossa et al. (2023).

Selbstverletzung und	Opfer			Täter		
Risikoverhaltensweisen	co vs. so	so vs. dual	co vs. dual	co vs. so	so vs. dual	co vs. dual
Suizidgedanken	0.73	0.34***	0.25***	2.19	0.50*	1.08
Suizidversuche	1.27	0.18***	0.23**	2.14	0.53	1.14
NSSI	0.86	0.25***	0.21***	2.54	0.64	1.63
Alkohol	2.31*	0.34***	0.77	1.50	0.65	0.97
Drogen	2.77*	0.29***	0.81	1.72	0.30***	0.51
Zigaretten	2.11	0.37***	0.77	1.10	0.41**	0.45
Schulabsentismus	0.79	0.44***	0.35*	2.63	0.33***	0.86

Sidak-korrigierte p-Werte *$p < .05$; **$p < .01$; $p < .001$***
co = cyber only; so = school only; dual = involvement in school and cyberbullying

In der Literatur wird der alleinige oder auch zusätzliche negative Einfluss von Cybermobbing häufig angezweifelt, da die meisten der im Internet gemobbten Schüler auch in der Schule Opfer von Mobbing sind (Wolke et al., 2017). So werden die negativen Konsequenzen vor allem durch das Involviertsein in Schulmobbing erklärt und der zusätzliche Einfluss von Cybermobbing geschmälert (Hase et al., 2015). Die vorliegenden Ergebnisse stellen jedoch sowohl einen deutlich negativen Einfluss von Cybermobbing ohne Schulmobbing als auch einen additiven Effekt von Cybermobbing zu Schulmobbing dar. Reine Opfer von Cybermobbing zeigten sich deutlich belasteter als Schüler, die nicht gemobbt wurden und genauso belastet wie Betroffene von Schulmobbing. Lediglich in der Subskala „Beziehungsprobleme zu Gleichaltrigen“, zeigten sich die Betroffenen von Schulmobbing belasteter, was ihre aktuelle Situation widerspiegelt. Im Risikoprofil zeigten Schüler, die nur im Internet gemobbt wurden, sogar einen höheren Anteil an Alkohol- und Drogenkonsum. Schüler, die in beiden Bereichen gemobbt wurden, zeigten eine besonders hohe Belastung sowie hohes Risikoverhalten und zwar sowohl auf Opfer- als auch auf Täterseite. Betroffene können selbst zu Hause den Schikanen der anderen nicht mehr entgehen, was sich in der Belastung kumulativ zeigt. Trotzdem schränken die Querschnittsdaten die Aussagekraft ein, da auch vermehrte Psychopathologie sowie auffälliges riskantes Verhalten zu Mobbing

führen kann. Somit ist eine kausale Schlussfolgerung nicht möglich. Ob sich der Zusammenhang zwischen Mobbing und Psychopathologie auch in Längsschnittdaten zeigt und ob Mobbingreduktion auch die Belastungen wieder reduzieren kann, beantwortet Manuskript 4.

4.4. Manuskript 4: Under the skin: does psychiatric outcome of bullying victimization in school persist over time? A prospective intervention study

Jantzer, V., Ossa, F. C., Eppelmann, L., Parzer, P., Resch, F., & Kaess, M. (2022). Under the skin: does psychiatric outcome of bullying victimization in school persist over time? A prospective intervention study. *Journal of Child Psychology and Psychiatry*, 63(6), 646-654.

Das vierte Manuskript beschäftigt sich mit der Frage, ob Mobbingreduktion (durch Mobbingprävention) zur Reduktion psychischer Belastung und zur Verbesserung der Lebensqualität bei Mobbingbetroffenen führt. Zudem wird im Längsschnitt geprüft, ob neu aufgetretenes Mobbing innerhalb eines Jahres in direktem Zusammenhang zu schlechterer psychischer Verfassung und geringerer Lebensqualität steht. Für die Beantwortung der Forschungsfragen wurden die Daten, die im Rahmen der Projektevaluation (Manuskript 1) erhoben wurden, herangezogen. Alle Schülerdaten der 23 Schulen, Klassenstufen fünf bis 13, die sich zu mindestens zwei Zeitpunkten zuordnen ließen, gingen in die Auswertung mit ein. Dabei wurde die Entwicklung der Mobbingsituation zum Vorjahr betrachtet (Zunahme oder neu aufgetretenes Mobbing, gleichbleibendes Mobbing, Reduktion oder beendetes Mobbing). Von N = 19 009 Einzelerhebungen in drei Jahren, ließen sich n = 11 709 zu zwei Messzeitpunkten zuordnen. Diese Daten gehörten n = 4 873 unterschiedlichen Schülern. Für die Messung der Psychopathologie wurden neben NSSI und Suizidalität der Gesamtwert des SDQ und die SDQ-Subskala „emotionale Probleme" analysiert (Goodman, 2001). Für die Lebensqualität wurde der KIDSCREEN-10 (HRQL) ausgewertet (The KIDSCREEN Group Europe, 2006).

Reduktion/Beenden der Mobbingsituation: Wurde Mobbing innerhalb eines Jahres reduziert oder beendet, zeigte sich eine Reduktion der psychischen Belastung (*Mobbing vergangenes Jahr* für alle $p < .001$) und eine Verbesserung der Lebensqualität ($p < .001$), auch wenn sich die Schüler im Vergleich zu nicht gemobbten Schülern immer noch deutlich belasteter zeigten (siehe Koeffizienten *Mobbing vergangenes Jahr*, Tabelle 4).

Zunahme oder Neuauftreten von Mobbing: eine Zunahme von Mobbing oder neuaufgetretenes Mobbing innerhalb eines Jahres führte zu einer Zunahme der psychischen Belastung (*Mobbing dieses Jahr* für alle $p < .001$) und einer Reduktion der Lebensqualität ($p < .001$).

Gleichbleibende Mobbingsituation: Eine unveränderte Mobbingsituation innerhalb eines Jahres führte zu einer Verschlechterung des SDQ-Gesamtwertes ($p = .034$) und zu einer schlechteren Lebensqualität ($p = .025$). Die anderen Subskalen verschlechterten sich durch anhaltendes Mobbing nicht weiter (für alle $p > .117$). Die jeweiligen Koeffizienten und OR des Latent Growth Curve Modells finden sich in Tabelle 4.

Tabelle 4 Regressionskoeffizienten der fixen Effekte des Latent Growth Curve Models (LGCMs) für emotionale Symptome, Gesamtwert des SDQ und KIDSCREEN-10 sowie Odds Ratios (OR) für Suizidalität und NSSI (N = 11 709). In Anlehnung an Jantzer et al. (2022).

	Koeffizient	p	95 % CI
Emotionale Symptome			
Zeit	0.07	<.001	0.03 – 0.11
Mobbing vergangenes Jahr	0.75	<.001	0.58 – 0.91
Mobbing dieses Jahr	1.63	<.001	1.45 – 1.81
Interaktion beider Jahre	-0.58	<.001	-0.90 – -0.26
Geschlecht Junge	-1.40	<.001	-1.51 – -1.30
SDQ-Gesamtwert			
Zeit	0.14	.001	0.06 – 0.23
Mobbing vergangenes Jahr	2.13	<.001	1.78 – 2.49
Mobbing dieses Jahr	4.26	<.001	3.87 – 4.64
Interaktion beider Jahre	-1.48	<.001	-2.17 – -0.80
Geschlecht Junge	-1.19	<.001	-1.42 – -0.95
KIDSCREEN-10 (HRQL)			
Zeit	-0.58	<.001	-0.77 – -0.39
Mobbing vergangenes Jahr	-3.46	<.001	-4.25 – -2.68
Mobbing dieses Jahr	-6.76	<.001	-7.61 – -5.92
Interaktion beider Jahre	1.94	.013	0.41 – 3.46
Geschlecht Junge	3.47	<.001	2.99 – 3.96
	OR	**p**	**95 % CI**
Suizidgedanken			
Zeit	1.15	.005	1.04 – 1.27
Mobbing vergangenes Jahr	2.95	<.001	2.12 – 4.11
Mobbing dieses Jahr	7.60	<.001	5.41 – 10.68
Interaktion beider Jahre	0.50	.022	0.28 – 0.90
Geschlecht Junge	0.46	<.001	0.37 – 0.56
Suizidversuche			
Zeit	1.21	.018	1.03 – 1.41
Mobbing vergangenes Jahr	2.82	<.001	1.74 – 4.57
Mobbing dieses Jahr	10.35	<.001	6.83 – 15.68
Interaktion beider Jahre	0.26	.001	0.12 – 0.56
Geschlecht Junge	0.84	.209	0.63 – 1.11
NSSI			
Zeit	1.02	.632	0.93 – 1.12
Mobbing vergangenes Jahr	2.71	<.001	1.97 – 3.72
Mobbing dieses Jahr	5.52	<.001	4.00 – 7.62
Interaktion beider Jahre	0.43	.004	0.24 – 0.76
Geschlecht Junge	0.61	<.001	0.50 – 0.74

Durch die Berechnung der *Marginal Means* ließen sich zudem beispielhaft die Verläufe der Schüler schätzen. Dabei wurde in die Gruppen *Nein-Nein-Nein* (zu keinem der drei Zeitpunkte Mobbing erlebt), *Nein-Ja-Ja* (Mobbing hat zu t1 begonnen) und *Ja-Ja-Nein* (Mobbing hat zu t2 aufgehört) unterteilt. Wie in Abbildung 4 für den SDQ-Gesamtwert und die Lebensqualität beispielhaft zu sehen ist, sank nach Beendigung des Mobbings (Ja-Ja-Nein, gepunktete Linie) zwar die Belastung bzw. die Lebensqualität stieg, erreichte aber nicht den Wert der nicht-gemobbten Kontrollgruppe. Ebenso zeigte sich, dass der Beginn einer Mobbingsituation (Nein-Ja-Ja, gestrichelte Linie) direkt auch zu einer Verschlechterung der Lebensqualität und der psychischen Gesundheit führt (Anstieg des SDQ-Gesamtwertes; siehe Abbildung 4).

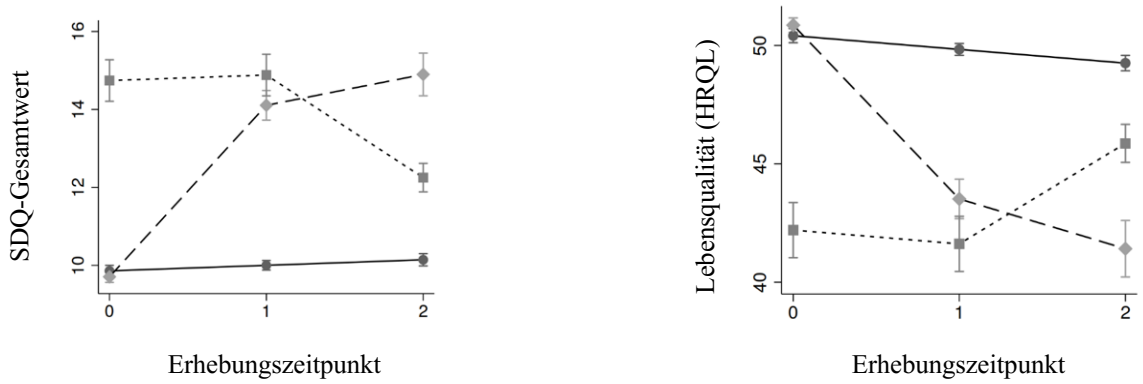

Abbildung 4: Verläufe der Marginal Means des Latent Growth Curve Models (LGCMs) für einige exemplarische Muster der Mobbingopfer. Visualisiert wird der Effekt von Mobbing auf die Verläufe des LGCMs über die Erhebungszeitpunkte hinweg. *Durchgezogene* Linie*:* Nein-Nein-Nein (Mobbing zu keinem Zeitpunkt); *gestrichelte Linie:* Nein-Ja-Ja (Mobbing hat zu t1 begonnen); *gepunktete Linie*: Ja-Ja-Nein (Mobbing hat zu t2 aufgehört). In Anlehnung an Jantzer et al. (2022).

Die Ergebnisse unterstreichen die Wichtigkeit von Mobbingprävention. Zum einen zeigen die Längsschnittdaten, dass eine Verschlechterung der psychischen Gesundheit und der Lebensqualität in direkter Folge auf eine Mobbingsituation zu erwarten sind, zum anderen zeigen sie, dass durch Verbesserung/Beenden der Mobbingsituation durchaus auch die Gesundheit und die Lebensqualität wieder verbessert werden kann. Diese Verbesserung ist ein lohnenswerter Erfolg und unterstreicht Nutzen und Erfolg von Mobbingintervention und -prävention. Trotzdem konnte die Gesundheit nicht ganz wiederhergestellt werden, was die Wichtigkeit von Prävention sowie die negativen Auswirkungen von Mobbing herausstellt. So berichten auch andere Autoren bei Betroffenen von anhaltenden psychischen Belastungen bis ins Erwachsenalter (Lereya, Copeland, Costello, et al., 2015). Die gewonnen Daten zeigen, dass chronisches Mobbing zudem zu einer Verschlechterung der Lebensqualität und des SDQ-Gesamtwertes führt. Die weiteren Subskalen zeigten keine Verschlechterung über die Mobbingdauer, was zum Teil bisherigen Befunden widerspricht, bei denen chronisches Mobbing mit einer höheren Belastung einhergeht (Klomek et al., 2019; Moore et al., 2017). Möglich ist, dass die Frequenz des Mobbings, die in unserer Studie nicht detailliert in die Auswertung mit einging, eine entscheidende Rolle bzgl. der Auswirkungen spielt (Moore et al., 2017). Trotz der Längsschnittdaten über zwei Jahre ließen die Stichprobengrößen nur Vergleiche zum Vorjahr zu, was die Aussagekraft einschränkt. In künftigen Studien könnten die Häufigkeit sowie individuelle Verläufe über drei oder vier Messzeitpunkte weitere Informationen liefern. Zusammenfassend lässt sich sagen, dass Mobbing mit direkter psychischer Belastung einhergeht und dass es Möglichkeiten gibt, diese wieder zu verbessern oder durch Prävention zu verhindern.

5. Diskussion

Die vorliegende Dissertation hat gezeigt, dass (1) das OBPP in Deutschland wirkungsvoll Mobbing reduzieren kann und (2) auch auf Lehrerebene mit positiven Verhaltensänderungen korreliert, (3) ein direkter Zusammenhang zwischen Implementierungsintensität des Programms und positivem Outcome besteht, (4) Cybermobbing einen eigenen und auch additiven negativen Einfluss auf die psychische Gesundheit von Schülern hat und dass (5) psychische Gesundheit und Lebensqualität in direktem Zusammenhang mit Mobbingverbesserung oder -verschlechterung stehen. Durch Mobbingprävention kann damit auch ein Beitrag zur Prävention psychischer Krankheiten geleistet werden.

Die Einführung und wissenschaftliche Begleitung des OBPP in Baden-Württemberg zählt mit 23 Schulen, N = 5759 Schülern und einer Teilnehmerrate von 88.8 % zu einer der großen Evaluationsstudien in Deutschland. Die Erhebung der Daten über zwei Jahre hat Auswertungen nicht nur im Querschnitt, sondern auch im Längsschnitt ermöglicht. Die Aussagekraft der gewonnen Daten ist somit besonders hoch. Die Einführung des OBPP im norwegischen Original stellt eine sehr aufwändige und strukturierte Intervention dar. Über einen Zeitraum von mindestens 18 Monaten haben sich die teilnehmenden Schulen wöchentlich, auf mehreren Ebenen und mit verschiedenen Materialien mit der Mobbingthematik befasst. Für jede Schule wurde ein Olweus-Coach direkt durch Olweus-International ausgebildet. Beides stellt eine Besonderheit an Ausbildungsgüte und Investment im Vergleich zu anderen Präventionsprogrammen dar. Eine intensive und langandauernde präventive Arbeit ist nach Axford et al. (2020) eine Voraussetzung für erfolgreiche Prävention. Dies spiegelt sich auch in den Ergebnissen wider, da die *non-completer* Schulen keine signifikanten Verbesserungen auf Schüler- oder auch Lehrerebene verzeichneten. Im Gegensatz dazu zeigte die Studie bei den *completer* Schulen bereits nach einem Jahr einen Rückgang der Mobbingrate um 24.87 % auf Opfer- und 28.25 % auf Täterseite. Diese Reduktion blieb auch nach zwei Jahren stabil und liegt damit sogar über der durchschnittlichen Reduktion (15 % – 20 %) einer Metaanalyse verschiedener Präventionsprogramme von Gaffney et al. (2019).

Die Einteilung der Schulen in *intention to treat*, *completer* und *non-completer*, ermöglichte für einige irrelevanten Faktoren wie initiale Motivation oder generelle Zeittrends zu kontrollieren. Durch die Begleitung der Implementierung kann geprüft werden, ob bei ausbleibenden Resultaten das Programm nicht wirkt, oder bloß mangelhaft umgesetzt wurde. Daher kommt dieser Begleitung eine hohe Bedeutung zu. Neben der deutlichen Mobbingreduktion unter den *completer* Schulen zeigten sich dort auch positive Auswirkungen auf Lehrer- und Schulebene. Die Interventionsbereitschaft der Lehrer bei Mobbing einzugreifen wurde innerhalb von zwei Jahren erhöht und das Schulklima nach Lehrereinschätzung verbessert. Laut dem Modell von Latané und Darley (1970) braucht es u. a. Verantwortungsgefühl und Handlungssicherheit, um in einer Mobbingsituation einzugreifen (siehe Kapitel 2.7.2.). Beides wurde durch das Programm geschult, was sich in den Ergebnissen widerspiegelt. Die erhöhte Interventionsbereitschaft der Lehrer im Mobbingprozess ist ein großer Erfolg, da Lehrern und ihrem Verhalten eine Schlüsselrolle und Vorbildfunktion in der Mobbingprävention zukommt (Olweus, 1993; van

Verseveld et al., 2019). Da die Fluktuation für Lehrkräfte viel geringer ist, als für Schüler, die nach einigen Jahren die Schule verlassen, ist viel gewonnen, wenn es ein Programm schafft die Lehrerschaft zu mobilisieren (Ahtola et al., 2012). Deshalb ist die erfolgreiche Wirkungsweise des OBPP auf Lehrerebene als sehr positiv zu bewerten. Der Zusammenhang zwischen Intensität der Implementierung und dem Outcome lässt darauf schließen, dass die Resultate auf das Programm zurück zu führen sind (Haataja et al., 2014). Somit ist das OBPP neben Norwegen und den USA (Limber et al., 2018; Olweus & Limber, 2010; Ttofi & Farrington, 2011) auch in Deutschland ein wirkungsvolles Präventionsprogramm, das mit viel Einsatz auch umgesetzt werden kann.

Die Arbeit verdeutlicht zudem die Notwendigkeit von Mobbingprävention im Schulsystem. Die Daten zeigen die intensive Mehrbelastung von gemobbten Schülern (Manuskript 3 und 4). So berichteten beispielsweise 11.5 % der nichtinvolvierten Schüler Suizidgedanken und 3.7 % Suizidversuche, während in der Gruppe der Schüler, die sowohl im Internet als auch in der Schule gemobbt wurden, 45.7 % bereits Suizidgedanken und 25 % Suizidversuche angaben (Manuskript 3). Zudem zeigen die Daten im Längsschnitt den deutlichen Anstieg von emotionalen Problemen, Suizidgedanken, Suizidversuchen, NSSI und eine sinkende Lebensqualität, sobald Schüler gemobbt werden (Manuskript 4). Auch wenn der Zusammenhang zwischen Mobbing und Psychopathologie inzwischen hinreichend belegt ist (Moore et al., 2017; Takizawa et al., 2014), geht dieser Erkenntnisgewinn über den rein korrelativer Studien im Querschnitt hinaus und gibt einen Hinweis auf einen direkten Zusammenhang zwischen Mobbing *onset* und psychischer Belastung. Dabei tritt die Belastung nach neu aufgetretenem Mobbing schnell und deutlich auf. Die Genesung nach Beendung des Mobbings braucht hingegen deutlich länger und die Werte erreichen nicht die der nichtinvolvierten Kontrollgruppe. Dies stellt einen wichtigen und neuen Aspekt in der Beziehung zwischen Mobbing und psychosozialen Konsequenzen dar. Langzeitstudien sind nötig, um zu prüfen, ob diese residuale Symptomatik auch über einen längeren Zeitraum bestehen bleibt und welche Faktoren im Sinne des allostatischen Modells eine Genesung begünstigen. Die gewonnen Daten zeigen, dass chronisches Mobbing zu einer weiteren Verschlechterung der Lebensqualität und allgemeiner Probleme führt. Nach dem Modell der allostatischen Belastung können sich Stressoren, wie Mobbing direkt negativ auf die Gesundheit und Belastbarkeit auswirken (siehe Kapitel 2.6.). Besonders Dauerbelastung und die Unfähigkeit zur Allostase bringen negative Konsequenzen mit sich, da das System auf Kurzzeitstress ausgelegt ist (McEwen, 2006; McEwen & Seeman, 1999). Die kumulative Wirkungsweise von Stressoren, wie sie McEwen und Seeman (1999) beschreiben, zeigt sich aber nicht nur bzgl. der Mobbingdauer, sondern auch in der deutlichen Mehrbelastung der Schüler, die neben der Schule auch im Internet gemobbt werden (Manuskript 3). Cybermobbing birgt viele belastende Eigenschaften wie Anonymität der Täter, ein großes unkontrollierbares Publikum und die sehr schnelle Verbreitung von Bildern und Texten. Zudem dringt Cybermobbing bis in die Privatsphäre zuhause ein, wodurch die Betroffenen auch dort mit Angriffen zu rechnen haben. Diese unkontrollierbare Dauerbelastung führt dazu, dass die Betroffenen rund um die Uhr unter Anspannung stehen (*fight or*

flight), was sich in erhöhten Cortisol-Leveln unter Cybermobbingopfern zeigt (González-Cabrera et al., 2017). Diese erhöhte Stressreaktion birgt wiederum das Risiko für verschiedene physiologische und psychologische Konsequenzen, die in den Ergebnissen deutlich werden (Glaser & Kiecolt-Glaser, 2005; Hüther et al., 1999; McEwen & Seeman, 1999). Laut dem Konzept der allostatischen Belastung von McEwen und Seeman (1999) können Stressoren zudem schädliche Copingmechanismen wie Alkohol- und Drogenkonsum bedingen. Auch die vorliegenden Ergebnisse zeigen deutlich höheren Raten an Risikoverhalten unter den von Cybermobbing betroffenen Schülern. Laut Gámez-Gaudix et al. (2014) sind Risikoverhaltensweisen allerdings mehr als Teil verschiedener Verhaltensprobleme zu sehen, die nicht nur Konsequenz, sondern auch Ursache für Mobbing sein können. Möglich ist, dass beides in reziproker Beziehung zueinandersteht.

Trotz der erfolgsversprechenden Ergebnisse zeigt die niedrige Rekrutierungsrate von 1.9 %, dass das Programm im deutschen Schulsystem flächendeckend kaum umsetzbar ist. Vielen Schulen, die ursprünglich Interesse zeigten, war der zeitliche Mehraufwand des OBPP zu hoch. Die damit verbundene niedrige Teilnehmerquote schränkt die Repräsentativität und Generalisierbarkeit der Ergebnisse ein, da davon auszugehen ist, dass nur besonders motivierte Schulen an der Studie teilnahmen, die sich ggf. von anderen Schulen auch hinsichtlich weiterer Variablen unterscheiden. Auch die Abbruchrate von 30 % gibt Hinweise auf Hürden bei der Programmumsetzung. Die unvorhergesehen schwierige und lange Rekrutierungszeit führte zudem dazu, dass das ursprünglich geplante RCT-Design nicht umgesetzt werden konnte. So musste während der Rekrutierung auf ein quasi experimentelles Design umgestellt werden (siehe Kapitel 2.7.3. sowie Supplements zu Manuskript 1 figure A1). Durch das fehlende RCT-Design ist ein Einfluss der Selektion auf den Interventionserfolg möglich. Die fehlende Kontrollgruppe schränkt die Aussagekraft, ob die Ergebnisse tatsächlich auf das Programm zurückzuführen sind, ein. Kausale Schlüsse sind letztlich nur durch ein RCT-Design möglich, was in dieser Studie aber aus den beschriebenen Gründen nicht umzusetzen war. Zudem wurden alle Daten als Selbstbefragung erhoben. Auch dies kann zu einem Bias führen, da Schüler ggf. sozial erwünscht oder aufgrund der Länge der Befragung am Ende unkonzentriert antworteten. Lehrerratings oder klinische Interviews könnten die Befragung ergänzen. Die geringe Rücklaufquote der Lehrerbefragung (Baseline: 68.26 %; Postline: 47.32 %) schränkt ebenfalls die Repräsentativität der Ergebnisse von Manuskript 2 ein. Auch hier besteht die Möglichkeit, dass nur motivierte oder mit dem Programm zufriedene Lehrer die Umfrage beantwortet haben. Zudem bewirkte die schlechte Rücklaufquote auch, dass nur einige wenige Items der ursprünglich geplanten Lehrerbefragung sinnvoll ausgewertet werden konnten.

5.1. Implikationen für zukünftige Forschung und Praxis

Aus der vorliegenden Arbeit lassen sich mehrere Implikationen ableiten:

Mobbingprävention ist nötig und wirkungsvoll: Die Ergebnisse zeigen, dass Mobbingprävention wichtig ist und wirkt. Mobbing hat direkte Auswirkungen auf Gesundheit und Lebensqualität der Betroffenen.

Da eine Schulpflicht besteht und die Schüler aus der Situation nicht entfliehen können, muss von außen dafür Sorge getragen werden, dass die Schüler in Sicherheit ihren Schulalltag bewältigen können. Die Handlungsverantwortung bei Mobbing einzugreifen, liegt bei den Erwachsenen, ebenso dafür, sich in diesem Bereich fortzubilden und präventiv dagegen vorzugehen (Olweus, 1994). Deutlich wird auch, dass Prävention, die reine Intervention immer begleiten sollte, da viele Konsequenzen über Jahre nachwirken (Sourander et al., 2016; Wolke & Lereya, 2015). So zeigen auch die vorliegenden Daten die andauernde Belastung durch Mobbing, selbst nach dessen Reduktion. Die Ergebnisse unterstreichen daher die Wichtigkeit von Primärprävention: wenn Mobbing gar nicht erst entsteht, auf ein Minimum reduziert wird oder direkt nach Auftreten beendet werden kann, ist das der Intervention nach bereits verfestigten Mobbingsituationen überlegen. Prävention sollte daher politisch unterstützt und gefördert werden. Dabei ist allerdings darauf zu achten, dass diese für die Schulen auch umsetzbar ist. Die Dissertation hat Hürden und Schwierigkeiten des OBPP aufgezeigt. Selbst dort, wo Schulen Interesse zeigten, etwas gegen Mobbing zu tun, war es vielen Schulen nicht möglich, das zeitintensive Programm einzuführen. Diese Erkenntnis ist nicht neu, so berichten auch Olweus und Limber (2009) bereits von Hürden der Programmumsetzung des OBPPs in anderen Ländern. Metastudien kommen zwar zu dem Schluss, dass Präventionsprogramme langandauernd und intensiv sein müssen, um wirkungsvoll zu sein (Axford et al., 2020; Ttofi & Farrington, 2011), trotzdem sollten Wege gefunden werden, die zeitlichen Ressourcen der Lehrer zu berücksichtigen und dementsprechend Maßnahmen zu ergreifen. Durch mehr Zusatzmaterial für die Klassenstunden, weniger Präsenztreffen im Kollegium und flexible online Kurse könnten Zeitressourcen eingespart werden. Sind Programme für Schulen leichter umzusetzen, ist davon auszuggehen, dass auch die Teilnahme steigt. Dies wiederum würde die Aussagen bzgl. Repräsentativität und Generalisierbarkeit verbessern und ggf. ein RCT-Design ermöglichen. Aus diesen Schlussfolgerungen ist bereits das Folgeprojekt „*Mobbing&Du – schau hin und nicht zu*“ entstanden (https://info.mobbing-und-du.de). Dabei handelt es sich um ein Mobbing-Präventionsprogramm, das neben Einheiten in Präsenz auch einen großen Fokus auf die virtuelle Ausbildung der Schüler und Lehrer legt. Dadurch wird an Flexibilität und Zeit gewonnen. Das von der Baden-Württemberg Stiftung mit 800 000 € geförderte Projekt, wird zurzeit von unserer Forschungsgruppe in der Kinder- und Jugendpsychiatrie Heidelberg durchgeführt und evaluiert. Bei der Entwicklung konnten die gewonnenen Erkenntnisse aus der vorliegenden Dissertation umgesetzt werden und es wurden bereits erste Erfolge bei der Rekrutierungsrate verzeichnet.

Lehrer sollten auch in zukünftigen Studien mit in die Programmevaluation einbezogen werden. Können Programmmodule ausgemacht werden, die sich direkt positiv auf das Verhalten und die Interventionsbereitschaft der Lehrer auswirken, können diese Module einen größeren Teil in Prävention einnehmen und weniger hilfreiche Module ersetzen. So kann durch wissenschaftliche Begleitung, Prävention entwickelt werden, die sich auf die wirkungsvollsten Komponenten konzentriert. Um Lehrer ökonomisch auszubilden, sollte auch an den Universitäten und in der Lehrerausbildung Mobbingprävention

und -intervention deutlich mehr integriert werden. Auch wenn die praktische Anwendung im Studium noch fehlt, kann Wissen zur Thematik und Handlungssicherheit durch Wissensvermittlung und Rollenspiele gewonnen und eingeübt werden. So kann schon in der Ausbildung der Grundstein dafür gelegt werden, dass Lehrer nach dem Model von Latané und Darley (1970) durch Sensibilisierung und Handlungssicherheit Mobbing als Notfall erkennen, um Handlungsmöglichkeiten wissen und entsprechend handeln (siehe Kapitel 2.7.2.).

Mobbingprävention ist nicht nur ein Thema des Bildungswesens, sondern auch des Gesundheitswesens und der Politik: Mobbing betrifft nicht nur das Bildungswesen und den Bereich der Pädagogik. Die Ergebnisse zeigen, dass Mobbing weitreichende Folgen für das Gesundheitssystem hat. Dem erhöhten Versorgungsbedarf sollte Rechnung getragen werden, da er sich selbst nach 40 Jahren noch finden lässt (Evans-Lacko et al., 2017; Sourander et al., 2016). Neben den persönlichen Kosten für die Betroffenen hat Mobbing auch gesellschaftliche Kosten zur Folge (Jantzer et al., 2019). Das Gesundheitssystem sollte daher vermehrt Interesse an der Prävention von Mobbing und damit verbunden der Prävention von Krankheiten im Jugendalter haben. Finanzielle und strukturelle Unterstützung seitens der Politik (wie z. B. mehr Klassenleiterstunden, ausreichend Personal) würde Schulen helfen Freiräume für Prävention zu schaffen. Craig et al. (2009) erklären die hohe Diskrepanz der Mobbingraten zwischen Ländern zum Teil auch mit der unterschiedlichen nationalen Politik diesbezüglich. So verzeichnete das OBPP zu Beginn in Norwegen u. a. auch dadurch große Erfolge, da es politisch gewollt und Teil einer nationalen Kampagne war (Olweus, 1994).

Mobbing gehört in den Fokus der Kinder- und Jugendpsychiatrie sowie des Kinder- und Jugendschutzes: Auch wenn Primärprävention und damit das Verhindern von Mobbingfällen der Goldstandard wäre, braucht es auch eine gelungene Intervention, um mit Mobbingvorfällen umzugehen. Dabei ist jedoch das Beenden der Mobbingsituation oder das Verlassen der Schule nicht immer ausreichend. Die Dissertationsschrift zeigt, dass die psychische Belastung und die Lebensqualität nach beendetem Mobbing für die Betroffenen zwar wieder besser werden, jedoch nicht den Ausgangswert unbeteiligter Schüler erreichen. Dies verdeutlicht, dass Schüler nach Mobbing, wie auch nach anderen Gewalterfahrungen, Unterstützung über das Beenden der Situation hinaus brauchen. Die Entwicklung eines therapeutischen Konzepts zur Behandlung und Genesung für Opfer scheint hier der logisch nächste Schritt zu sein. In diesem Feld gibt es bisher einen deutlichen Forschungsmangel (Gökkaya & Tekinsav Sütcü, 2018; Hess et al., 2017). Eine an Mobbing angepasste Kurzzeittherapie, in der der Selbstwert der Schüler aufgebaut, Resilienzfaktoren gestärkt, Mobbing Situationen aufgearbeitet, schädliche Muster und Kognitionen erkannt und neue Verhaltensweisen eingeübt werden, könnte entwickelt und evaluiert werden. Elemente der Stress- und Traumaforschung, sowie der kognitiven Verhaltenstherapie sollten dabei Beachtung finden (Beck, 2009; Bering, 2008; Lazarus & Folkman, 1986; McEwen & Seeman, 1999). Dabei sollte geprüft werden, ob die Lebensqualität und die psychische Gesundheit wieder auf ein vergleichbares Niveau wie

bei nichtinvolvierten Schülern angehoben werden kann und schädliche Konsequenzen dadurch langfristig abgewendet werden können.

Neben der Entwicklung eines therapeutischen Ansatzes lohnt sich auch die weitere Resilienzforschung, denn nicht alle betroffenen Schüler leiden gleich stark. Das Analysieren von Risiko- und Schutzfaktoren könnte einen Beitrag dazu leisten, die Entwicklung von Psychopathologie nach Mobbingerfahrungen noch tiefer zu verstehen und zielgerichtet in die Prävention zu integrieren. So wirken sich auch im Sinne des Modells der allostatischen Belastung gute Schulleistungen, soziale Skills, stabile familiäre Verhältnisse, guter Kontakt zu den Eltern und prosoziale Freunde positiv auf die Gesundheit aus (Sapouna & Wolke, 2013; Ttofi et al., 2014). Mit Antworten auf die Frage „was wirkt für wen?“ und „wie können Resilienzfaktoren gestärkt werden?“, ließen sich auch sekundär- oder tertiär präventive Angebote gestalten.

Da ca. 40 % der Schüler aufgrund von Scham Niemand vom Mobbing erzählen (Leff et al., 1999; Wolke, 2019) kann nicht erwartet werden, dass sich Schüler aktiv Hilfe suchen. Betroffene sollten daher nicht nur in der Schule, sondern auch durch Screening in der Primärversorgung identifiziert werden, um frühzeitig Hilfe zu erhalten (Wolke, 2019). Da Kinderärzte und -psychiater häufig die ersten Ansprechpartner für Eltern und Betroffene bei psychischen und körperlichen Beschwerden sind, sollten diese aufgeklärt und sensibilisiert sein, Mobbing als Auslöser für Beschwerden in Betracht zu ziehen. Bisher erfragen Ärzte bei somatischen Beschwerden nur selten Gewalterfahrungen unter Gleichaltrigen (Radford et al., 2013; Wolke, 2019). Eine systematische Implementierung sowohl von Screening-Verfahren als auch von therapeutischen Maßnahmen könnte diesen bislang vernachlässigten Zusammenhang an den entscheidenden Stellen ins Bewusstsein rufen und so zur Genesung beitragen.

Während Mobbing teilweise immer noch als *normal* und etwas, *dass es schon immer gegeben hat*, angesehen wird, wird in der Wissenschaft bei Mobbing schon von Missbrauch *(peer abuse)* gesprochen (Sourander et al., 2016) Studien zeigen, dass die Wahrscheinlichkeit für psychische Probleme bei Schülern, die gemobbt wurden, höher liegen als bei Kindern und Jugendlichen, die unter häuslicher Gewalt leiden (Lereya, Copeland, Costello, et al., 2015). Mobbing gehört damit in die volle Aufmerksamkeit des Kinder- und Jugendschutzes. Es sollte als signifikantes internationales Gesundheitsproblem betrachtet werden (Gini & Pozzoli, 2009). Wenn an Schulen kein gezielter und geschulter Umgang mit der Thematik vorliegt, sollte dies als unterlassene Hilfeleistung eingestuft werden (Greene, 2006). So fasst Olweus zusammen:

> […] Es ist nicht länger möglich, bei Gewaltproblemen in der Schule passiv zu bleiben und sich dabei auf mangelndes Wissen zu berufen [….] Heute ist das alles nur noch eine Frage von Wille und Einsatzbereitschaft auf Seiten der Erwachsenen. (nach Olweus, 1993, S. 128).

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Manuskript 1

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Manuskript 2

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ORIGINAL CONTRIBUTION

Effects and moderators of the Olweus bullying prevention program (OBPP) in Germany

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Abstract

Bullying is a common and significant risk factor for mental and physical health problems. The aim of the outlined study was to evaluate the German version of the Olweus Bullying Prevention Program (OBPP) and to investigate potential moderators of its effectiveness. 23 schools started with the implementation and all students were invited to complete the Olweus Bullying Questionnaire annually. For our analyses, the data from grades 5 to 9 were used (t0: $n=5759$; t1: $n=5416$; t2: $n=4894$). 16 out of the 23 schools completed the 18-months implementation period. The effectiveness of the program statistically depended on its complete implementation ($\chi^2_{(2)}=7.62$, $p=0.022$). In the group of non-completers, the prevalence of victimization did not change during the observation period of 2 years ($\chi^2_{(2)}=4.64$, $p=0.099$). In the group of the completer schools, a significant decrease in bullying between t0 and t1 was found for victims (t0: 9.14%; t1: 6.87%; OR = 0.74; 95% CI 0.62–0.88; $p=0.001$) and perpetrators (t0: 6.16%; t1: 4.42%; OR = 0.70; 95% CI 0.55–0.89; $p=0.004$). After 24 months (t2), this decrease could be retained (victims: t2: 6.83%; OR = 0.73; 95%CI = 0.61–0.88; $p=0.001$; perpetrators: t2: 4.63%; OR = 0.72; 95% CI 0.57–0.92; $p=0.009$). Furthermore, we found the following moderators of program effectiveness in the completer schools: (1) gender (with a stronger decrease among victimized girls; $p=0.004$) and (2) school grade (with a stronger decrease of victimization among grades 5–7; $p=0.028$). The German version of the OBPP significantly reduced the bullying prevalence in the completer schools. Effective prevention needs time and resources: fulfilling the 18-months implementation period was the basis for positive results.

Keywords Bullying · School · Victimization · OBPP · Prevention · Adolescents

Introduction

Bullying is defined as negative actions, which occur repeatedly and over a long period of time. It is discerned from peer-conflicts by an imbalance of power. Consequently, the person who is being bullied has difficulties to defend him-/herself and the perpetrator is superior [1]. The large-scale study "Health Behavior in School-Aged Children" (HBSC) with a sample of over 200,000 adolescents from 40 European countries estimates the worldwide prevalence of bullying victimization with 12.6%, ranging across countries from 4.8% to 45.2% [2]. In most countries, the rates of victimization decreased with age. The data on the association of victimization and gender are inconsistent so far. However, boys were more likely to be perpetrators than girls. The prevalence for being a perpetrator is estimated at 10.7% [2]. In Germany, the recent studies reported prevalence rates of victimization between 10 and 16% [3, 4].

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Bullying increases the risk for a wide and diverse range of health and psychosocial problems with long-term effects even in later adulthood [5, 6]. Furthermore, our group recently reported significantly higher healthcare costs among victims of repetitive bullying compared to children without any bullying experience [7]. Despite its serious negative outcomes, bullying is still the most pervasive form of aggression at school [8]. Although it appears to be part of everyday school life, it is often disregarded. Even though many teachers recognize bullying in their schools, they often feel helpless or not responsible. Some schools have established prevention strategies, but most of them have failed to document and evaluate results. Considering the fact that school is mandatory in many parts of the world and students consequently have to spend a lot of time at school, schools must ensure that every student is safe at school and does not develop consequential impairments [1, 6]. Therefore, effective and long-term bullying prevention is urgently needed [9].

In a meta-analytic review, Ttofi and Farrington [10] investigated the effectiveness of 44 anti-bullying programs at schools. Being bullied decreased by 17–20% on average, being a perpetrator by 20–23%. More intensive and long-lasting programs with a whole-school policy were more effective and "programs inspired by the work of Dan Olweus worked best". In a more recent meta-analysis [11], the Olweus Bullying Prevention Program (OBPP) still worked best in reducing perpetrators and was among the best methods in reducing victimization. Professor Dan Olweus developed the OBPP, an evidence-based prevention program which had its beginnings in Scandinavia in 1983 [12]. Two large Norwegian evaluation studies of the OBPP showed a relative decrease in bullying of 24–43% on the side of the victims and a relative decrease of 21–52% for perpetrators in grade 5–7. A 5-year follow-up study in Oslo revealed that this decrease could be retained for both victims and perpetrators [12]. Positive results have also been reported for students in grades 8–10, but less consistently and sometimes weaker [12]. The OBPP spread out during the recent years and also had a large implementation period in the United States. A current study evaluated the program in 210 schools in Pennsylvania using an age cohort design [13]. Almost all grades showed significant reductions over 2 years with higher decreases for the lower grades (relative reduction: victims: 8.2–19.2%; perpetrators: 29.7–34.6%). Limber et al. [13] additionally found a program by sex interaction for students in grades 3–5. For boys they found a greater reduction for being victimized than for girls. For being a perpetrator, no gender effects were found. Other studies reported equal changes in bullying among boys and girls [12]. A first attempt to implement the OBPP in Germany dates back to 1994 [14]. The study was inspired by the book "Bullying at school, what we know and what we can do" [15]. The research team implemented their version in 37 German schools and evaluated it with $N = 11{,}052$ students. The results showed a reduction in direct victimization in grades 3, 5, 6 and 7, but not for indirect victimization. Perpetrator rates decreased in grades 4, 5 and 7. Grades 11 and 12 showed an increase in bullying. According to Olweus and Limber [16] the program "deviated considerably […] from the OBPP in terms of program components and model of implementation". Therefore, our study can be regarded to be the first to implement the OBPP in Germany.

The aim of the current study was to evaluate the implementation of the German version of the OBPP in a sample of German secondary schools. We hypothesized that the number of bullying victims and perpetrators will be reduced when schools successfully implement the OBPP. In addition, potential moderator effects of gender, class level and school-type were tested.

Methods

Study population, procedures and design

The German OBPP project was funded by the Baden-Wuerttemberg Foundation (Baden-Wuerttemberg Stiftung) as part of their program "Youths Mental Health"; thus, participation in the OBPP was free of charge for all schools. The study was conducted at the Department of Child and Adolescent Psychiatry, University of Heidelberg and performed in compliance with the Helsinki Declaration. It was approved by the ethics committee of the Medical Faculty of the University of Heidelberg (S-341/2014) and the respective school authorities. In addition, the study was registered at a WHO trial registry (Deutsches Register Klinischer Studien; DRKS00008202).

A prospective quasi-experimental design with an annual student survey (baseline, 12 months follow-up, 24 months follow-up) was used, and the OBPP was implemented after baseline in each participating school. All students, teachers and caregivers were informed about the OBPP implementation as well as the evaluation study by leaflet. Regarding the survey, students gave informed consent and caregivers were informed about the study and had the opportunity to object to the participation of their child (opt-out). The survey was conducted annually just before summer vacation. The data were collected from students in class-sized groups during a 45 min online survey.

The recruiting process started in 2014. Only regular secondary schools (i.e., no schools for students with special needs; no part time or evening schools) with at least 100 students, starting from grade five, were eligible. The intended design was a randomized control trial (RCT) and 30 schools from our regional catchment area were randomly

selected and invited to participate. Although the schools were intensively contacted via both mail and personal phone call, all of these schools declined. Subsequently, the catchment area was expanded stepwise. It took schools between several weeks and months to settle their decisions, and we still received very little consent to participate, thwarting the project timeline and funding resources. Given that we were forced to work with a lower number of schools than originally expected, and that schools were even less willing to participate in the context of a potential allocation to a control group, we finally moved from the RCT design to a quasi-experimental evaluation study.

Initially, 413 secondary schools in the state of Baden-Wuerttemberg were informed about the program via e-mail, mail and phone calls, and invited to participate in the OBPP and its evaluation. 13 schools accepted our offer and started with the program in 2015 (first cohort). In a second step, we further expanded the catchment area and invited another 1102 schools (794 new schools and 308 schools who did not respond during the first cohort). 10 schools accepted our invitation and started the program in 2016 (second cohort). Supplement figure A1 provides detailed information about participants in each group following the CONSORT 2010 Flow Diagram [17]. Overall, 195 (16.1%) out of the 1210 invited schools signaled interest and made closer contact via telephone, e-mail or in person. 23 schools finally started the program, resulting in a recruitment rate of 1.9% (see supplement figure A1). These schools were defined as the intention to treat (ITT) schools in our study, out of which 16 finally finished the implementation period (completer schools). In the participating schools ($n=23$), a total number of $n=6485$ students (grades 5–9) were invited to complete the survey. The final number of students who consented to participate in the OBPP evaluation during baseline assessment was $n=5759$ (88.8% response rate). We divided grades 5, 6 and 7 (age 10–13 years) and grades 8–9 (age 14–16 years) into two different grade groups.

The German Olweus bullying prevention program

Prior to the start of the study, all OBPP materials were translated into German in close collaboration with Olweus International Bergen and a translation company. The original teacher handbook was translated from Norwegian [18], the parent's booklet was translated from English [19] and the Olweus film was dubbed from Norwegian into German. Our study was the first implementation and evaluation of the OBPP in the German school system with the original materials; nonetheless, some minor changes and adaptions to the original were necessary and can be found in the supplementary material (supplement table A1).

For every school, a keyperson, called Olweus-Coach, was selected. This person received a 7 day training carried out by Olweus International Bergen (3 blocks: (1) day1–3: before implementation started, at the beginning of the school year, (2) day 4/5: 5 months after the program had started, (3) day 6/7: at the end of the school year), as well as regular supervision during the implementation phase. The Olweus-Coach in turn was responsible for the implementation of the program components at school, for example regular study- and supervision groups for all staff members, regular class meetings and cooperation with parents. For further details of the program, see Olweus and Limber [12] and supplementary table A2. Participation in three student surveys, as well as active work with the program and the Olweus-Coach over a period of at least 18 months were defined as minimum criterion for the program's complete implementation. Active work included small groups for the teacher staff at least every 6 weeks, discussions and regular contact with the Olweus-Coach, restructuring of the supervision system, regular classroom lessons at least in grades five through eight and further program components (see Supplement Table A2). Regular telephone calls (every 3 months), between the research team and the Olweus-Coaches made sure that the core components of the program were running according to the Olweus manual. In addition, there was an annual call with the headmaster of each school.

Measures

The Olweus Bullying Questionnaire Revised (OBQ-R) [20] is a 57-item questionnaire that anonymously assesses students' self-reports of bullying others and being bullied at school or via electronic means (cyberbullying), their own behavior when they witness bullying, their attitudes towards bullying and their perceptions of how their teachers counteract bullying [21, 22]. The two global items "How often have you been bullied/have you bullied others at school during the past 3 months?" were used to define victims and perpetrators with the common cut-off of "at least 2 or 3 times a month".

Statistical analyses

The effect of the intervention on the rate of bullying was estimated with multilevel mixed-effect logistic regressions with being bullied (yes/no) as dependent variable and time of assessment (t0, t1 and t2) as fixed factor. To take into account that students within one class are more similar then students between classes and students within one school are more similar than students between schools we added random intercepts for each school and for each combination of class and assessment time nested within schools. The short-term effect (1 year) of the program is estimated by the odds ratio between the probability of being bullied at t0 and t1 and the long-term effect (2 years) by the odds ratio between t0 and t2. We also tested the possible moderator variables

program completion, gender, grade-level, school-type and cohort. For each of these moderator variables the variable itself and the interaction of the variable with assessment time were added to the regression. A significant interaction would mean that the program effect is influenced by the levels of the moderator variable. Of special interest is cohort as moderator. A significant interaction between assessment time and cohort would indicate a confounding between program effect and general trends in time, limiting the interpretation of the results. To estimate the effect of the program on the number of bullying perpetrators, the same set of models were estimated with being a bullying perpetrator (yes/no) as dependent variable. We assumed an independent variance–covariance structure for all mixed models; the hypotheses were tested with Wald-tests of linear contrasts using a significance level of $\alpha = 0.05$. For all calculations, the statistic program Stata 16 was used [23].

Results

Out of the 23 participating schools (intention-to-treat), 16 schools successfully implemented the OBPP (completer), while seven schools canceled implementation of the program within the 18-months implementation period (non-completer). Five of these seven non-completers took part in the annual student survey at all three time points and two schools completed the survey at two time points only. Table 1 presents the sample description for completer and non-completer schools as well as the overall sample.

Table 1 Sample description

	Total	Completer	Non-completer
Number of schools	23	16	7[b]
N			
t0	5759	4753	1006
t1	5416	4466	950
t2	4894	4305	589
Gender (%)			
Girls	47.79	48.77	42.55
Boys	52.21	51.23	57.45
Grade-level (%)			
5–7	56.76	57.05	55.21
8–9	43.24	42.95	44.79
School-type (%)[a]			
A	26.78	31.82	0
B	73.22	68.18	100
Participation (%)	88.11	90.20	78.45

[a]*Gymnasium* is called A-level school; *Haupt-* and *Realschule* were summarized as B-level schools

[b]Two of the seven non-completer schools did not participate in t2

Intent-to-treat analysis and effects in the non-completer schools

At baseline, 9.21% reported being a victim of bullying, with a range of 2.0–17.46% among the 23 schools. An intent-to-treat analysis (including both completers and non-completers) showed a significant reduction between t0 and t1 (t1: 7.13%; relative reduction 22.56%; OR = 0.80; 95% CI 0.65–0.98; $p = 0.033$) but no reduction between t0 and t2 (t2: 7.55%; relative reduction 17.99%; OR = 0.99; 95% CI 0.79–1.24; $p = 0.948$). 6.71% reported being a perpetrator, with a range of 0.0–16.39% across schools. The number of perpetrators was reduced between t0 and t1 (t1: 4.99%), which comes up to a relative reduction of 25.62% (OR = 0.71; 95% CI 0.56–0.92; $p = 0.010$). Again, this effect was not stable at t2 (t2: 5.06%; relative reduction: 24.58%; OR = 0.79; 95% CI 0.59–1.04; $p = 0.093$).

A significant interaction between program participation and assessment time was found in the regression of bullying victimization ($\chi^2_{(2)} = 7.62$, $p = 0.022$), indicating that the trajectories of the victimization rates differed between completer and non-completer schools. While the completer schools showed a significant reduction in victimization over time ($\chi^2_{(2)} = 15.17$, $p < 0.001$), the non-completers showed no change in the rate of victimization during the observation period ($\chi^2_{(2)} = 4.64$, $p = 0.099$). Figure 1 shows the predicted probability of victimization for all time points, separately for completer and non-completer schools. For perpetrators, no interaction between program participation and assessment time was found ($\chi^2_{(2)} = 0.35$, $p = 0.840$).

To make meaningful conclusions about the effect of the OBPP, its complete implementation is the basic requirement. Therefore, the following analyses refer to the 16 completer schools only.

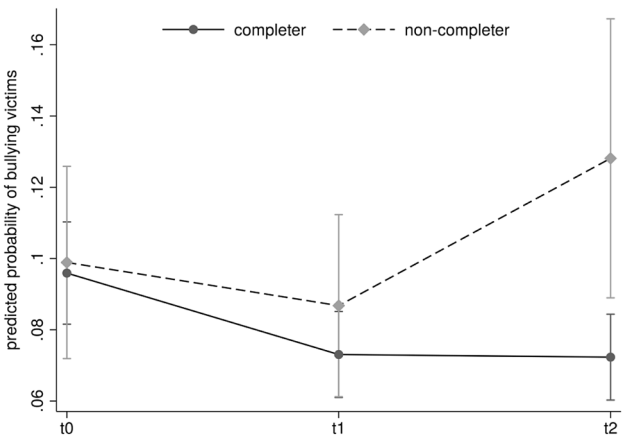

Fig. 1 Predicted probability of victimization (%) at baseline (t0), 12-months follow-up (t1) and 24-months follow-up (t2), separated for the completer and non-completer schools

Effects in the completer schools

At baseline, 9.14% reported being a victim of bullying. After 1 year, the bullying rate dropped to 6.87% at t1 (OR = 0.74; 95% CI 0.62–0.88; $p = 0.001$). This corresponds to a relative reduction of 24.87% in being bullied. Between t0 and t2, the relative reduction remained 25.26% (rate at t2: 6.83%; OR = 0.73; 95% CI 0.61–0.88; $p = 0.001$), indicating stable program effects. These odds ratios reflect a small effect size in epidemiological studies [24].

The number of perpetrators could be reduced from 6.16% at t0 to 4.42% at t1, which corresponds to a relative reduction of 28.25% (OR = 0.70; 95% CI 0.55–0.89; $p = 0.004$). The reduction was stable at t2 (rate at t2: 4.63%; relative reduction: 24.86%; OR = 0.72; 95% CI 0.57–9.2; $p = 0.009$). These results reflect small effect sizes [24].

Moderators of the program effect

Gender

At t0, no differences for the prevalence of victimized girls (9.75%) and boys (8.54%; $z = -1.76$; $p = 0.078$) were found. Including gender as a moderator of the program effect resulted in a significant interaction between gender and assessment time for victims ($\chi^2_{(2)} = 10.85$; $p = 0.004$). Girls showed a significant decrease between t0 and t1 (OR = 0.66; 95% CI 0.52–0.84; $p = 0.001$), as well as between t0 and t2 (OR = 0.55; 95% CI 0.42–0.71; $p < 0.001$). This indicates that being a victim of bullying for girls reduced by half after 2 years of intervention, which is interpreted as a medium effect size in epidemiological studies [24]. Boys showed no change over the course of the program (t0 vs. t1: OR = 0.83; 95% CI 0.65–1.05; $p = 0.125$; t0 vs. t2: OR = 0.93; 95% CI 0.74–1.18, $p = 0.570$).

At t0, boys were significantly more likely to be perpetrators than girls (boys: 8.61%; girls: 3.70%; OR = 2.47; 95% CI 1.90–3.22; $p < 0.001$). As opposed to victims, there was no interaction between gender and assessment time for perpetrators ($\chi^2_{(2)} = 0.68$; $p = 0.713$), indicating that the program did not affect male and female perpetrators differently. Table 2 presents detailed data for bullying and gender. Figure 2 shows the predicted probability of being a victim at all measuring points separated for boys and girls.

Grade-level

At t0, an inverse relationship between the prevalence of being bullied and grade was found, with a victimization rate of 10.00% at grades 5–7 and 8.07% at grades 8–9 (OR = 0.78; 95% CI 0.61–0.99; $p = 0.044$). The data showed a significant interaction between grade group and assessment time in predicting victimization ($\chi^2_{(2)} = 7.12$; $p = 0.028$). Grades 5–7 showed a significant decrease between t0 and t1 (OR = 0.77; 95% CI 0.61–0.97; $p = 0.025$) and between t0 and t2 (OR = 0.62; 95% CI 0.49–0.79; $p < 0.001$), which

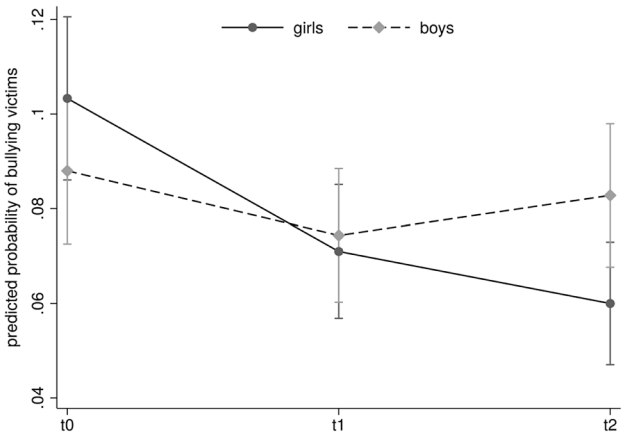

Fig. 2 Predicted probability of victimization (%) at baseline (t0), 12-months follow-up (t1) and 24-months follow-up (t2), separated by gender for the completer schools

Table 2 Prevalence (%) and relative change (%) in being bullied and in bullying others over time for the completer schools

	Victims					Perpetrators				
	t0	t1	t2	t0–t1	t0–t2	t0	t1	t2	t0–t1	t0–t2
Gender										
Boys	8.54	7.11	7.95	16.76	6.91	8.61	6.14	6.65	28.62**	22.67*
Girls	9.75	6.61	5.61	32.13**	42.44***	3.70	2.60	2.41	29.64	34.90*
Grade-level										
5–7	10.00	7.79	6.43	22.05*	35.74***	5.29	3.91	3.53	26.14	33.41*
8–9	8.07	5.62	7.40	30.41**	8.36	7.23	5.10	6.15	29.42*	14.97
School-type										
A	7.51	6.08	7.04	19.01	6.30	5.25	3.79	5.46	27.84	-4.00
B	9.92	7.26	6.74	26.87**	32.02***	6.60	4.73	4.27	28.29*	35.25**
Total	9.14	6.87	6.83	24.87**	25.26**	6.16	4.42	4.63	28.25**	24.86**

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

is a medium effect size in epidemiological studies [24]. Grades 8–9 showed a significant decrease between t0 and t1 (OR = 0.68; 95% CI 0.51–0.92; $p = 0.009$; medium effect size) but there was no change between t0 and t2 anymore (OR = 0.91; 95% CI 0.69–1.20; $p = 0.507$).

At t0, the overall rate of perpetrators differed between the grade groups, with higher rates in grades 8–9 (grades 5–7: 5.29%; grades 8–9: 7.23%; OR = 1.41; 95% CI 1.03–1.92; $p < 0.032$). For being a perpetrator, no interaction of assessment time with grade group could be shown ($\chi^2_{(2)} = 1.25$; $p = 0.535$); see Table 2 for further details.

School-type

At t0, no differences for the prevalence of victimization in A-level (7.51%) and B-level schools (9.92%) were found ($z = 1.60$; $p = 0.109$). There was no interaction between school-type and assessment time in predicting victimization ($\chi^2_{(2)} = 3.13$; $p = 0.209$).

At t0, the prevalence for being a perpetrator did not differ between A-level (5.25%) and B-level (6.60%) schools ($z = 0.62$; $p = 0.538$). Also, the interaction between school-type and assessment time was not significant in predicting perpetration ($\chi^2_{(2)} = 4.88$; $p = 0.087$). Again, see Table 2 for further details.

Cohort

There was no interaction between cohort and assessment time for victims ($\chi^2_{(2)} = 5.61$; $p = 0.061$) and for perpetrators ($\chi^2_{(2)} = 3.69$; $p = 0.158$), indicating that the program did not affect the two cohorts differently.

Discussion

In the light of the adverse long-term effects bullying has on victims and perpetrators and the increasing need for successful prevention, the purpose of this study was to evaluate the effects of the German OBPP. The results provide support for its effectiveness among participating schools. Within the completer sample, there were clear reductions in the two key dimensions, being victimized and being a perpetrator. The reductions were visible after 1 year in both groups and were even maintained after 2 years. In contrast, non-completer schools had no reduction of the bullying rates during the observation period. In addition, there was no cohort-effect on bullying reduction, which indicates that the results were not driven by general time trends. This supports the assumption that the bullying reduction of the completer schools is likely facilitated by program implementation and that prevention "programs need to be intensive and long lasting to have an impact", as Ttofi [10] has already concluded.

The bullying reduction among victims and perpetrators after 1 year was 24.87–28.25%, considered as small effect size in epidemiological studies [24]. The reduction is generally consistent with previous research evaluating the OBPP in the US or Norway [10, 13, 16]. In their current meta-analysis, Gaffney, Farrington and Ttofi [11] estimated an approximate reduction of 15–16% for bullying victimization and 19–20% for bullying perpetration over 100 evaluations. By comparison, the reported reduction by implementing the German OBPP seems to be above average. A positive effect could be retained for victims and perpetrators after 2 years, with a relative reduction of bullying of 25%. This is in line with Gaffney, Farrington and Ttofi [11], who claimed the OBPP to be the most effective intervention program in reducing school-bullying perpetration. Gaffney, Farrington and Ttofi [11] also identified global differences in the effectiveness of anti-bullying programs. Five German evaluation studies met the pre-determined inclusion criteria, as described in the meta-analysis [11]: studies must "(1) describe an evaluation of a school-based anti-bullying program that was implemented with school-age participants; (2) utilize an operational definition of school bullying that coincides with common definitions; (3) measure school-bullying perpetration and/or victimization using quantitative measures; and (4) use an experimental or quasi-experimental design […]". These five evaluations revealed a significant reduction of victimization (Odds Ratio 1.18), but not of perpetration. Again, the German OBPP appears promising.

Our study revealed two moderator effects which shall be briefly discussed here. First of all, the program effect in Germany was obviously stronger for girls (42.44% reduction, medium effect size), than for boys which might suggest that the program is more effective in reducing female victimization. However, it is also well possible that girls may tend to answer more socially desirable in respective outcome questionnaires. This was rather surprising since no previous studies working with the OBPP reported an interaction by gender in this direction. Therefore, it would be questionable to explain this effect only by program content or requirements that may favor girls. So far, authors reported that some components of anti-bullying programs worked better for girls (e.g., monitoring school break times), others for boys (e.g., clear rules or disciplinary strategies; [25]). It is possible that our participating schools put special emphasis on components such as improved break supervision and thus reductions in bullying rates were higher for girls. Smith et al. [25] concluded that the success of targeted prevention and intervention factors may differ between girls and boys and may therefore not be universal. To explain gender differences in further detail, the different types of bullying (verbal, social, physical and cyber) should be investigated separately because some involve boys more frequently than girls [26]. The program might also evoke stronger compassion

for victimized girls than for boys because of biased gender role stereotypes that promote toughness as an especially masculine trait [27]. Kochenfelder-Ladd and Skinner [28] reported that seeking social support reduced the risk for peer victimization for girls, whereas seeking social support was associated with low peer acceptance for victimized boys. Boys earn respect of their peers by handling peer conflicts themselves. Detecting boys in need for support becomes thus even harder for teachers and parents, while for these boys appealing for help would certainly undermine their peer status even further. Scheithauer et al. [26] reported the important role of gender composition within class: bullying occurred more frequently in classes with mainly boys. In follow-up studies, this class composition factor should be considered as control factor. Considering the behavior of boys in more detail would help to identify aspects that could reduce male victimization. In addition, teacher ratings would be helpful to exclude a social desirability effect.

Secondly, the victimization rate could be reduced between t0 and t1 in both grade-levels; however, after 2 years, the positive effects could only be retained for grades 5–7 but not for grades 8–9. Thus, we revealed an overall successful pattern for grades 5–7, with a medium effect size [24], but a different pattern for grades 8–9: a strong reduction in being a victim as well as a perpetrator between t0 and t1 (around 30%, medium effect size), but no significant effect after 2 years anymore. This finding was unexpected and warrants further investigation. It is also not in line with the previous results from Norway and the US, where program effects at higher grade levels have been somewhat weaker and have taken longer time to obtain [13, 16]. An analysis from Olweus and Kallestad [29] about the effective implementation of the classroom aspects showed that more of the low-grade teachers had used at least one of the effective classroom measures as compared to high-grade teachers. Limber et al. [13] mentioned that school structures change in the higher grades (e.g., less time with classroom teacher), which could make it more difficult to address bullying. In our study, schools started approximately 3 months before t1 with classroom components in most grades. It is possible that schools had a good start in all grade levels, explaining the immediate effect, but could not maintain the regularity or intensity in the higher grades during the second year of program implementation. A detailed dosage–response analysis could help to explain this grade effect in the future. Another aspect is the decrease of bullying with increasing age, as we found at the baseline. This finding confirms previous research [2, 26] and emphasizes the fact that there was a higher need for the program in the lower grades, what has certainly influenced program activity in turn.

Despite the significant reduction of bullying in the completer schools, the study demonstrates a potential lack of feasibility of the OBPP in the current German school system. As illustrated by our difficulties in recruitment, German schools have been unlikely to participate in the OBPP even under relatively optimal conditions (i.e., no program costs or close support and supervision from the research team). In the future—outside of research studies like ours—schools would have to pay for the materials and Coach-Workshops, which may even increase barriers for the successful implementation of the program. Thus, the overall public health value of the OBPP for Germany may be questionable. In this study, we provided transparent reporting of our difficulties in recruiting schools including its implications for further dissemination. Four studies conducted in Germany during the last decade were included in a recent meta-analysis. However, none of these provided detailed reporting of recruitment rates [11, 30]. The main international studies were conducted under different conditions (i.e., nationwide campaigns with mandatory participation), not allowing for a direct comparison [1, 31]. Only one German study from 1994, inspired by OBPP, reported a recruiting rate of 4.45%, which is likewise low [14]. The sample sizes of the four German studies (published post 2009), included in the recent meta-analysis [30], varied between $n = 119$ and $n = 422$. Therefore, we consider the large sample size (of $N = 5759$) and our transparency in the reporting of the recruitment process as two major strengths, when compared with the previous studies. Our findings of low feasibility may point to the need of new programs that integrate effective whole-school approaches but require less time and costs to be implemented. However, prevention definitely needs time and resources to be effective [10] and it is probably unrealistic to expect that bullying prevention can achieve large effect sizes for very low costs and efforts. Therefore, and particularly since bullying is associated with significant costs to society [7], an increase of resources for prevention efforts within the school system might also be a potential solution to the problem.

Consequently, our conclusion is: It is necessary to increase the feasibility of the OBPP or any other antibullying program that may include similar whole-school approaches probably alongside with political actions that may also involve the provision of respective resources. If schools work with the OBPP over a period of 18 months, they may experience considerable benefits as indicated by reduced bullying rates.

Limitations

For interpreting our results, it needs to be considered that these are not the results from a RCT. Although an RCT was originally planned, the study design was changed due to the low commitment of schools to participate in the study in general, and in a control condition in particular (see Figure A1 of the supplementary material). It is not new that the realization of a RCT design in complex organizations like

schools is problematic [13]. However, the intent-to-treat analyses made it possible to compare completer and non-completer schools and therefore control for some influencing and irrelevant factors like initial motivation to engage in bullying prevention as well as general time trends. However, RCTs still remain the gold standard, and are mainly lacking in bullying intervention and prevention research. Another limitation may be related to both the representativeness of the schools as well as the overall practicability of the OBPP in Germany. The required resource-neutral implementation of the OBPP resulted in the massive recruitment difficulties as described above. Most decisions at German schools are democratically based. In order to participate in a whole-school program, the majority of teachers have to vote for it in a teachers´ conference. Although 16.12% of all invited schools signaled serious interest and need for bullying prevention, only 1.90% finally decided to partake. The low recruitment rate shows that the majority of the schools were deterred by a time-consuming program like the OBPP. Hence, the study demonstrates a potential lack of feasibility of the OBPP in the current German school system. The final sample of our study likely is a group of highly motivated schools and hence may not be entirely representative for the German school system, which is also reflected in the fact that the reported baseline rates of victimization (9.14%) were below the national average of 10–16% [3, 4]. This sample bias may thus reduce the generalizability of the study. However, given that we were forced to broaden our catchment area substantially due to low consent rates among the originally invited schools, the recruitment strategy was in many cases limited to sending personal letters via mail or e-mail to all schools. Improved personalized and proactive recruitment strategies might have been successful in improving the participation rate; however, these are costly and time consuming and might even attenuate ecological validity of the study. Political campaigning to raise general awareness of the problem might further guide these efforts and ease initial contact to schools. In addition, one third of the schools dropped out during the first year. Different from the completer schools, the non-completer sample consisted of B-level schools only which potentially led to further selection bias (overrepresentation of A-level schools among completers). Although bias could not be controlled for within our study design, this bias may be partly alleviated by our finding that school types did not differ in their bullying reduction rates within the completer group. Main reasons given for quitting the program were too little time or motivation, high turnover of staff, transfer of leadership or different priorities and school profiles. Challenges in disseminating the OBPP are not new and have already been discussed by Olweus and Limber [16]. This raises the question for possible program adaptations, making it easier for the schools and staff to begin with and maintain the program. Possible adaptations could be a lower frequency in regular teacher meetings through online alternatives like chats and e-learning; focusing on grades five through eight, where the highest bullying rates occur and where teachers have greater flexibility. At higher grades fewer class meetings or special theme-days would be conceivable. A wider variety of pre-structured materials for the use in class meetings might further aid in limiting preparation time for teachers. Further studies into the efficacy of components could help design and optimize a program that better values existing resources. Structural changes within the school system and more flexibility in program implementation could offer chances for the OBPP in the future. Without appropriate political actions, it is likely that only few schools will be willing to go the extra mile to generate substantial change in the future. School authorities should therefore prioritize bullying prevention since obligatory nation-wide campaigns have proven successful, as described earlier. Greene [8] pleads for framing bullying in a human rights approach. He argues that a positive climate change can emerge if state-wide or national bullying laws are invoked as part of a broader human rights perspective. This would lead to a conceptualization of bullying as a form of abuse, where the absence of a clear bullying policy can be seen as a failure to render assistance.

Further research

Bullying reduction can be achieved by the German OBPP in case of a successful implementation of the program over a period of 18 months. However, the extremely low participation rate outlined above as well as the high dropout rate during implementation (both at the school level), imply that some necessary adaptations might be needed to make the program more feasible for schools. Moderator analyses showed that adaptations may also be needed to make the bullying prevention more effective for boys and more stable for grades eight through nine. In their meta-analysis, Gaffney, Farrington and Ttofi [11] reported that an Italian online prevention program (NoTrap!) worked best at reducing victimization. Including an online forum, short video clips and more materials for class meetings might be promising complements to the traditional work of the OBPP.

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Compliance with ethical standards

Conflict of interest The authors report no conflicts of interest or relationships that are likely to have created bias in relation to this work.

Ethics approval and consent to participate The study was in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki Declaration and its later amendments. Informed consent was obtained from all individual participants included in the study.

Research involving human and animal participants This article does not contain any studies with animals performed by any of the authors.

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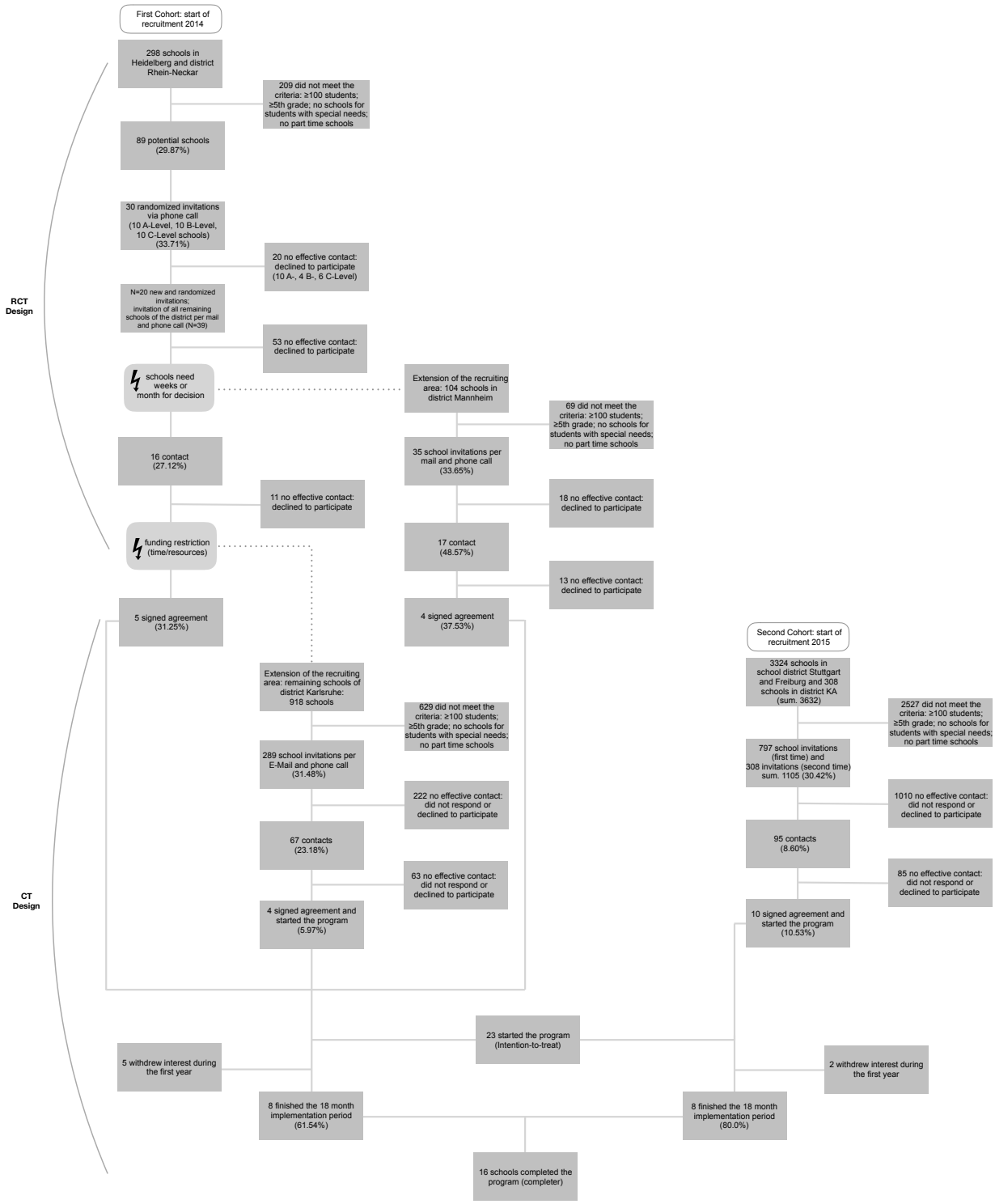
Supplement tables and figures

Ossa, F. C., Jantzer, V., Eppelmann, L., Parzer, P., Resch, F., & Kaess, M. (2021). Effects and moderators of the Olweus bullying prevention program (OBPP) in Germany. European child & adolescent psychiatry, 30(11), 1745-1754.



Supplement figure A1: Flow diagram of recruitment and selection of participating schools.

Supplement table A1
Cultural adaptation of implementation process (18 months)

	Original OBPP (Olweus, 2015b; Olweus, 1994; Olweus & Limber, 2010; Olweus & Limber, 2009)	Pilot Project Germany
Study- and supervision groups (all staff)	Norway: every other week for all staff, 90 minutes US: every month, 45 minutes	Approximately once a month for 90 minutes; at least 75% of the staff
Class meetings	Once a week in every class	As much as possible (most schools could offer regular class meetings for grade 5-8 only); some schools provided class meetings just once a month
Kick-off event for all students	Obligatory	Optional
Training of Olweus-Coaches	Norway: 11-12 whole days divided into three appointments over a period of 18-24 months US: 5 whole days divided into two appointments; phone calls with a mentor once a month over a period of 18-24 months	3 days of workshop in month 1 (at the beginning of the school year); 1 half day of video-supervision in month 3; 2 days of workshop in month 6; 2 days of workshop in month 10; 1 half day of video-supervision in month 15; every third month telephone calls with the research team

Supplement table A2
Components of the OBPP

School-Level	Establish a Prevention Committee
	Conduct Committee and staff training
	Administer the OBQ schoolwide
	Hold staff discussion group meetings
	Introduce the school rules against bullying
	Review and refine the school´s supervisory system
	Hold a school kick-off event to launch the program
	Involve parents
Classroom-Level	Post and enforce schoolwide rules against bullying
	Hold regular class meetings
	Hold meetings with students´ parents
Individual-Level	Supervise students´ activities
	Ensure that all staff intervene on the spot when bullying occurs
	Conduct serious talks with students involved in bullying
	Conduct serious talks with parents of involved students
	Develop individual intervention plans for involved students

Adaptation from Olweus & Limber, 2009

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ORIGINAL ARTICLE

The Importance of Implementation Fidelity for Teacher-Related Changes Within the Olweus Bullying Prevention Program

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Abstract

Although teachers are key figures of a program's effectiveness, most intervention studies to date have not explored how anti-bullying programs are associated with changes at teacher level. Moreover, teacher data also informs about aspects of program implementation, which are essential in program evaluations. Therefore, the aim of this study was to gain insight into the perspectives of teachers working with the Olweus Bullying Prevention Program (OBPP). A scientific evaluation of the OBPP was carried out in 21 German schools. In addition to annual student surveys, regular teacher surveys were conducted. Ordered logistic regressions and linear regressions were used to estimate the variables. As we expected a dosage-response effect, we divided the schools by level of implementation (non-completer, completer, and certified Olweus schools). At baseline, 615 teachers took part in the assessment (68.26%), and 388 teachers at postline 2 years later (47.32%). A positive change in teachers' intention to intervene in bullying could be found across all schools ($p < .001$), which was only significant for completer ($p < .001$) and certified schools ($p = .004$) when differentiated by implementation level. Teachers' level of job strain did not change at all (non-significant model fit), while an improvement in school climate only emerged for certified schools ($p = .003$). The moderating effect of the implementation level turned out to be independent of different school characteristics. The self-reported changes at the teacher level depended on the level of program implementation. Therefore, it is essential to record data about the intensity of program activities when evaluating a program.
Trial registration number: DRKS00008202 (date of registration: 08/04/2015).

Keywords Bullying · Peer victimization · Prevention · School · Adolescence · Teachers

Bullying is one of the most common forms of youth violence and is now acknowledged as a serious public health concern, affecting children and adolescents in all parts of the world. According to the Centers for Disease Control and Prevention (2014), bullying among youths is considered as a secondary hypothesis, we expected that the extent of the changes within the OBPP is associated with implementation fidelity (that is, to which extent is the program implemented as designed by the program developers). Therefore, we hypothesized that:

> any unwanted aggressive behavior(s) by another youth or group of youths who are not siblings or current dating partners that involves an observed or perceived power imbalance and is repeated multiple times or is highly likely to be repeated. Bullying may inflict harm or distress on the targeted youth including physical, psychological, social, or educational harm. (p.7).

Systematic research on school bullying started over 40 years ago, and a growing body of research worldwide has documented the broad negative impacts of bullying, especially for the victims (Kaess, 2018). These negative outcomes highlight the need for effective intervention and prevention programs to reduce school bullying among children and adolescents around the world.

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Efficacy of Anti-bullying Programs

As bullying is a serious issue in schools, considerable research has been conducted in the past decade on the effectiveness of anti-bullying programs. A recent meta-analysis including 100 independent evaluations found that overall, programs were effective in reducing school bullying perpetration (relative reduction of 19–20%) and victimization (relative reduction of 15–16%) (Gaffney et al., 2019). Four anti-bullying programs with multiple evaluations were compared, showing that evaluations of the Scandinavian Olweus Bullying Prevention Program (OBPP; Olweus, 1993) produced the largest effect sizes for bullying perpetration outcomes, while the Italian NoTrap! program (Menesini et al., 2012) was the most effective in reducing bullying victimization. In our own OBPP evaluation study, a prospective quasi-experimental design with an annual student survey (baseline, postline + 12 months, follow-up + 24 months) was used to evaluate the effect of the program. Based on data from approximately 5500 pupils (grades 5–9) who took part in the surveys between 2015 and 2018, a comparatively high effect of the program could be demonstrated, with a relative reduction in bullying perpetration as well as victimization of 25% after 2 years (Ossa et al., 2021). However, the low recruitment rate of 1.9%, an absence of program effect for boys, as well as a stronger effect for grades 5–7 should be considered in the interpretation of findings.

Importance of Teachers

Implementing a bullying prevention program does not only influence the pupils, but is also connected to teacher outcomes. The responsibility to act against bullying lies with the school staff, and by working with an anti-bullying program, adults at school are made aware of the issue of bullying and develop competencies to intervene appropriately. Teachers are often present when an episode of bullying occurs, and they are often the first adults that students contact (Wachs et al., 2019). Teachers have both the authority to address inappropriate behavior and the moral obligation to keep students safe (Cortes & Kochenderfer-Ladd, 2014). Even though teachers are key figures of a program's effectiveness, most intervention studies have not focused explicitly on the effects of anti-bullying programs at teacher level, but on the bullying behavior and well-being of students instead (Van Verseveld et al., 2019). Van Verseveld et al. (2019) conducted a meta-analysis on the effects of school-based anti-bullying programs on determinants of teacher intervention (e.g., teachers' attitudes toward bullying, subjective norms, self-efficacy, and knowledge regarding intervention strategies), as well as on teachers' responses to bullying (e.g., teacher intervention). Thirteen peer-reviewed papers could be included, of which only six studies contained teachers as informants for the measurement of teacher outcomes. The meta-analysis comprises a total of eight anti-bullying interventions, all of which provided a teacher training package aimed at improving teacher awareness and responsiveness to bullying situations. With regard to determinants of teacher intervention, a significant moderate positive effect of anti-bullying programs on teachers' attitudes, subjective norms, self-efficacy, and knowledge could be shown ($g = 0.531$). Furthermore, regarding teachers' responses to bullying, a significant small to moderate effect was found on teachers' actual intervention practices in bullying situations ($g = 0.390$). However, examining the included OBPP studies in greater detail revealed wide variation in effect sizes (based on students' ratings). While Pepler et al. (2004) reported no significant effect of the OBPP on teachers' responses to bullying ($g = 0.028$), and Black and Washington (2008) found only a small effect ($g = 0.075$), the evaluation study of Limber et al. (2018) revealed a very large effect of the OBPP on teachers' responses to bullying ($g = 1.250$). This variability in effect sizes raises the question of what explains these differences.

Contextual Variables: Job Strain

The occupation of teachers is considered one of the most stress loaded, besides nurses and doctors (Jennings et al., 2017). When teachers are asked about their greatest stressors, problematic behavior of students, additional support required for students in need, and the feeling of being overwhelmed by their own tasks are perceived as among the greatest burden (Richards, 2012). A recent systematic review identified detrimental determinants of teacher exhaustion, including work climate, teacher self-efficacy in managing student behavior, and classroom disruption (Mijakoski et al., 2022). High rates of teacher absenteeism and turnover, as well as an imbalance in job roles, responsibilities and institutional resources, can create additional teacher stress (Bottiani et al., 2019; Hong, 2009). Regarding bullying, several studies have shown that teachers feel unprepared to intervene in bullying situations, that they would like to receive additional training, and have difficulty monitoring bullying in addition to their regular duties (Bauman & Hurley, 2005; Bradshaw et al., 2012; Van Verseveld et al., 2021). Jennings and Greenberg (2009) theorized that a burnout cascade may result when teachers lack the social-emotional competency to manage behavioral challenges in the classroom and fail to create a healthy class climate with supportive student–teacher relationships and positive classroom management. The relationship that teachers share with their students is critical for teachers' emotional well-being and motivation (Klassen et al., 2012). Studies suggest that teachers' ratings of their own social and emotional

skills positively relate to how they manage stress and to their levels of burnout (Brackett et al., 2010). Therefore, successful school-based prevention has the potential to positively improve teacher outcomes, such as self-efficacy, general stress level, and risk for burnout, as a function of its positive impact on classroom management and student behavior (Bradshaw et al., 2009). So far, only a few studies have examined this relationship. For example, Domitrovich et al. (2016) were able to show the positive effect of a classroom behavior management program on teacher burnout, but only for the component of personal accomplishment, and not for emotional exhaustion. This secondary benefit of school-wide prevention programs would ultimately serve the teachers' health and may provide a justification for their use. Moreover, higher teachers' job satisfaction directly influences lower levels of bullying (De Luca et al., 2019), whereby teachers' satisfaction can be perceived by the students in their everyday life in school as it constantly influences the quality of interactions and relationships in the classroom.

Contextual Variables: School Climate

School climate presents an important context for teachers' professional activities and has been defined in a variety of ways that cover student- and teacher-oriented conceptualizations. Effective anti-bullying work calls for changes in the school culture and organization, as well as in the behavioral norms, having a lasting impact on the school as a social system (Olweus & Limber, 2010). Therefore, its effects go beyond the reduction of bullying, and previous research has demonstrated an improvement in school climate within the work with the OBPP (Olweus, 2012). In their meta-analysis described above, Van Verseveld et al. (2019) inferred that strengthening the teacher ultimately leads to a change in the school climate. Beyond this, aspects of the school climate such as teacher-teacher collaboration and communication, can influence teachers' attitudes and behaviors toward bullying, and appear to be associated with teachers' active responses to bullying (Kollerová et al., 2021). This indicates a complex model of interrelationships between the reduction of bullying through the implementation of bullying prevention programs, active teacher intervention, and school climate, and research is lacking on the possible associations between these influencing factors.

Importance of Implementation Fidelity

In research on anti-bullying programs, the wide variation in effect sizes for both teachers' intention to intervene in bullying situations as well as for reduction of bullying (Gaffney et al., 2019; Van Verseveld et al., 2019) raises the question as to which factors are responsible for program effects. Possible explanations might be that anti-bullying programs differ in terms of focus, number of program components, and training dosage. Aside from this, aspects of implementation (such as fidelity, dosage, or quality) have been found to be moderating factors for program outcomes, even within the same program. According to Carroll et al. (2007), implementation fidelity is the degree to which programs are implemented as intended by the program developers. Results from nearly 500 implementation studies in the field of prevention and promotion targeting children and adolescents offered strong empirical support for the conclusion that the degree of implementation fidelity affects the outcomes obtained. The magnitude of mean effect sizes were at least two to three times higher when programs were carefully implemented and free from serious implementation problems (Durlak & DuPre, 2008). In anti-bullying program evaluations, however, limited attention has been paid to implementation fidelity, so far. A study on the effects of the KiVa anti-bullying program on teachers investigated the associations between KiVa activities and teacher perceptions (Ahtola et al., 2012). The effects of team membership and the number of implemented student lessons were tested. While only about 2–3% of the variation in teacher perceptions could be explained at the school level, 8% of the individual variation was explained by engagement in KiVa activities at the end of the intervention year. Another person-centered KiVa trial examined the link between the implementation of the program and its effectiveness by using monthly teacher reports (Haataja et al., 2014). Results revealed that lesson adherence as well as lesson preparation time (but not duration of lessons) were associated with reductions in victimization at the classroom level. In a second step, it was also examined how, when, and why teacher adherence to KiVa lessons varied. Different factors were associated with the degree of implementation fidelity: high starting levels were enhanced by positive beliefs about program effectiveness, while maintaining high implementation levels was enhanced by principal support. Finally, consistent and high implementation was enhanced by lesson preparation (Haataja et al., 2015). The cited studies underscore the assertion that implementation matters, and Axford et al. (2020) concluded that schools might require more intensive and responsive implementation support to achieve significant program effects.

Facilitators and Barriers for Implementing Bullying Prevention Programs

The implementation of school-wide anti-bullying programs has been facing major barriers in different school systems worldwide. A main problem is the complex structure of schools—teachers often instruct a large number of students

they see only a few times a week, and this can create difficulties in building positive student–teacher relationships (Coyle, 2008). Challenges can also stem from a focus on academic achievement, lack of time, variations in staff commitment, lack of support from headmasters, uncooperative parents, short time of program implementation, or simultaneous implementation of conflicting prevention efforts (Cunningham et al., 2016; Limber et al., 2004; Nansel et al., 2003). In interviews and focus groups with OBPP participants, the following additional themes impeding OBPP implementation emerged: unanticipated changes and events, difficulties identifying bullying incidents, social media influences that exacerbated bullying behaviors, and limited fiscal and staff resources (Sullivan et al., 2021). Similarly, Herkama et al. (2022) conducted focus group interviews with teachers to explore facilitators and barriers to the sustainment of the KiVa anti-bullying program. Program-related, organizational, as well as contextual issues were discussed in the process. According to the participants, the following program-related characteristics were important for program sustainability: systematic program structure, clear guidelines on how to address acute cases of bullying, user-friendly materials, program adaptability, information about bullying as a phenomenon and practical tools for prevention, support from program developers as well as realistic expectations and recognition of program boundaries. In the organizational area, strategic coordination and planning, teacher motivation and commitment, time and personnel resources, headmaster's support, teacher trainings, supportive school climate, as well as a fit of the program to the current school structures were listed as program facilitators. Finally, a national core curriculum, a school-wide bullying prevention plan, and positive media attention were mentioned in the contextual area.

Implementation fidelity and sustainability are important influencing factors on the attained outcomes and benefits of bullying prevention (Durlak & DuPre, 2008; Haataja et al., 2014). Therefore, it is essential to gain knowledge about facilitators and barriers for successful program implementation, before delivering a program. In the preparation phase, program planners should consider the specific challenges that may arise to identify necessary resources to support a program delivery with high implementation fidelity and sustainability. The identified influencing factors are intertwined in complex ways: some of them might be more influential than others, and in some cases, the presence of several facilitators is needed in order to sustain the program. Besides, high implementation fidelity might contribute to a positive cycle, where the realization of reduced prevalence of bullying may encourage further implementation (Herkama et al., 2022). However, it also has to be considered that our secondary outcomes (job strain and school climate) might be influenced by several school characteristics, even more than by the implementation fidelity of the OBPP. For example, school climate appears to be more positive in smaller schools, with more personalized relationships between teachers and pupils and a bigger feeling of safety (Cotton, 2001; Newman et al., 2006). Teachers in smaller schools tended to have more positive perceptions of their abilities to influence school norms, and to control their classrooms (Garrett et al., 2004), which might contribute to less job strain. Several school characteristics (school size, level of bullying victimization, number of inhabitants of the school location, and school board) were therefore integrated in our models, to investigate their influence on our primary and secondary outcome variables.

Research Questions

To assess the changes in teachers' responses to bullying and in the school climate, as well as to check for a possible link between job strain and OBPP work, we integrated an online teacher survey into our evaluation study of the OBPP in Germany. After working with the OBPP for 2 years, we expected more active responses by teachers in the case of bullying (Black & Washington, 2008; Limber et al., 2018), lower level of job strain for teachers (Bradshaw et al., 2009; Domitrovich et al., 2016), as well as general improvements in the school climate (Olweus, 2012; Van Verseveld et al., 2019) across all schools. Furthermore, we expected that these improvements are associated with the degree of implementation fidelity (Durlak & DuPre, 2008; Haataja et al., 2014) and therefore should be higher for certified schools, which were able to fulfill the central requirements of the program. Non-completer schools should achieve no improvements at all, and vice versa (see "Assessment" for the definition of the different levels of implementation).

Specifically, we hypothesized that:

1. The intention to intervene when witnessing bullying would be higher at postline compared to baseline over all schools (primary outcome).
2. The general job strain for teachers would be lower at postline compared to baseline across all schools (secondary outcome).
3. School climate would be better at postline compared to baseline over all schools (secondary outcome).
4. Changes would be highest for certified schools, followed by completer schools. Non-completer schools were expected to achieve no improvements at all.

Methods

Study Population and Design

The OBPP is an evidence-based anti-bullying program which was developed in Norway in the 1980s and has since

been continuously adapted and expanded. The program includes elements at four levels: school, classroom, individual, and parents/ community. All program components are guided by four key principles: adults should (1) show warmth and positivity toward students; (2) set strict limits and restrictions on unacceptable student behavior; (3) apply consistent and non-aggressive consequences; and (4) act as positive and authoritative role models (Olweus & Limber, 2010). The effectiveness of the OBPP is well documented (Gaffney et al., 2019) and therefore, the Clinic of Child and Adolescent Psychiatry Heidelberg translated the program materials and trainings (Olweus, 2012), and commenced the first scientific evaluation of the program in Germany in close cooperation with Olweus International. The project was funded by the foundation of Baden-Wuerttemberg (*Baden-Württemberg Stiftung*). Secondary schools in our state were informed about the possibility to participate in the program and could voluntarily sign up for participation. Overall, 21 schools were enrolled in the study[1]: eleven in 2015 (wave 1) and another ten in 2016 (wave 2). These schools can be divided into A-Level schools (*Gymnasium*: comparable to secondary/high school for grades 5 through 12 or 13, more academic, required for enrolment at university) as opposed to B-level schools (*Realschule / Werkrealschule / Gemeinschaftsschule*: comprises part of general or practical secondary/high school education, generally for grades 5 through 9 or 10 and allows for the option to commence vocational training, but is insufficient for enrolment at university).

The present article is based on teacher self-reports at baseline and postline. In order to gain insights into how the OBPP works from the teachers' point of view, regular anonymous teacher surveys were conducted. Data was collected before the implementation process started (baseline, in 2015 and 2016 respectively), five times during the implementation process (quarterly) and after the implementation process (postline, in 2017 and 2018 respectively). In the quarterly surveys, additional information was obtained on the progress of the implementation process of the individual program components, as well as on the satisfaction with these components tailored to the role of the respondent (teacher, class teacher, and/or Olweus group leader). The present article is based on the baseline and postline surveys only. For baseline, 901 teachers from 21 schools were invited to take part in the survey. As two of the non-completer schools refused to partake in the postline survey, 820 teachers from 19 schools were invited for postline. These teacher surveys are part of a wider study design aimed at determining the effectiveness of the OBPP (reduction of bullying victims and perpetrators within 2 years). To clarify this overarching question, three annual student surveys were part of the program and formed the basis for our main evaluation study. In the first wave of schools, students participated in the surveys between 2015 and 2017, while in the second wave of schools, student surveys took place between 2016 and 2018.

[1] Two participating schools, which included different school types, were each combined into one school. This is due to the fact that the individual teachers there could not be clearly assigned to one single type of school. That is why we are talking about 21 schools enrolled in the evaluation study here, while we are talking about 23 schools in our main effect paper based on student data (Ossa et al., 2021).

Study Procedures

The study was conducted in compliance with the Helsinki Declaration and was appraised and approved by the ethics committee of the faculty of medicine at the University of Heidelberg (S-341/2014) and the respective school authorities. Furthermore, the study was registered at a WHO trial registry (*Deutsches Register Klinischer Studien*; DRKS00008202). Informed consent was appropriately obtained, and all teachers were extensively informed about the purpose, content, and conditions of the study by members of our research team at a teacher's conference, as well as via information leaflets. They were also given the opportunity to contact our research team for questions. Teachers were assessed using self-report online questionnaires from July 2015 until July 2018 via LimeSurvey, which had a duration of about 10 min. An e-mail was sent to invite each teacher to participate, as well as up to two reminder e-mails (if necessary). All e-mails contained an individual code and the link to the online platform. Data was saved anonymously; login codes were saved separately from the e-mail addresses and it was not possible to connect the given answers with the login codes.

Assessment

The baseline and postline surveys consisted of 31 self-created items. The present article focuses on the following seven items, which were presented to all participants:

Intention to intervene: "How often do you try to intervene when you witness bullying among students?" (1 = I almost never do anything, 2 = I very seldom do anything, 3 = I sometimes do anything, 4 = I often do something, 5 = I almost always intervene, 6 = I didn't notice that students were bullied at school).

Job strain: "How much do you currently enjoy your teaching profession?" (VAS 0 = no joy at all - 100 = a lot of joy); "How stressful do you currently find your teaching profession to be?" (VAS 0 = not stressful at all – 100 = very stressful); "How strenuous do you currently find your teaching profession to be?" (VAS 0 = not afflicting at all – 100 = very afflicted). These three items form the scale *job strain* (sum score, the first item was inverted, Cronbachs $\alpha = .73$).

School climate: "How well do the students in your school get along?"; "How well do the staff in your school get along?"; "How well do students and school staff in your school get along? (all VAS 0 = very bad - 100 = very good). These three items form the scale *school climate* (sum score, Cronbachs $\alpha = .71$).

In our sample of schools, the implementation fidelity varied extensively. Therefore, we created three groups of schools, based on their level of implementation:

(a) Non-completer schools who quit the OBPP within the first 18 months
(b) Completer-schools who worked with the program for at least 18 months and conducted at least two annual student surveys
(c) Certified Olweus schools who additionally fulfilled the following quality criteria: (i) at least five meetings of study- and supervision groups for teachers per year; (ii) annual presentation of survey results to teachers and parents; (iii) regular class meetings in grades 5 to 9 (at least monthly); (iv) OBPP as a topic on a regular teacher conference at least twice per year; (v) information of parents at least twice per year (parents' evening, information letter etc.). When applying for certification, schools had to fill out a documentation sheet (program activity report) to demonstrate the implementation of the required program modules. Olweus coaches (i.e., specially trained persons responsible for implementation and use of the OBPP) were responsible for the collection of the required information. The documentation was checked by our research team, and it was finally decided about certification within an on-site audit in the respective school.

Statistical Analyses

Data were collected anonymously at each timepoint and therefore, linking the baseline and corresponding postline data of an individual teacher was not possible. We used ordered logistic regression to estimate the categorical variable (*intention to intervene,* see Table 2 for categories) and linear regressions with robust standard errors to estimate the continuous scales (*job strain, school climate*). The proportional odds assumption was checked using the Brant test. Timepoint, implementation level, and their interaction acted as predictors. Post hoc comparisons were undertaken using the Wald test to investigate the change between baseline and postline over all implementation levels and for individual implementation levels. No missing values were imputed. We did an available-case analysis. To check whether the results are robust, we integrated the school characteristics of school size, baseline level of bullying (% of pupils that get bullied), number of inhabitants of the school location, and school board (private vs. public) separately in our models, to investigate their influence on our primary and secondary outcome variables. The school characteristics were entered as covariates and interaction with timepoints in our regression models. Data were analyzed using Stata 17.0 (StataCorp, 2021).

Table 1 Description of baseline T0 ($N = 615$) and postline T1 ($N = 388$) teacher samples

	Baseline		Postline	
	N	%	*N*	%
Gender				
Female	384	62.44	242	62.37
Male	231	37.56	146	37.63
School type				
A-Level	245	39.84	167	43.04
B-Level	370	60.16	221	56.96
Level of implementation				
Certified	225	36.59	167	43.04
Completer	266	43.25	177	45.62
Non-completer	124	20.16	44	11.34
School board				
Private	92	14.96	49	12.63
Public	523	85.04	339	87.37
	M	SD	*M*	SD
School size	508.48	304.22	532.73	267.19
Number of inhabitants	109,390	119,830	101,540	114,400
Bullying victimization (%)[a]	8.41	3.45	8.33	3.27

[a]Applied to the teacher sample, i.e., the % of bullying victimization per school remained constant

Results

At baseline, 615 of the 901 invited teachers took part in the assessment (participation rate of 68.26%). At postline, only 388 out of 820 invited teachers participated in the survey (participation rate of 47.32%). Table 1 gives an overview of the baseline and postline teacher samples concerning gender as well as for different school characteristics (school type, level of implementation, school board, school size, number of inhabitants of the school location, and level of bullying victimization).

Overall, the two samples are quite comparable, with a higher proportion of female teachers, teachers from B-Level schools, as well as public school teachers. The biggest difference between the two points of measurement is at the level of implementation. While at baseline, 20.16% of the teachers belonged to non-completer schools, only 11.34% of the teachers at postline worked at non-completer schools. This can be easily explained by the fact that the motivation to take part in the postline teacher survey was of course the lowest in the drop-out schools. Two of seven non-completer schools even completely refused to participate.

Table 2 shows the distribution of the variable *intention to intervene* (primary outcome) separated by implementation level and measurement point.

The Brant tests of parallel regression assumption resulted in non-significant test statistics ($p > .05$), providing evidence that the parallel regression assumption holds. Because of zero-populated categories (see Table 2), we combined the lowest three categories for the test.

For *intention to intervene,* our main regression model achieved a significant fit ($X^2(5) = 30.96$; $p < .001$). Ordered logistic regression revealed a significant change between baseline and postline over all schools ($p < .001$; $OR = 1.78$; 95% $CI = 1.39–2.29$). After 2 years of work with the OBPP, teachers became significantly more active when witnessing a bullying situation. Figure 1 provides a graphical illustration of this relationship, showing a movement toward the fifth category "*I almost always intervene*."

Examining the contrast between postline and baseline for the different implementation levels in a second step, we found a positive increase in activity only for completers ($p < .001$; $OR = 2.41$; 95% $CI = 1.65–3.51$) and certified schools ($p = .004$; $OR = 1.76$; 95% $CI = 1.19–2.60$), but not for non-completers ($p = .569$; $OR = 0.83$; 95% $CI = 0.44–1.58$). The difference between completers and certified schools was not significant ($p = .255$).

In a third step, we separately integrated the interaction of measurement point (baseline vs. postline) with each of our four school characteristics (school board, school size, number of inhabitants of the school location, and baseline level of bullying) as covariates in our regression models to check whether these school characteristics would influence our outcome variables even more than the level of implementation of the OBPP. Our model proved to be stable with regard to the covariates since the same relationships remained.

For our continuous scales *school climate* and *job strain*, we used robust standard error estimates, as (even when transforming the variables) the assumption of normally

Table 2 Descriptive statistics (frequency and percentage) of intention to intervene at baseline T0 ($N = 615$) and postline T1 ($N = 388$) separated by implementation level

	Certified		**Completer**		**Non-completer**		**Total**	
How often do you try to intervene when you notice bullying among students?								
	T0	**T1**	**T0**	**T1**	**T0**	**T1**	**T0**	**T1**
	N (%)	*N* (%)	*N* (%)	*N* (%)	*N* (%)	*N* (%)	*N* (%)	*N* (%)
Almost never	0 (0.00)	0 (0.00)	1 (0.38)	0 (0.00)	1 (0.81)	0 (0.00)	2 (0.33)	0 (0.00)
Very seldom	1 (0.44)	1 (0.60)	7 (2.63)	3 (1.69)	2 (1.61)	0 (0.00)	10 (1.63)	4 (1.03)
Sometimes	40 (17.78)	17 (10.18)	52 (19.55)	16 (9.04)	12 (9.68)	6 (13.64)	104 (16.91)	39 (10.05)
Often	50 (22.22)	25 (14.97)	65 (24.44)	31 (17.51)	27 (21.77)	10 (22.73)	142 (23.09)	66 (17.01)
Always	120 (53.33)	110 (65.87)	123 (46.24)	103 (58.19)	73 (58.87)	27 (61.36)	316 (51.38)	240 (61.86)
No bullying	14 (6.22)	14 (8.38)	18 (6.77)	24 (13.56)	9 (7.26)	1 (2.27)	41 (6.67)	39 (10.05)
Total	225 (100.00)	167 (100.00)	266 (100.00)	177 (100.00)	124 (100.00)	44 (100.00)	615 (100.00)	388 (100.00)

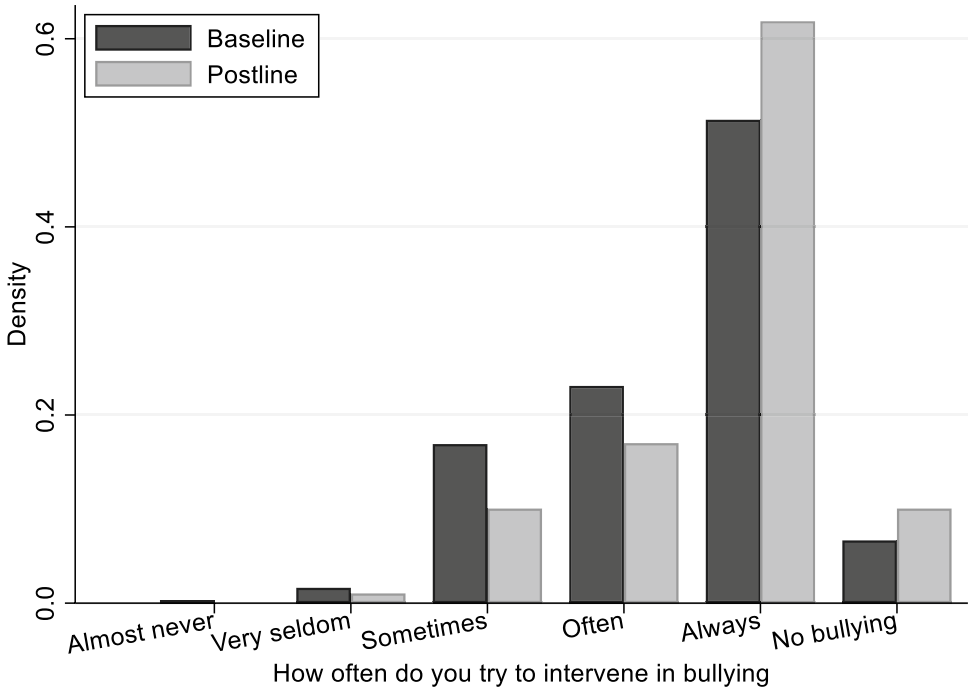

Fig. 1 Density plot for intention to intervene at baseline T0 ($N=615$) and postline T1 ($N=388$)

distributed residuals was violated. For *job strain,* our main regression model could not achieve a significant model fit ($F(5,997)=1.58$; $p=.163$), and therefore we did not interpret the individual coefficients.

For *school climate*, our main regression model achieved significant fit ($F(5,997)=3.33$; $p=.005$). Linear regression revealed no significant change between baseline and postline over all schools ($p=.448$; $B=0.62$; 95% $CI=-0.98$–2.21). However, examining the development of school climate separated by level of implementation, a significant change was yielded for certified schools ($p=.003$; $B=3.46$; 95% $CI=1.14$–5.78). For completer schools, no significant change was observed ($p=.713$; $B=0.42$; 95% $CI=-1.82$–2.67), while for non-completers, the school climate even changed for the worse ($p=.035$; $B=-5.51$; 95% $CI=-10.64$ to -0.38). In the final successive integration of the school characteristics as covariates in our regression models, only school size changed the yielded relationships. The main effect of school size, as well as its interaction with the measurement point, was not significant (both $p>.07$). However, when integrating school size as a covariate, the previously significant deterioration of the school climate for non-completer schools became non-significant ($p=.054$; $OR=-5.16$; 95% $CI=-10.41$–0.09). That is because non-completer schools tend to be smaller, and smaller schools showed weak evidence for better school climate at baseline ($p=.077$; $B=-.89$, 95% $CI=-1.87$–0.10) and postline ($p=.051$; $B=-1.34$, 95% $CI=-2.68$–0.01). Aside from this finding, our model proved to be stable with regard to the covariates baseline level of bullying, number of inhabitants of the school location, and school board.

The results of the logistic and linear regressions described are summarized in Table 3.

Discussion

To gain insight into the perspective of teachers, we integrated an online teacher survey into our evaluation study of the OBPP in Germany. As teachers are key figures in the reduction of bullying at school, we aimed to investigate teachers' responses to bullying after 2 years of work with the OBPP. Since past research mostly used students' self-reports to answer this question, the current study helps to fill this gap in the literature. The second aim of this study was to check whether the implementation of the OBPP appears to be related to further secondary benefits, by contributing to a reduction of the self-reported level of job strain as well as to an improvement of the school climate. We expected positive changes on all three outcome variables at postline compared to baseline over all schools. Additionally, research has demonstrated that implementation fidelity affects the outcomes obtained (Durlak & DuPre, 2008). We therefore expected that the reported changes are associated with the level of implementation, being highest for certified schools, middle for completer schools and non-existing for non-completer schools.

First, our data revealed a significant increase of *intention to intervene* in bullying over all schools, which represents a primary goal of the OBPP and confirms our first hypothesis. After 2 years of work with the program, teachers became

Table 3 Postline T1 vs. baseline T0 contrasts for intention to intervene and school climate over all schools and separated by implementation level

	Contrast	*p*	95% CI
Intention to intervene			
Over all schools	1.78	**< .001*****	1.39–2.29
Certified	1.76	**.004****	1.19–2.60
Completer	2.41	**< .001*****	1.65–3.51
Non-completer	0.83	.569	0.44–1.58
School climate			
Over all schools	0.62	.448	−0.98–2.21
Certified	3.46	**.003****	1.14–5.78
Completer	0.42	.713	−1.82–2.67
Non-completer	−5.51	**.035***	−10.64 to −0.38

significantly more active when witnessing a bullying situation. This also corresponds to the meta-analysis of Van Verseveld et al. (2019), showing a significant small to moderate effect of anti-bullying programs on teachers´ responses to bullying over 13 studies. When examining the contrast between baseline and postline for the different implementation levels in a second step, we found this significant positive increase in activity for completers and certified schools only, but not for non-completers. This relationship underscores the importance of implementation fidelity for achieving positive effects and also contributes to the assumption that the increase in active responses to bullying was likely a result of OBPP efforts (Haataja et al., 2014). Contrary to our second hypothesis, no significant decrease in *job strain* could be found at postline, as our model was not able to significantly predict the data for this outcome. This means that although teachers acquire skills in dealing with bullying within the OBPP, their general stress level did not change. Moreover, a significant improvement in *school climate* as a secondary goal of the OBPP could not be shown over all schools, contradicting our third hypothesis. However, looking at the development of school climate separated by the level of implementation, a significant change revealed for certified schools, which confirms our fourth hypothesis again. It would be interesting to see if a school climate improvement in completer schools could be achieved at a later date, as any change might take a longer time there due to the lower level of implementation. Aside from the already described influence of school size on school climate, our models proved to be stable with regard to the covariates of school size, baseline level of bullying, number of inhabitants of the school location, and school board.

In summary, our teacher-related primary and secondary outcomes were associated with the level of implementation within the OBPP implementation process. Certified Olweus schools, i.e., the group with the highest level of implementation, achieved an increase of teachers' intention to intervene as well as an improvement of school climate. Completer schools, which met the minimum requirements of the program, only showed an increase of teachers' intention to intervene, but no improvement of school climate, while non-completer schools showed no improvements at all over the course of 2 years. This relationship highlights the importance of recording implementation data through surveys or interviews with teachers when implementing a school-wide anti-bullying program. As Durlak and DuPre (2008) stated:

> It is important that the potential value of new interventions is adequately tested, and this is impossible without attending carefully to the process of implementation. […] There is extensive and persuasive evidence that confirms the powerful impact of implementation on outcomes. A major implication emanating from these findings is that the assessment of implementation is an absolute necessity in program evaluations. (p. 328 & 340)

Collecting implementation data is important for several reasons: (a) the overall degree of program delivery informs program developers of whether the program is feasible, (b) monitoring of implementation can reveal problems in program use that can thereby be solved quickly, and (c) a significant association between the level of implementation and outcome provides further support for the effects obtained being a result of the program rather than by other factors (Haataja et al., 2014). Unfortunately, the implementation process is rarely taken into account in the field of bullying prevention currently, although implementation fidelity and program commitment have been found to be important moderating factors for program outcomes (Van Verseveld et al., 2019).

Strengths, Limitations, and Future Directions

The current study has several strengths that are worth mentioning. First, teacher outcomes were measured as part of an evaluation of an anti-bullying program, and these outcomes were not rated by the students, but the information was directly derived from teachers in the form of regular teacher surveys instead. Not only should improvements in the behavior of teachers be an important measure for the success of a program, but secondary positive changes for teachers might be an important source of motivation to implement a laborious whole-school anti-bullying approach. Second, the integration of teacher data also provides insight into the implementation fidelity, which has emerged in research as a key moderator for the effects of a program. Surprisingly, the teachers' perspective has barely been considered thus far, and our findings contribute to the literature on this important component.

Nevertheless, there are some reasons why findings from this study should be interpreted with some caution. The current quasi-experimental study design only allows to draw the conclusion that teachers' intention to intervene in bullying situations as well as their rating of the school climate improved over time in the schools with high implementation fidelity. Even though the longitudinal design of the study implies a directionality of the observed effects, only a randomized controlled trial would permit causal attributions. For this reason, we cannot be sure that program implementation is really responsible for the change. Besides, the participation rate of the study was at least medium and dropped from 68.26% at baseline to 47.32% at postline, and therefore, our sample might not be representative for the teachers taking part in the OBPP, and our results might be distorted by a self-selection bias. Next, due to the anonymization of the data, the assignment of baseline and postline data of individual teachers was not possible, which prevents any analysis of individual trajectories. Another limitation centers on a rather subordinate methodological problem, regarding the sixth category of the variable *intention to intervene* ("I didn't notice that students were bullied at school"). This category could be interpreted positively as the optimum of the scale, to keep the scale in order. However, it could also be interpreted negatively in the sense of not noticing existing bullying. In the latter case, we would have had to recode this category from 6 to 0, which would mathematically violate a model assumption and impair the model fit. As the calculation of a sensitivity analysis between excluding and including this category showed no difference in results, we decided to retain the category in its positive expression. The observed main shift within this scale was from category 3 and 4 ("I sometimes do anything" and "I often do something") to category 5 ("I almost always intervene"), which is clear in interpretation anyway. In addition, our results are based on teachers' self-reports only and might therefore be limited by common-method bias. Future research should complement teachers' self-reported data with students' reports and observations. In the present analyses, the baseline rates of bullying victimization reported by pupils were the only student data used, which we integrated as one of the control variables in our regression models. A further limitation of the study relates to the measures used, as the sum scales of *job strain* and *school climate* were each composed by only three self-created items. Future studies should include stronger and more validated measures. In addition, the single item on teachers' responses to bullying does not provide insight into the kind of intervention, i.e., which available strategies were used and with what success. As De Luca et al. (2019) stated, very few studies examine how teachers respond in bullying situations, and even less analyze the impact of those interventions, although it appears that teachers' responses (or non-responses) to bullying vary considerably. This is especially relevant as the choice and success of a strategy might be influenced by student characteristics (e.g., gender, popularity, or social skills), teacher characteristics (e.g., gender, beliefs, empathy, self-efficacy, teaching experience, or job satisfaction), as well as school characteristics (e.g., response of other teachers, or support from the principal) in a complex model (De Luca et al., 2019; Farley, 2018). Finally, no data on the determinants of teachers' responses to bullying was collected within our study to further investigate how specific program elements or training activities are associated with teacher outcomes. Van Verseveld et al. (2019) found the largest effects on determinants of bullying intervention that were directed at improving teachers' self-efficacy and knowledge. Previous research has also shown that teachers' empathy toward the victim, beliefs about bullying, their perceptions of the seriousness of bullying incidents, and school support are related to teachers' responses to bullying (Dedousis-Wallace et al., 2014; Novick & Isaacs, 2010; Yoon et al., 2014). Knowledge regarding the moderators of this relationship should be expanded to further improve the effectiveness of preventive programs, since changes on the behavioral level of teachers should be a central goal and criterion of success of bullying prevention.

Conclusion

Our study based on teachers' self-reports indicates that the OBPP is associated with a positive change in the intention of teachers to intervene in bullying, and not only with a change in determinants of intervention such as attitude or knowledge. A change in actual behavior represents an important success indicator of a preventive program, as, according to the ideas of Dan Olweus, responsibility for acting against bullying lies with the school staff. Furthermore, teachers in the certified Olweus schools reported an improvement in school climate after 2 years, representing a further benefit of the OBPP. The teacher plays an important role in the management of classroom bullying, and therefore teacher outcomes should be part of future program evaluations, as research should focus more on the effects of anti-bullying programs on teachers. As Ahtola et al. (2012) said:

> Throughout the years, students are replaced, but teachers, more or less, remain. When we are looking for ways to change the students' environment permanently in order to increase well-being, we are likely to rely heavily on teachers' commitment and activity. Their knowledge, attitudes, and skills have an important role when the school's position in the promotion of well-being and the prevention of problems is negotiated. (p. 858)

Besides, it is not only important that teachers intervene more frequently in bullying situations, but also that teachers

use strategies that have proven to be effective. To that end, more research is needed in order to support teachers and provide them with useful strategies for noticing, terminating, and preventing bullying.

The positive changes reported in our study are associated with implementation fidelity, as our secondary hypothesis stated. It is therefore essential to record data about the extent of program activities when evaluating a program. Otherwise, it is unclear whether possible missing effects are due to conceptual deficiencies of the program, or simply due to inadequate implementation. This makes teachers an important source of information, and thus far, their contribution has received too little research attention. Furthermore, dosage-response-effects might also be responsible for the wide range of effects of anti-bullying programs in the past, as fidelity of implementation is a critical factor influencing a program's success.

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Availability of Data and Material The data that support the findings of this study are not publicly available but are available from the corresponding author upon reasonable request.

Declarations

Ethics Approval The study was performed in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments. It was appraised and approved by the ethics committee of the faculty of medicine at the University of Heidelberg (S-341/2014) and the respective school authorities.

Consent to Participate Informed consent was obtained from all individual participants included in the study.

Conflict of Interest The authors declare no competing interests.

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Cyberbullying and School Bullying Are Related to Additive Adverse Effects among Adolescents

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Keywords
School bullying · Cyberbullying · Mental health · Self-harm · Risk-taking behavior

Abstract
Introduction: The aim of this study was to examine whether (a) cyberbullying has unique associations with mental health problems, risk-taking, and self-harm behavior in victims and perpetrators when compared to school bullying and (b) if cyberbullying is associated with an additional burden for students already involved in school bullying. ***Methods:*** Data were collected from 6,561 students across 23 schools in Germany (grades 5–13). The sample was divided into the following four groups: cyber-only involvement (victims = 1.9%, perpetrators = 0.6%), school-only involvement (victims = 17.2%, perpetrators = 11.9%), dual involvement (victims = 5.7%, perpetrators = 2.9%), and noninvolvement (victims = 75.3%, perpetrators = 84.6%). Multilevel mixed-effects regression analysis was conducted to examine group differences in mental health (Strengths and Difficulties Questionnaire, KIDSCREEN-10), risk-taking, and self-harm behavior (e.g., substance use, suicide attempts). ***Results:*** Cyber-only bullying had unique associations with mental health problems and risk-taking behavior in victims (lower levels of peer relationship problems: $p < 0.001$, greater substance use: $p < 0.05$) and perpetrators (higher levels of peer relationship problems: $p < 0.05$) when compared to school-only bullying. Dual victims and perpetrators reported significantly more mental health problems (victims: $\chi^2_{(5)} = 221.58$, $p < 0.001$; perpetrators: $\chi^2_{(5)} = 116.40$, $p < 0.001$) and were more likely to report risk-taking and self-harm behavior (victims: $\chi^2_{(7)} = 115.15$, $p < 0.001$; perpetrators: $\chi^2_{(7)} = 38.79$, $p < 0.001$) than students involved in school-only bullying. ***Conclusion:*** Cyber-only bullying appears to be related to specific mental health issues beyond those associated with school-only bullying. Cyberbullying and school bullying go along with additive mental health problems, risk-taking, and self-harm behavior in both victims and perpetrators. Thus, bullying prevention and intervention programs should also target cyberbullying.

Introduction

According to Dan Olweus, bullying is defined as negative actions that occur repeatedly and over a long period of time and that are characterized by an imbalance of power [1]. Consequently, the victimized person has difficulties in defending him- or herself against a superior

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perpetrator. Despite this comprehensive definition of bullying, the precise definition of cyberbullying continues to be debated [2, 3]. The characteristics of cyberbullying differ from those of offline bullying: the permanence of shared information and large number of potential observers can induce feelings of powerlessness in victims. Further, even though a perpetrator may engage in bullying only once, sharing and forwarding the offensive content can repeatedly hurt the victim [3].

Bullying is a widespread phenomenon among youths: in Germany, 8.3% of adolescents reported school bullying and 2.0% cyberbullying victimization. Furthermore, 3.9% reported bullying others at school and 1.3% bullied others online [4]. Higher victimization rates were found in a recent study across 13 countries: 17.7% of the participating adolescents reported being bullied at school only, 5.1% being cyberbullied only, and 6.1% being bullied at school as well as online [5]. Therefore, similar to other studies [6], approximately 50% of those adolescents who experienced cyberbullying were also bullied at school. Thus, cyberbullying appears to create only few new victims [5–7]. Approximately, 25% of students who are bullied in school also experience cyberbullying [5, 8]. These "dual victims" are not safe from bullying behaviors even within their own homes.

Several studies found an association between bullying and various physical and mental health problems such as suicidal ideation, suicide attempts, depression, anxiety, nonsuicidal self-injury, and posttraumatic stress disorder symptoms [9–11]. Recent research suggests that these associations may be causal [12] and persistent [13, 14]. Similarly, past studies proposed that the adverse effects of cyberbullying may include depression [15], increased substance use [16], and suicidal behavior [17, 18]. In other studies, the associations between cyberbullying and mental health had become nonsignificant when school bullying was included as a moderator [19]. Hence, associations found between cyberbullying and mental health issues might have merely resulted from the large overlap between school bullying and cyberbullying, when studies did not control for school bullying. However, other authors have come to different conclusions. Specifically, cyberbullying appeared to exert additional adverse effects on victims beyond the mental health issues associated with school bullying [20–22]. For instance, a meta-analysis found that cyberbullying and school bullying victimization were both uniquely associated with internalizing problems [21]. One potential explanation could be that cyber-victims experience greater fear, frustration, insecurity, and powerlessness because online-perpetrators act anonymously and a larger audience might witness the humiliation [23]. The conflicting results mentioned above continue to raise the question of whether the specific characteristics of cyberbullying contribute to a unique relation with psychopathology.

Although the adverse health associations with victimization are well documented, the relationship between health and perpetration remains under-researched [24]. Studies found that all forms of bullying involvement, including perpetration, at school and online were linked to an increased risk of psychological distress, emotional and behavioral problems, substance use, self-harm, and attempted suicide [17, 25]. Cyber-perpetrators and perpetrators at school appeared to not differ regarding their mental health issues [26] while adolescents who simultaneously bullied others at school as well as online were found to be at highest risk for externalizing problems [27]. In contrast, other studies suggest that perpetrators tend to have better mental health and experience lower levels of depression, anxiety, as well as loneliness [28] and show positive somatic outcomes [13]. Social prestige and hierarchical benefits, which positively influence mental health, have been cited as influential factors that account for this relationship [13, 29]. Since data on mental well-being of bullying perpetrators is scarce, mental health, self-harm, and risk-taking behavior profiles of school bullying and cyberbullying perpetrators are still subject of further studies.

Therefore, the present study aimed to examine the association that cyberbullying and school bullying independently and collectively share with mental health problems as well as risk-taking and self-harm behavior. The sample consisted of students from grades 5–13, who answered specific questions about bullying, mental health, quality of life, self-harm, and risk-taking behavior. To account for the large overlap of school bullying and cyberbullying, students were classified as being involved in school-only, cyber-only, or dual victimization/perpetration or being noninvolved. Since bullying in either environment (at school or online) appears to be associated with negative outcomes, it was hypothesized that school-only and cyber-only victims will not differ in their mental health profiles. To investigate a potential additive association of cyberbullying with adverse outcomes, we hypothesized that dual victims will report more mental health problems than school-only victims. Further, it was hypothesized that school-only and cyber-only victims will not differ in their risk-taking and self-harm behavior profiles and that dual victims will be more likely to report risk-taking and self-harm behavior than school-only victims. The same hypotheses were formulated for bullying perpetration.

Methods

Study Population and Procedures

The present cross-sectional study was performed within the framework of a quasi-experimental evaluation study of the Olweus Bullying Prevention Program in Germany, funded by the Baden-Württemberg foundation [30]. This study was conducted in accordance with the principles outlined in the Declaration of Helsinki and approved by the Ethics Committee of the Medical Faculty of the University of Heidelberg (S-341/2014) and the respective school authorities. Additionally, this study was registered with the World Health Organization trial registry (Deutsches Register Klinischer Studien; DRKS00008202). Baseline data were analyzed in this study. All students, teachers, and caregivers were informed about the survey through a leaflet, and caregivers were afforded the opportunity to object participation (passive consent). Data were collected from students, who were divided into class-sized groups (approximately 45 min). At the beginning of the self-administered online survey, the students received standardized instructions from their teachers. This survey included two sections. The first consisted of the German version of the Olweus Bullying Questionnaire-revised [31, 32]. The second consisted of questions that assessed mental health as well as risk-taking and self-harm behavior. Only the responses of those who completed both survey sections were included in the analyses.

Measures

School Bullying and Cyberbullying

The Olweus Bullying Questionnaire-revised was used to assess the different forms of bullying, bullying frequency, and the circumstances under which bullying had occurred. This 57-item scale has been used in several studies [31, 32]. The participants were classified into different groups based on their responses. One global and nine specific items for school bullying (victimization: Cronbach's $\alpha = 0.87$; perpetration: Cronbach's $\alpha = 0.86$) and one global and three specific items for cyberbullying were used (victimization: Cronbach's $\alpha = 0.81$; perpetration: Cronbach's $\alpha = 0.87$). If a student answered the global or one of the specific items with at least "2 or 3 times a month," they were counted as victims or perpetrators, respectively.

Mental Health and Quality of Life

The Strengths and Difficulties Questionnaire (SDQ), a self-report scale suitable for use with ages 11–16 [33], is a brief behavioral screening tool that assesses mental health problems. This 25-item scale consists of five subscales: emotional symptoms (Cronbach's $\alpha = 0.74$), conduct problems (Cronbach's $\alpha = 0.47$), hyperactivity (Cronbach's $\alpha = 0.65$), peer relationship problems (Cronbach's $\alpha = 0.54$), and prosocial behaviors (Cronbach's $\alpha = 0.72$). The KIDSCREEN-10 [34] was used to assess general health-related quality of life (Cronbach's $\alpha = 0.84$).

Risk-Taking and Self-Harm Behavior

Self-harm was assessed using three items related to suicidal thoughts, suicide attempts, and nonsuicidal self-harm based on the self-injurious thoughts and behaviors interview [35]. Risk-taking behaviors were assessed using four items related to the use of alcohol, drugs, and cigarettes, and school absenteeism based on the Global School-based Student Health Survey [36] (see online supplements; for all online suppl. material, see www.karger.com/doi/10.1159/000523992).

Statistical Analysis

Mixed-effects logistic regression analysis was used to examine group differences (yes vs. no) in cyberbullying and school bullying as a function of sex, grade level, and school type. For the main analysis, participants were classified into four groups (separately for victims and perpetrators): cyber-only involvement (no concurrent school bullying), school-only involvement (no concurrent cyberbullying), dual involvement (concurrent school bullying and cyberbullying), and noninvolvement. To examine participant mental health profiles, the five SDQ subscale scores and KIDSCREEN-10 scores were combined into one multilevel mixed-effects linear regression model. Standardized scale scores served as the dependent variables. Bullying role, scale (emotional symptoms, conduct problems, hyperactivity, peer relationship problems, prosocial behaviors, and KIDSCREEN-10), and the interaction between bullying role and scale served as the fixed factors. School, class, and subject were the levels of the random effects. By treating the scales as repeated measures, statistical power can be increased. Post hoc comparisons were undertaken using the Wald test, and Sidak-adjusted p values were computed to correct for multiple comparisons. The significance level was set as $\alpha = 0.05$. The risk-taking and self-harm behavior profile model was developed similarly. Seven dichotomized yes-no questions served as repeated measures of risk-taking and self-harm behavior (i.e., the dependent variable; for respective cut-offs see online supplements). A multilevel mixed-effects logistic regression model was created because of the binary nature of the dependent variable. Stata 16 was used to conduct all analyses [37].

Results

Data were collected from students in grades 5–13 across 23 schools. Out of a total of $N = 7{,}651$ eligible students, $N = 6{,}561$ (consent rate: 85.8%) participated in this study. Incomplete datasets were excluded which resulted in different sample sizes for the scales: 48 students were excluded from the analysis of bullying victimization (leading to $N = 6{,}513$; girls: 50.4%) and 18 students from the analysis of bullying perpetration (leading to $N = 6{,}495$). For victims, 21 responses were missing regarding mental health, 57–67 regarding risk-taking behaviors, and 39–42 regarding self-harm behaviors. For perpetrators, 62 responses were missing regarding mental health, 97–107 regarding risk-taking behaviors, and 79–82 regarding self-harm behaviors. Overall, the number of excluded participants due to missing data was comparably small (<2% for any variable).

During the past 3 months, 1,491 (22.9%) students had experienced school bullying victimization, and 492 (7.6%) students had experienced cyberbullying victimization. Moreover, 967 (14.9%) students had perpetrated school bullying, and 228 (3.5%) students had perpetrated cyberbullying. Girls were more likely to be victims in both envi-

Table 1. Prevalence (%) and *p* values from mixed-effects logistic regressions for sex, school-type, and grade-level, separated for victims and perpetrators of school- and cyberbullying

	Sex			Grade-level[a]						School-type[b]		
	girls, %	boys, %	girls vs. boys (*p* value)	low, %	middle, %	high, %	low vs. middle (*p* value)	low vs. high (*p* value)	middle vs. high (*p* value)	A-level, %	B-level, %	A vs. B (*p* value)
Victims												
School	23.5	22.3	0.02	26.3	21.4	13.9	0.002	<0.001	0.04	18.2	25.5	0.001
Cyber	9.4	5.7	<0.001	7.9	8.1	4.4	0.99	0.03	0.04	5.5	8.7	<0.001
Perpetrators												
School	10.5	19.3	<0.001	13.6	17.1	12.5	0.01	0.84	0.76	12.0	16.4	0.006
Cyber	2.4	4.7	<0.001	2.9	4.5	2.8	0.01	0.29	0.99	2.3	4.2	0.03

p values for grade-level were Sidak-adjusted. [a] Grades 5–7 were grouped as "low grades," grades 8–9 as "middle grades" and grades 10–13 as "high grades." [b] Gymnasium is called "A-level"; Realschule and Hauptschule are summarized as "B-level" schools.

Table 2. Sample description and descriptive statistics for mental health (SDQ, KIDSCREEN-10) and risk-taking and self-harm behavior separated for students not involved in bullying, only involved in cyberbullying, only involved in school bullying, or dual involvement (separated for victims and perpetrators)

	Victims				Perpetrators			
	noninvolved	cyber-only bullying	school-only bullying	cyber and school bullying	noninvolved	cyber-only bullying	school-only bullying	cyber and school bullying
Total, *N* (%)	4,901 (75.3)	121 (1.9)	1,120 (17.2)	371 (5.7)	5,493 (84.6)	41 (0.6)	774 (11.9)	187 (2.9)
Child-level factors								
Sex, %								
Boys	50.5	30.6	51.2	39.4	47.0	56.1	63.3	67.9
Girls	49.5	69.4	48.8	60.7	53.0	43.9	36.7	32.1
School-type,[a] %								
A	37.9	28.1	29.3	25.3	37.0	14.6	29.8	25.1
B	62.1	71.9	70.7	74.7	63.0	85.4	70.2	74.9
Grade-level,[b] %								
Low	46.6	43.0	56.8	53.9	49.5	39.0	45.4	40.1
Middle	39.6	43.8	35.0	41.0	37.8	56.1	44.3	49.2
High	13.7	13.2	8.2	5.1	12.7	4.9	10.3	10.7
Mental health [M (SD)]								
SDQ total difficulties	9.58 (4.58)	13.89 (4.79)	13.62 (5.30)	17.41 (6.00)	10.27 (5.08)	14.93 (6.04)	13.09 (5.25)	15.90 (6.56)
SDQ emotional symptoms	2.30 (2.05)	3.96 (2.51)	3.56 (2.47)	5.22 (2.87)	2.64 (2.28)	3.71 (2.71)	2.99 (2.47)	3.52 (2.83)
SDQ conduct problems	1.86 (1.45)	2.82 (1.73)	2.64 (1.64)	3.40 (1.94)	1.87 (1.40)	3.44 (1.72)	3.08 (1.78)	4.46 (2.23)
SDQ hyperactivity	3.50 (2.06)	4.44 (2.03)	4.03 (2.23)	4.52 (2.31)	3.52 (2.07)	4.29 (2.32)	4.39 (2.20)	4.82 (2.32)
SDQ peer relationship problems	1.92 (1.44)	2.68 (1.77)	3.40 (1.96)	4.27 (2.07)	2.24 (1.70)	3.49 (2.05)	2.61 (1.87)	3.10 (2.26)
SDQ prosocial behavior	7.34 (2.13)	7.05 (2.33)	7.13 (2.13)	7.10 (2.30)	7.49 (2.04)	6.73 (2.33)	6.35 (2.30)	5.41 (2.48)
KIDSCREEN 10 [t-values (SD)]	50.64 (10.01)	43.12 (8.18)	44.75 (9.44)	39.90 (9.67)	49.45 (10.31)	42.39 (10.51)	46.27 (9.83)	44.73 (11.39)
Risk-taking and self-harm behavior, %								
Suicide ideation	11.5	26.5	28.5	45.7	14.6	36.6	25.0	37.1
Suicide attempts	3.7	10.7	8.3	25.0	4.5	17.1	10.9	18.3
NSSI	4.4	10.7	11.0	26.2	5.9	19.5	11.1	16.7
Alcohol	15.1	23.3	12.7	24.8	13.8	26.8	22.1	29.7
Drugs	5.8	15.8	7.1	16.9	4.8	19.5	14.6	31.4
Cigarettes	12.8	25.0	14.6	26.4	12.2	22.0	21.7	36.4
Absenteeism	12.8	14.2	15.3	25.1	12.3	31.7	18.8	36.2

M, mean; SD, standard deviation; NSSI, nonsuicidal self-injury. [a] Gymnasium is called "A-level"; Realschule and Hauptschule are summarized as "B-level" schools. [b] Grades 5–7 were divided as "low grades," grades 8–9 as "middle grades" and grades 10–13 as "high grades."

Table 3. Mean differences between cyber-only and school-only, between school-only and dual involvement, and cyber-only and dual involvement (negative values correspond to higher values in the second group) for the SDQ subscales and KIDSCREEN-10 including 95% CIs

SDQ	Victims			Perpetrators		
subscales + KS10	co vs. so	so vs. dual	co vs. dual	co vs. so	so vs. dual	co vs. dual
Emotional	0.16 (−0.07 to 0.40)	−0.71 (−0.86 to −0.57)***	−0.55 (−0.81 to −0.30)***	0.28 (−0.12 to 0.69)	−0.21 (−0.42 to −0.00)*	0.08 (−0.36 to 0.51)
Conduct	0.10 (−0.13 to 0.34)	−0.48 (−0.63 to −0.33)***	−0.38 (−0.63 to −0.12)***	0.20 (−0.20 to 0.60)	−0.85 (−1.05 to −0.64)***	−0.65 (−1.08 to −0.21)***
Hyper	0.19 (−0.05 to 0.42)	−0.23 (−0.38 to −0.09)***	−0.05 (−0.30 to 0.21)	−0.07 (−0.47 to 0.33)	−0.18 (−0.39 to 0.02)	−0.25 (−0.68 to 0.18)
Peer relationship problems	−0.42 (−0.65 to −0.19)***	−0.50 (−0.64 to −0.35)***	−0.91 (−1.2 to −0.66)***	0.48 (0.07–0.88)*	−0.26 (−0.47 to −0.06)**	0.22 (−0.22 to 0.65)
KS-10	0.15 (−0.09 to 0.38)	−0.46 (−0.61 to −0.32)***	−0.32 (−0.57 to −0.06)**	0.36 (−0.05 to 0.76)	−0.13 (−0.34 to 0.07)	0.23 (−0.21 to 0.66)

co, cyber-only; so, school-only; dual, involvement in school bullying and cyberbullying. Sidak-adjusted *p* values. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

ronments, whereas boys were more likely to be perpetrators in both environments. B-level school students reported more bullying behaviors than A-level school students. Table 1 presents group differences in prevalence rates as a function of sex, grade level, and school type among victims and perpetrators of school bullying and cyberbullying.

For the main analysis, the sample was divided into four groups: cyber-only involvement, school-only involvement, dual involvement, and noninvolvement. A total of 121 (1.9%) students were victims of cyber-only bullying. Further, 1,120 (17.2%) students were school-only victims, whereas 371 (5.7%) students had been victimized in both environments. Moreover, 41 (0.6%) students were cyber-only perpetrators, and 774 (11.9%) students were school-only perpetrators. However, 187 (2.9%) students had perpetrated bullying in both environments. Table 2 presents descriptive statistics for each group of participants.

Mental Health

Table 2 presents descriptive statistics for the SDQ and KIDSCREEN-10 (mean and SD) for each group.

Victims

The mental health scores of cyber-only and school-only victims were different ($\chi^2_{(5)} = 43.39$, $p < 0.001$). School-only victims reported more peer relationship problems than cyber-only victims ($\chi^2_{(1)} = 21.37$; $p < 0.001$). The results of post hoc tests and mean differences including 95% confidence intervals (CIs) are presented in Table 3. Dual victims reported more mental health problems than school-only ($\chi^2_{(5)} = 221.58$, $p < 0.001$) and cyber-only victims ($\chi^2_{(5)} = 104.89$, $p < 0.001$). Group differences are summarized in Figure 1 and Table 3.

Perpetrators

The mental health scores of cyber-only and school-only perpetrators were different ($\chi^2_{(5)} = 15.55$, $p = 0.008$). Cyber-only perpetrators reported more peer relationship problems than school-only perpetrators ($\chi^2_{(1)} = 9.27$; $p = 0.01$). The results of post hoc tests and mean differences including CIs are presented in Table 3. Dual perpetrators reported more mental health problems than school-only ($\chi^2_{(5)} = 116.40$, $p < 0.001$) and cyber-only perpetrators ($\chi^2_{(5)} = 28.38$, $p < 0.001$). Group differences are summarized in Figure 1 and Table 3.

Risk-Taking and Self-Harm Behavior Profile

Table 2 presents descriptive statistics for risk-taking and self-harm behavior (percentage of yes-responses) for each group.

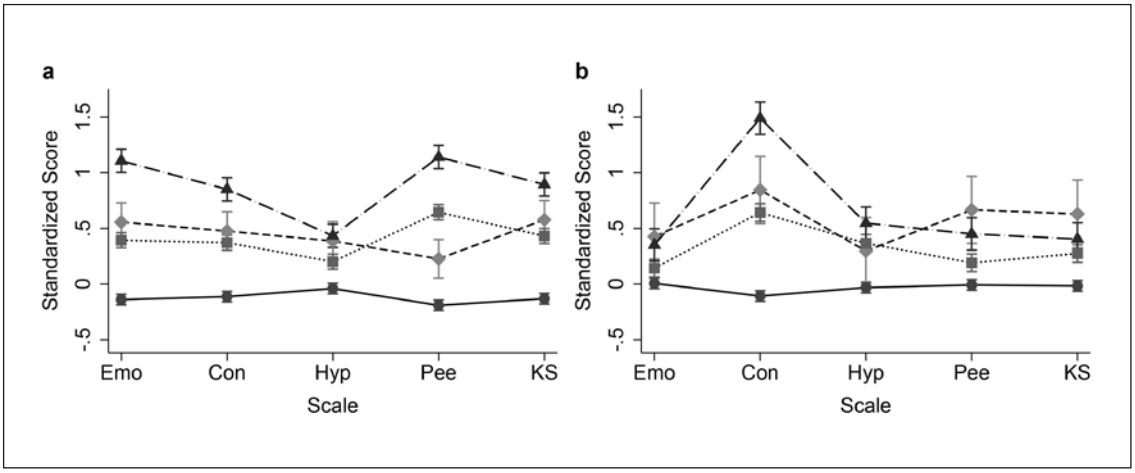

Fig. 1. Mental health profiles for cyber-only involvement (diamonds), school-only involvement (squares), dual involvement (triangles), and noninvolvement of students (circles). *Z*-scores for the individual scale and each group are displayed (95% CI). **a** Profiles for victims. **b** Profiles for perpetrators. Emo, emotional symptoms; Con, conduct problems; Hyp, hyperactivity; Pee, peer relationship problems; KS, KIDSCREEN-10; CI, confidence interval.

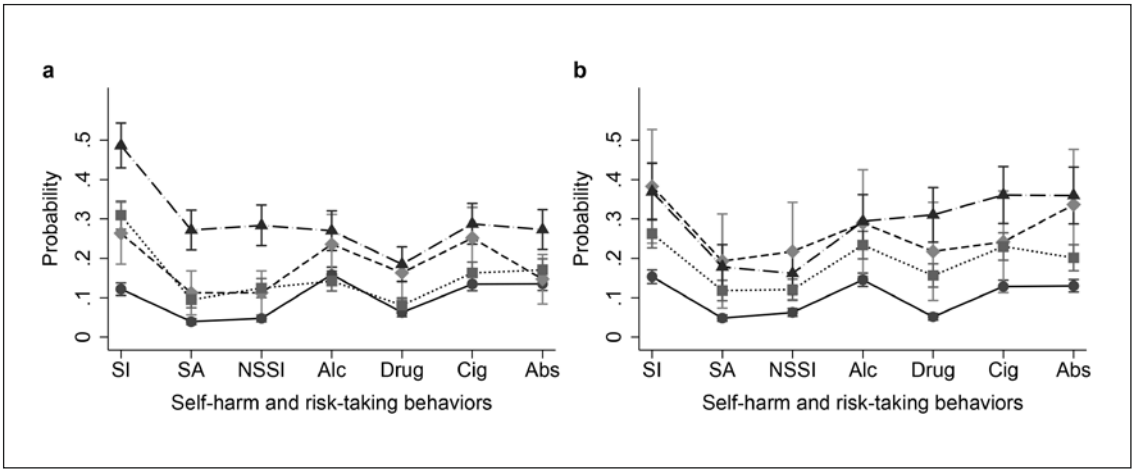

Fig. 2. Self-harm and risk-taking behaviors profiles for cyber-only involvement (diamonds), school-only involvement (squares), dual involvement (triangles), and noninvolvement of students (circles). Probability of showing the individual behavior is displayed (95% CI). **a** Profiles for victims. **b** Profiles for perpetrators. SI, suicidal ideation; SA, suicide attempt; NSSI, nonsuicidal self-injury; Alc, alcohol; Drug, drugs; Cig, cigarettes; Abs, absenteeism; CI, confidence interval.

Victims

The risk-taking and self-harm behavior profiles of cyber-only and school-only victims were different ($\chi^2_{(7)}$ = 25.82, $p < 0.001$). Cyber-only victims had higher chances to report alcohol consumption and drug use than school-only victims (odds ratio [OR] = 2.31–2.78, $p < 0.05$). Post hoc test results, ORs, and CIs are presented in Table 4. Dual victims were more likely to report risk-taking and self-harm behavior than school-only victims ($\chi^2_{(7)}$ = 115.15, $p < 0.001$). The ORs for risk-taking and self-harm behavior (subscale scores) were lower for school-only victims (OR = 0.18–0.44). The odds of having engaged in such behaviors were two to five times higher among dual victims. They also reported more risk-taking and self-harm behavior than cyber-only victims ($\chi^2_{(7)}$ = 40.49, $p < 0.001$). Figure 2 and Table 4 present all ORs.

Table 4. ORs between cyber-only and school-only, between school-only and dual involvement, and cyber-only and dual involvement for the risk-taking and self-harm behavior subscales (values <1 correspond to a higher chance to show the behavior in the second group) including 95% CIs

Self-harm and risk-taking behavior subscales	Victims			Perpetrators		
	co versus so	so versus dual	co versus dual	co versus so	so versus dual	co versus dual
S-ideation	0.73 (0.33–1.60)	0.34 (0.21–0.54)***	0.25 (0.10–0.58)***	2.19 (0.65–7.42)	0.50 (0.26–0.95)*	1.08 (0.29–4.04)
S-attempts	1.27 (0.46–3.52)	0.18 (0.10–0.32)***	0.23 (0.08–0.67)**	2.14 (0.50–9.16)	0.53 (0.25–1.16)	1.14 (0.24–5.41)
NSSI	0.86 (0.31–2.36)	0.25 (0.14–0.43)***	0.21 (0.08–0.62)***	2.54 (0.62–10.36)	0.64 (0.29–1.41)	1.63 (0.36–7.45)
Alcohol	2.31 (1.01–5.29)*	0.34 (0.20–0.58)***	0.77 (0.32–1.89)	1.50 (0.41–5.44)	0.65 (0.33–1.27)	0.97 (0.24–3.88)
Drugs	2.77 (1.09–7.04)*	0.29 (0.16–0.55)***	0.81 (0.30–2.18)	1.72 (0.43–6.96)	0.30 (0.15–0.59)***	0.51 (0.12–2.24)
Cigarettes	2.11 (0.93–4.76)	0.37 (0.22–0.62)***	0.77 (0.32–1.86)	1.10 (0.28–4.22)	0.41 (0.21–0.79)**	0.45 (0.11–1.87)
Absenteeism	0.79 (0.31–1.99)	0.44 (0.26–0.74)***	0.35 (0.13–0.93)*	2.64 (0.75–9.24)	0.33 (0.17–0.64)***	0.86 (0.23–3.30)

co, cyber-only; so, school-only; dual, involvement in school bullying and cyberbullying; NSSI, nonsuicidal self-injury. Sidak-adjusted p values. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Perpetrators

The risk-taking and self-harm behavior profiles of cyber-only and school-only perpetrators were not different ($\chi^2_{(7)} = 8.10$, $p = 0.32$; see Table 4). Dual perpetrators were more likely to report any risk-taking and self-harm behavior than school-only perpetrators ($\chi^2_{(7)} = 38.79$, $p < 0.001$). Post hoc analyses revealed that the odds of experiencing suicidal ideation, drug and cigarette use, and school absenteeism were two to three times higher among dual perpetrators than among school-only perpetrators (OR = 0.3–0.5; see Table 4). Dual perpetrators were not significantly different from cyber-only perpetrators regarding risk-taking and self-harm behavior ($\chi^2_{(7)} = 5.65$, $p = 0.58$). Figure 2 and Table 4 present these results in greater detail.

Discussion

In this study, the prevalence of school bullying and cyberbullying victimization was 22.9% and 7.6%, respectively. The prevalence of school bullying and cyberbullying perpetration was 14.9% and 3.5%, respectively. These findings are consistent with previous studies in which cyberbullying was less prevalent than school bullying [5, 6]. The aforementioned rates are higher than in other studies in Germany [4] but comparable to cross-national prevalence rates [5]. Differences in prevalence can be attributed to differences in bullying measures or sampling strategy.

As observed in past studies [5–7], there was a large overlap between bullying at school and online and cyberbullying did not contribute to the creation of a large new group of victims or perpetrators. Only 1.9% of the participants were cyber-only victims, and only 0.6% were cyber-only perpetrators. Most cyberbullying victims (75%) and perpetrators (82%) were also involved in school bullying. Conversely, however, only 25% of school bullying victims and 19.5% of school bullying perpetrators were involved in cyberbullying. This finding is consistent with the results of previous research [5, 8]. Further, consistent with past findings, an age-related effect was observed, whereby bullying was less common among higher-grade students [38]. Girls were significantly more likely to have been victims in both environments, whereas boys were significantly more likely to have been perpetrators in both environments, supporting past research [39]. However, some studies have reported no sex differences [40] and even higher rates of victimization among boys [38].

We hypothesized that school-only and cyber-only victims will not differ in their mental health as well as risk-taking and self-harm behavior profiles. The results did not entirely support this hypothesis. On the one hand, school-only and cyber-only victims reported a similar amount of, for instance, emotional problems or self-harm behaviors. On the other hand, in line with previous research [21], victims also showed unique associations with some outcomes depending on the environment in which they experienced bullying: School-only victims reported significantly more peer relationship problems than cyber-only victims. Interestingly, alcohol and drug consumption were significantly more likely among cyber-only victims than among school-only victims (OR = 2.3–2.7). This result is consistent with past findings [16, 41]. In their longitudinal study, Gámez-Guadix et al. [41]

found that higher levels of substance use at time 1 increased the likelihood of cyberbullying victimization at time 2. However, cyberbullying did not predict substance use. The authors noted that "substance use is part of a larger pattern of behavior problems in adolescence, such as relationships with antisocial peers or involvement in violent behaviors" (p.450) which may in turn increase the risk of cyberbullying victimization. The cyber-only victims may simultaneously engage in normal peer interactions at their schools as well as according risky behaviors (e.g., smoking and drug use) that are commonly undertaken in social contexts. These factors may render them vulnerable to bullying under conditions of anonymity which can be found in cyberspace. It is also possible that the cyber-only victims were being bullied by perpetrators who were not a part of the school environment. This also accounts for the lower rates of peer relationship problems that were observed within this group. Unlike previous research [20, 42], in this study, rates of suicidal ideation and attempts did not differ between cyberbullying and school bullying victims.

In terms of bullying perpetration, we hypothesized that the mental health as well as risk-taking and self-harm behavior profiles of school and cyberbullying perpetrators will be similar. This hypothesis was not fully supported by the results that emerged for mental health profiles. Perpetrators of cyberbullying reported more peer relationship problems than school-only perpetrators. These students may experience difficulties in addressing peer relationship problems in face-to-face contexts. König et al. [43] found that victims of school bullying who also concurrently engage in cyberbullying tend to choose their former perpetrators as targets. They concluded that revenge may be an important motive that underlies cyberbullying behaviors. As opposed to the differences found in our study in terms of mental health profiles, the risk-taking and self-harm behavior profiles of the two groups of perpetrators did not differ. This finding supports our hypothesis, but contradicts the results of a previous study, in which rates of suicide were higher among male perpetrators of cyberbullying than among school bullies [17]. However, it should be noted that we did not independently analyze the data collected from boys and girls. Therefore, future studies should examine sex differences to delineate these group differences and similarities in greater detail.

As hypothesized, cyberbullying is associated with increased negative effects in school bullying victims. Indeed, victims of both kinds of bullying reported more mental health problems and were more likely to have engaged in risk-taking and self-harm behavior (two to five times higher odds) than school-only victims. This finding supports past research, in which exacerbated outcomes were observed among dual victims (cyberbullying and school bullying) [20]. A similar effect has been observed among students who are also sibling-bullying victims [44]. Cyberbullying and sibling-bullying are both cases of multiple victimization that intrude the home which is linked to an increase in behavioral problems. In these cases, one of the key features of the bullying definition, namely the "power imbalance," may play a particular role: it indicates that the victimized person "cannot get the bullying to stop" [1, 45]. On the internet, one has no control over who (and how many individuals) views the hurtful messages posted by perpetrators. Further, it is impossible for victims to put an end to their ongoing humiliation. These factors may contribute to an increased negative impact on their health. Besides dual victims, dual perpetrators also seem to constitute a high-risk group. In line with previous research [27], they reported more mental health problems and were more likely to report risk-taking and self-harm behavior than school-only perpetrators.

Our findings have several practical implications for anti-bullying programs and research. Due to the large overlap of school bullying and cyberbullying, targeting bullying at school with anti-bullying programs may have positive carryover effects on cyberbullying. However, because of the unique negative correlates with cyberbullying and its potential additive adverse effects in victims and perpetrators alike, prevention programs should also take into account cyberbullying itself. For instance, students could be taught about safety measures to reduce the risk of becoming a cyber-victim (e.g., privacy settings) and about appropriate online-behavior to raise awareness for online-perpetration. Regarding research, our results underline the need to control for school bullying or cyberbullying when investigating the negative associates of bullying in the respective other environment to avoid misleading conclusions.

The present findings should be interpreted within the framework of the strengths and limitations of this study. Major strengths concern the large sample size of approximately 6.500 adolescents and the use of validated instruments. Further, our study offers new and deeper insights into the associations between mental health issues and bullying not only in victims but also in perpetrators. However, one first limitation may be the reduced representativeness and generalizability of our findings: the final sample may have consisted of students recruited from a selected set of schools because the analyzed data were

collected as a part of a study that evaluated the Olweus Bullying Prevention Program in Germany [30]. A random selection of a representative sample of schools across multiple countries would be desirable in future research to allow to generalize the findings further. The second limitation pertains to the adoption of a cross-sectional design. Future studies should adopt a longitudinal design to delineate the direction of the emergent correlations between bullying and mental health problems as well as risk-taking and self-harm behavior. Third, only self-reports were conducted in this study which may inflate effect sizes. However, since bullying, mental health problems, and self-harm behaviors are very sensitive topics, self-reports appeared to be the most suitable measures. Fourth, the inclusion of a large number of items in the questionnaire may have adversely affected concentration levels among lower-grade students. Thus, responses given at the beginning of the survey may be more reliable than those given towards the end.

Conclusion

The present findings clearly underscore the negative associations of bullying with adolescent mental health. This observation highlights the urgent need to develop and implement effective bullying prevention and intervention programs. School bullying still is the more prevalent form of bullying with the majority of cyberbullying victims also being bullied at school. Therefore, prevention strategies should primarily focus on the school environment [46, 47]. Nevertheless, the present findings suggest that cyberbullying may be at least as damaging as school bullying and is associated with additive negative effects among victims and perpetrators of school bullying. This emphasizes the need for school-based anti-bullying programs to go beyond the walls of school buildings and to also address bullying in cyberspace.

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Statement of Ethics

This study protocol was reviewed and approved by the Ethics Committee of the Medical Faculty of the University of Heidelberg, approval number S-341/2014. All students, teachers, and caregivers were informed about the survey through a leaflet, and caregivers were afforded the opportunity to object participation (passive consent). As mentioned above, this procedure was granted by the Ethics Committee of the Medical Faculty of the University of Heidelberg.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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Author Contributions

Fanny Ossa conceptualized and designed the study and the data collection instrument, collected data, and drafted the initial manuscript. Vanessa Jantzer and Lena Eppelmann conceptualized and designed the study and the data collection instrument, collected data, and reviewed and revised the manuscript. Franziska Neumayer contributed to the analysis and interpretation of data, reviewed, and revised the manuscript. Franz Resch conceptualized and designed the study and critically reviewed the manuscript for important intellectual content. Michael Kaess conceptualized and designed the study, coordinated and supervised data collection, and critically reviewed the manuscript for important intellectual content. All the authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

Data Availability Statement

The data that support the findings of this study are not publicly available but are available from the corresponding author (M.K.; michael.kaess@upd.ch) upon reasonable request.

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Supplementary Material

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Items used to assess risk-taking and self-harm behavior.

Self-harm	
The following questions refer to your behavior.	
Suicidal ideation	Have you thought about taking your life in the past twelve months? • no • yes
Suicide attempts	Have you tried to kill yourself in the past twelve months? • no • yes
Non-suicidal self-injury (NSSI)	On how many days have you injured yourself in the past twelve months without the intent to die? • not at all[a] • on 1 to 4 days[a] • on 5 to 10 days[b] • on more than 10 days [b]

Risk-taking behavior	
The following questions are about substance use, such as e.g. use of alcohol, cigarettes or drugs. Please refer the questions to the last month, i.e. the past 30 days.	
Alcohol	During the past 30 days, on how many days did you have a drink containing alcohol (e. g. 0.33 l of beer or cider; a glass of wine or 4 cl of strong alcohol)? • not at all[a] • on 1 or 2 days[a] • on 3 to 5 days[b] • on 6 to 9 days[b] • on 10 to 19 days[b] • on 20 to 29 days[b] • daily[b]
Drugs	During the past 30 days, on how many days did you take drugs like e. g. cannabis, ecstasy, cocaine? • not at all[a] • on 1 or 2 days[b] • on 3 to 5 days[b] • on 6 to 9 days[b] • on 10 to 19 days[b] • on 20 to 29 days[b] • daily[b]
Cigarettes	During the past 30 days, on how many days did you smoke cigarettes? • not at all[a] • on 1 or 2 days[b] • on 3 to 5 days[b] • on 6 to 9 days[b] • on 10 to 19 days[b] • on 20 to 29 days[b]

	• daily[b]
Absenteeism	During the past 30 days, on how many days did you miss school without permission? • none[a] • on 1 or 2 days[b] • on 3 to 5 days[b] • on 6 to 9 days[b] • on more than 10 days[b]

[a]classified for analyses as “no”; [b]classified for analyses as “yes”

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Under the skin: does psychiatric outcome of bullying victimization in school persist over time? A prospective intervention study

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Background: Research has shown a direct path between peer victimization and poor mental health outcomes. However, the impact of bullying prevention on mental health is a largely unexplored field. Therefore, our study examined the longitudinal association between bullying development and trajectories of psychiatric symptoms (emotional problems, total difficulties, nonsuicidal self-injury, and suicidality) and health-related quality of life (HRQL) during the implementation of school-based bullying prevention. **Methods:** Data of 4,873 pupils (grades 5–13) were collected in 23 schools implementing the *Olweus Bullying Prevention Program (OBPP)*. Self-report questionnaires were administered at three annual assessment waves and individual codes enabled the association of repeated assessments to the same pupil. Latent growth curve models (LGCMs) were used to examine the relation among bullying status and mental health outcome with mixed-effects linear regressions estimating the association of changes in bullying with changes in continuous scores and mixed-effects logistic regressions for categorical variables. **Results:** Latent growth curve models revealed an improvement of mental health and HRQL through the termination of bullying for every outcome variable of interest (all $p < .001$). Correspondingly, we found an explicit increase in psychopathology as well as decrease in HRQL within one year as a result of developing victimization (all $p < .001$). Interestingly, the growth of psychopathology associated with the onset of bullying was significantly steeper than its decline associated with the termination of bullying. The postulated cumulative effect of ongoing bullying for a further year could only be shown for HRQL ($p = .025$) and total difficulties ($p = .034$), but not for specific mental health problems (all $p > .117$). **Conclusions:** Latent growth curve models clearly showed that the adverse psychosocial consequences of bullying arise quickly but seem to reduce much slower and partly persist over time. Future long-term studies are necessary to clarify if mental health problems will return to baseline after several years or if residual symptoms will remain. **Keywords:** Bullying; victimization; mental health; prevention; adolescence; longitudinal.

Introduction

According to the Centers for Disease Control and Prevention, bullying among youths is "any unwanted aggressive behavior(s) by another youth or group of youths who are not siblings or current dating partners that involves an observed or perceived power imbalance and is repeated multiple times or is highly likely to be repeated." (Gladden, Vivolo-Kantor, Hamburger, & Lumpkin, 2014, p. 17). The distress and suffering related to school-based bullying is immense; problems experienced by the victims of bullying include a wider range of serious mental health disorders. There is evidence of a direct path between peer victimization and poor mental health outcomes. A current meta-analysis including 165 studies (Moore et al., 2017) showed an increased risk of depression (OR = 2.21), nonsuicidal self-injury (NSSI; OR = 1.75), suicidal ideation (OR = 1.77), and suicide attempts (OR = 2.13) for bullied children. Data from the British National Child Development Study was even able to show the long-term impact of bullying into midlife. Participants who were bullied in childhood not only had higher rates of depression, anxiety disorders, and suicidality at the age of 23 but also reported a lack of social relationships, financial problems, and low perceived quality of life at the age of 50 (Takizawa, Maughan, & Arseneault, 2014).

Reducing bullying might help to prevent subsequent development of mental health problems, not only in childhood and adolescence but even into adulthood. Over the last 30 years, various school-wide bullying intervention and prevention programs have been developed, implemented, and evaluated. However, these evaluations implied the reduction of bullying as main outcome and did not focus on the impact of bullying prevention on mental health. To the best of our knowledge, only one work by Williford et al. (2012) investigated this relationship in a Finnish large-scale study of the KiVa antibullying program, and suggested that the program is not only effective in reducing victimization but also in lowering students' internalizing problems (anxiety and

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depression). In light of this research gap, the remaining question is how change in victimization over time can predict change in psychosocial adjustment and mental health problems.

Cohort studies collecting prospective data on bullying suggest that victims of bullying still have adjustment difficulties in late adolescence and early adulthood (Sourander et al., 2007; Takizawa et al., 2014). However, these longitudinal studies have often used long time-spans of several years between bullying and outcome measures and measured bullying experiences only at one point in time. Thus, these studies give little insights into the immediate consequences of new onset or just terminated bullying experiences on the development of mental problems. A meta-analysis of 18 longitudinal studies (Reijntjes, Kamphuis, Prinzie, & Telch, 2010) also contained shorter intervals (6–24 months) in exploring whether peer victimization predicts changes in internalizing problems. But again, single measurements of bullying do not allow differentiations between ongoing, newly experienced, or terminated bullying. Longitudinal assessments with an interval of 3 and 12 months were performed by Klomek et al. (2019), offering the possibility of comparing the adverse long-term effects of chronic versus sporadic bullying. Chronic victimization of any type increased the probability for later depression compared with sporadic and nonvictimization. Besides, chronic relational victimization increased the likelihood for later suicidal ideation, and chronic physical victimization increased the likelihood for suicide attempts. But former studies have never raised the question to what happens with its psychiatric outcome after the bullying stopped. In addition, all results described above were derived from studies investigating normative courses of bullying and its consequences, and were never obtained in a controlled intervention setting.

To answer these open questions, our study examined the impact of bullying and longitudinal bullying development on the course of health-related quality of life (HRQL) and psychiatric symptoms (total difficulties, emotional problems, NSSI, suicidality) during adolescence. A particular strength of our study is the controlled intervention design, which provides evidence for the assumption that changes in psychological adjustment are indeed caused by changes in bullying.

We expected that changes in victimization would predict corresponding changes in mental health outcomes. Specifically, we hypothesized that

1. Termination or decrease of bullying leads to a decrease of mental health problems in victimized students as well as to an increase in HRQL within one year.
2. Onset or increase of bullying leads to an increase of mental health problems in victimized students as well as to a decrease in HRQL within one year.
3. Ongoing bullying has a cumulative negative effect, that is, leads to a further increase of mental health problems in victimized students as well as to a further decrease in HRQL.

Methods

Study population and design

The *Olweus Bullying Prevention Program (OBPP)* (Olweus, 2012) is an evidence-based antibullying program which was developed in Norway in the 1980s and has been continuously adapted and expanded since then. Its effectiveness is well documented (Gaffney, Ttofi, & Farrington, 2019). Therefore, the Clinic of Child and Adolescent Psychiatry, Heidelberg translated the program materials and trainings and started a first scientific evaluation of the program in Germany. The project was funded by the foundation of Baden-Württemberg (*Baden-Württemberg Stiftung*). Schools in our state were informed about the possibility to participate in the program and could voluntarily sign in. Overall, 23 schools became enrolled in the study, 13 in 2015 and another ten in 2016. $N = 6{,}561$ students consented to participate (85.8% response rate). The implementation of the program took about 18 months, and annual student surveys for the duration of 24 months were part of the program. For details about the recruitment procedure and the program components, we refer to Ossa et al. (2020).

Study procedures

The study was performed in compliance with the Helsinki Declaration. It was appraised and approved by the ethics committee of the faculty of medicine at the University of Heidelberg (S-341/2014) and the respective school authorities. Furthermore, the study was registered at a WHO trial registry (*Deutsches Register Klinischer Studien*; DRKS00008202). Informed consent was appropriately obtained. All participants were extensively informed about the purpose, content, and conditions of the study by members of our research team in class as well as by information leaflets. Their respective caregivers were informed by information leaflets as well, and they were given the opportunity to contact our research team for questions as well as for declining their child´s participation (opt-out). Students were assessed using self-report online questionnaires from July 2015 until July 2018. The assessments took place during regular class times and the duration was a maximum of 45 min. The investigation consisted of two parts: the first part included an anonymous self-report using the Olweus Bullying Questionnaire (OBQ). The second part was optional and consisted of additional questionnaires concerning psychopathology and HRQL. If continuing with the second part, pupils were asked to create an individual code to enable the association of repeated assessments to the same pupil.

Assessment

Students filled in a self-report online-survey, including questions regarding socio-demographic characteristics as well as items comprising bullying experiences and diverse mental health problems. Experiences of bullying were assessed by the Olweus Bullying Questionnaire (OBQ; Olweus, 1996), a widespread instrument with a clear definition of bullying. The global item on victimization can be answered on a five-point scale. With "two or three times a month," the common cut-off for bullying was used. For the assessment of emotional and behavioral problems, the Strengths and Difficulties Questionnaire (SDQ), short-version self-report 11–16 years (Goodman,

2001) was administered. The 25 items of the SDQ are divided into five scales, each of which results in a score between 0 and 10. For our purpose, the total difficulties score as well as the subscale emotional problems were used. Since the item "Other children or young people pick on me or bully me" directly asks about bullying, it was removed from the total difficulties score. The KIDSCREEN-10 (The-KIDSCREEN-Group-Europe, 2006) was used for assessment of HRQL. Its ten items can be rated on a five-point scale and generate a global HRQL score for monitoring and screening uses. Non-suicidal self-injury (NSSI) was assessed with a single-item which clearly distinguished NSSI from suicidal behavior by its intent ("On how many days have you injured yourself in the last three months without the intent to die?"). The item was dichotomized between "not at all" = 0 and "on one day" or more = 1. Suicidal behavior was recorded using two dichotomized items, differentiating between suicidal ideation ("Have you thought about taking your life in the last three months? No/Yes") and suicide attempt ("Have you tried to kill yourself in the last three months? No/Yes").

Statistical analyses

For the association of the questionnaires from different time points to pupils, we used a similarity matching procedure to allow for typing errors of the pupils when they entered the self-generated code. Questionnaires were assigned to the same pupil if the school and gender were identical, the grade of a later assessment was not lower than the grade of earlier assessments, and the Levenshtein distance of the codes was not greater than 2.

Latent growth curve models (LGCMs) were performed to test whether exposure to bullying compared with no victimization affects the development of psychopathology (emotional symptoms, total difficulties, NSSI, suicidality) and HRQL over two years. This modeling allowed for empirical exploration of developmental trajectories, and considered whether initial psychopathological symptoms and their change over time vary according to bullying exposure. In case of missing information about bullying in the previous year (at t0 or in case of missing data), we referred to the variable "How long has the bullying lasted" and coded positively for "it lasted about a year" or longer. The global item on victimization was used for coding current victimization. Assignable participants with at least two measurement points including complete information about bullying, HRQL, and psychopathology were included in the following analyses. Incomplete datasets were deleted. To check for a possible bias, that is, a systematic loss of participants which cannot be individually assigned, the two samples were compared with respect to gender, age, school type, victimization, HRQL, and psychopathological outcome variables via stepwise mixed-effects logistic regression with random effects for school and class within school, minimizing Bayes Information Criterion (BIC).

Since pupils can have repeated measurements in the prescribed change variables (change from first to second assessment and change from second to third assessment), mixed-effects regressions were used to fit the LGCMs. We used mixed-effects linear regressions to estimate the association of changes in bullying with changes in continuous scores (emotional symptoms, total difficulties, HRQL) and mixed-effects logistic regressions for estimating the association of changes in bullying with changes in the categorical variables (NSSI, suicidal ideation, suicide attempts). Data were analyzed using Stata 16 (StataCorp, 2017).

Results

In total, 19,009 assessments were conducted during the course of three years. For 11,709 of them, an association of at least two measurements to a pupil could be established. These data belonged to 4,873 different pupils (85% of all participants), 54.30% of them girls (N = 2,646), and 45.70% boys (N = 2,227). 38.19% (N = 1,861) of the participants visited A-level schools and 61.81% (N = 3,012) visited B-level schools. Participants visited grade 5–13, whereof at their first assessment 60.00% (N = 2,924) of them were in grades 5 to 7, 30.70% (N = 1,496) in grade 8–9 and only 9.30% (N = 453) were in grades 10–13. From 40.28% of the pupils (N = 1,963), three measurements could be obtained, and 59.72% (N = 2,910) only participated twice. Table 1 shows the distribution of bullying victimization, bullying perpetration, HRQL, and psychological problems of these pupils for their first point of measurement.

Examining the relationship between victimization and perpetration for the first point of measurement revealed that while 88.95% of the victims were victims only, 11.05% of victims belonged to the group of bully/victims. Chi^2-test showed that the probability of becoming a victim was significantly higher for perpetrators (19.00%) than for nonperpetrators (7.30%) ($\chi^2(1) = 39.97$, $p < .001$). However, perpetration had no influence on the relationship between bullying victimization and psychological outcomes. For example, including *perpetration this year* as a further variable into our mixed-effects linear regression resulted in a negative estimated regression coefficient for this parameter for HRQL (−2.43; $p < .001$), indicating that also perpetrators had a lower level of HRQL compared with their nonbullied peers. This decrement was independent of whether perpetrators were pure bullies or bully/victims (interaction *perpetration this year x victimization this year* p = .944).

Table 1 Descriptive statistics: Bullying victimization, bullying perpetration, HRQL, and mental health problems at the first point of measurement (N = 4,873)

	Mean	*SD*
Emotional problems	2.72	2.30
Total difficulties	10.31	5.00
HRQL	49.73	10.35
	N	%
Bullying victimization		
No	4,491	92.16
Yes	382	7.84
Bullying perpetration		
No	4,627	95.44
Yes	221	4.56
Suicidal ideation		
No	4,422	90.74
Yes	451	9.26
Suicide attempt		
No	4,730	97.07
Yes	143	2.93
NSSI		
No	4,366	89.60
Yes	507	10.40

Table 2 presents the estimated regression coefficients for the fixed effects of the LGCMs. To ease the interpretation, the coefficients for the binary outcomes are shown in their exponentiated form, as odds ratios. The parameter *time* indicates a significant maturation effect for every outcome variable apart from NSSI, showing an increase of psychopathology and a decrease of HRQL with increasing age. The odds ratios < 1 of the parameter *gender boys* display a significantly lower level of suicidal ideation and NSSI for boys; correspondingly, the negative value of this parameter show a significantly lower level of emotional symptoms and total difficulties for boys.

To test our first objective, the difference between *victimization this year* and *victimization last year* was tested for statistical significance via chi²-test. We tested the hypothesis that the effect of bullying last year would be the same as the effect of bullying this year, implying no improvement of mental health through the termination of bullying. The test revealed that the opposite was the case, confirming our first objective for all outcome variables of interest (all $p < .001$). However, although a decrease of bullying led to a decrease of mental health problems and an increase in HRQL within one year, the elevated levels of the parameter *victimization last year* indicate that the effect of bullying still persists after one year.

The high values of the parameter *victimization this year* indicate a clear effect of bullying in form of an explicit increase in psychopathology as a result of developing victimization (all $p < .001$; second objective).

To test the postulated cumulative effect of ongoing bullying for a further year (third objective), the difference between the parameter *interaction for both years* and *victimization last year* was compared, showing a cumulative effect only for HRQL ($p = .025$) and total difficulties ($p = .034$), but not for specific mental health problems (all $p > .117$).

In order to improve visibility of the findings, three exemplary trajectories shall be presented graphically for all of the outcome variables (see Figure 1). These graphs (No-No-No displayed as a solid line, No-Yes-Yes displayed as a dashed line, and Yes-Yes-No displayed as a dotted line) show the estimated mean levels of each outcome variable and primarily illustrate the steep increase of psychopathology due to the onset of bullying (No-Yes-Yes). Second, if we look at the trajectory pattern of Yes-Yes-No, an ongoing effect of bullying even after the termination of bullying victimization becomes apparent. Although psychopathology significantly decreased by termination of bullying, it does not return to the baseline levels at t2. This means that the growth of psychopathology associated with the onset of bullying was significantly steeper than its decline associated with the termination of bullying. Finally, the apparent increase between t1 and t2 within the trajectory No-Yes-Yes was not significant for most mental health problems, implying that during this period of two years no cumulative effect of ongoing victimization was detectable (except for total difficulties and HRQL).

The final check for a possible bias caused by the exclusion of assessments that could not be assigned to a repeated measurement of the same pupil revealed several significant differences between the included and excluded assessments. Differences could be found according to gender (for boys OR = 0.53; 95%CI = 0.49–0.57; $p < .001$), emotional problems (OR = 1.13; 95%CI = 1.10–1.16; $p < .001$), total difficulties (OR = 0.94; 95%CI = 0.93–0.95; $p < .001$), HRQL (OR = 1.01; 95%CI = 1.01–1.02; $p < .001$), and suicide attempts (for yes OR = 0.67; 95%CI = 0.55–0.81; $p < .001$). Although significant, most of these differences are relatively small and therefore certainly negligible (mean emotional problems: 2.75 vs.

Table 2 Estimated regression coefficients for the fixed effects of the Latent Growth Curve Models (LGCMs) for emotional symptoms, total difficulties, HRQL, suicidality, and NSSI ($N = 11{,}709$)

	Coef.	*p*	95%CI
Emotional symptoms			
Time	0.07	<.001	0.03–0.11
Victimization last year	0.75	<.001	0.58–0.91
Victimization this year	1.63	<.001	1.45–1.81
Interaction for both years	−0.58	<.001	−0.90–−0.26
Gender boys	−1.40	<.001	−1.51–−1.30
Total difficulties			
Time	0.14	.001	0.06–0.23
Victimization last year	2.13	<.001	1.78–2.49
Victimization this year	4.26	<.001	3.87–4.64
Interaction for both years	−1.48	<.001	−2.17–−0.80
Gender boys	−1.19	<.001	−1.42–−0.95
HRQL			
Time	−0.58	<.001	−0.77–−0.39
Victimization last year	−3.46	<.001	−4.25–−2.68
Victimization this year	−6.76	<.001	−7.61–−5.92
Interaction for both years	1.94	.013	0.41–3.46
Gender boys	3.47	<.001	2.99–3.96
	OR	***p***	**95%CI**
Suicidal ideation			
Time	1.15	.005	1.04–1.27
Victimization last year	2.95	<.001	2.12–4.11
Victimization this year	7.60	<.001	5.41–10.68
Interaction for both years	0.50	.022	0.28–0.90
Gender boys	0.46	<.001	0.37–0.56
Suicide attempt			
Time	1.21	.018	1.03–1.41
Victimization last year	2.82	<.001	1.74–4.57
Victimization this year	10.35	<.001	6.83–15.68
Interaction for both years	0.26	.001	0.12–0.56
Gender boys	0.84	.209	0.63–1.11
NSSI			
Time	1.02	.632	0.93–1.12
Victimization last year	2.71	<.001	1.97–3.72
Victimization this year	5.52	<.001	4.00–7.62
Interaction for both years	0.43	.004	0.24–0.76
Gender boys	0.61	<.001	0.50–0.74

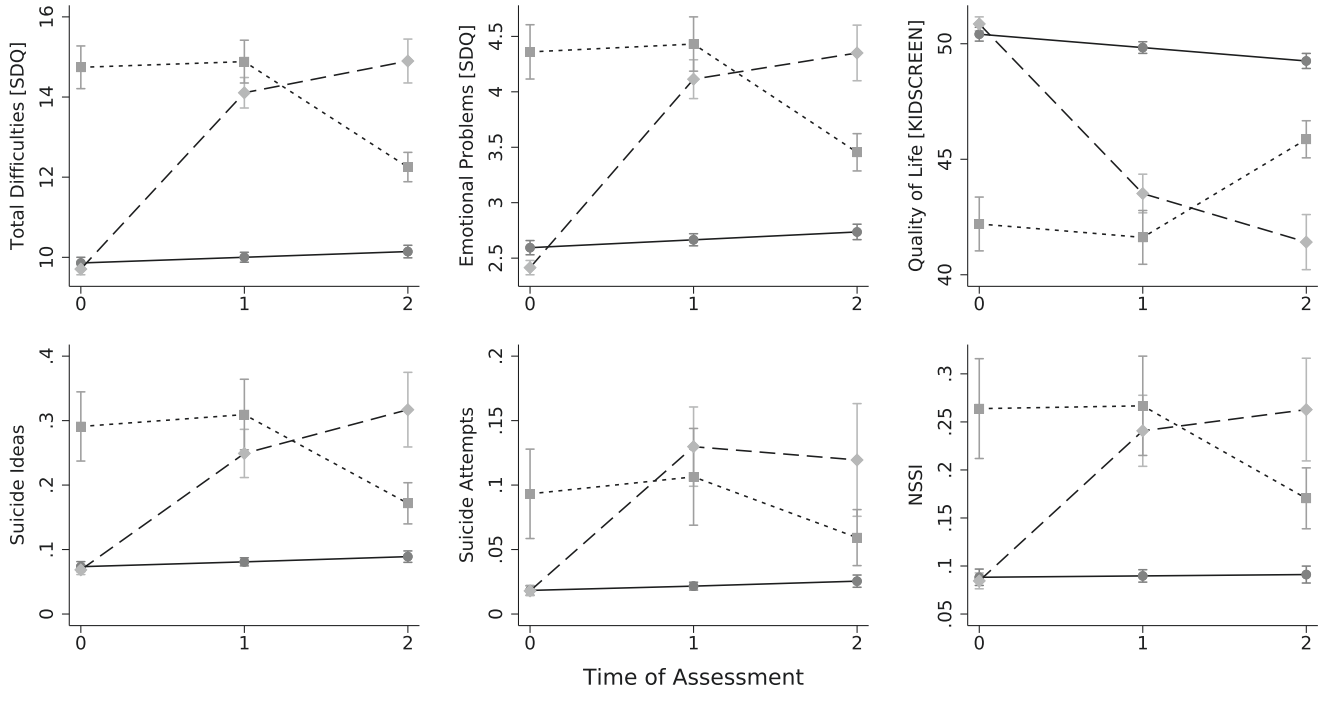

Figure 1 Trajectories of marginal means of the Latent Growth Curve Models (LGCMs) for some exemplary patterns of bullying victimization visualize the effect of bullying on the slopes of the LGCMs. No-No-No: solid line, No-Yes-Yes: dashed line, Yes-Yes-No: dotted line

2.68; mean total difficulties 10.30 vs. 11.27; mean HRQL 49.40 vs. 47.82). The only meaningful difference might be those in suicide attempts, which indicates a slightly lower strain in our sample than in the original study population (2.93% vs. 5.20%). Proportionally, more girls could be found in our sample indicating a gender bias. To test if this bias had an influence on the estimation of the effect of bullying on psychopathology, all LGCMs were re-estimated with gender as a moderator of this effect. All likelihood-ratio tests of the moderator effect of gender were nonsignificant (all $p \geq 0.16$). A possible confounding could thus be ruled out.

Discussion

To the best of our knowledge, our study is the first to bring up an important new aspect concerning the relationship between bullying and psychosocial consequences. First of all, the termination or decrease of bullying leads to a decrease of mental health problems as well to an increase in HRQL within one year. But even after termination of experienced bullying victimization during a bullying prevention program, individuals lacked full recovery from mental health problems and presented with ongoing reduction of quality of life.

Interestingly, we did not observe a decline in psychopathology despite successful implementation of bullying prevention (Ossa et al., 2020). While bullying declined from 8.00% to 5.11% within two years, the observed level of emotional problems, total difficulties, non-suicidal self-injury, and suicidality remained relatively stable. These findings may occur due to two reasons: First, the effect within the bullying group is not transferable to the entire study population. The pattern No-No-No, implying no bullying victimization at any time of measurement, was by far the largest proportion of our sample (87.6%), and no decrease of adverse outcomes through bullying prevention could be expected in this group. Thus, the mean trajectories of mental health problems are determined by a large group without bullying. Second, the longitudinal effect of bullying prevention may be confounded by the well-known effect of age on the development of psychopathology during early and midadolescence (Costello, Copeland, & Angold, 2011; Hawton, Saunders, & O'Connor, 2012). Due to the lack of a normative control group (without bullying prevention), we cannot rule out that the observed stability of mental health problems is in line with successful bullying prevention.

Second, our data clearly show that onset of bullying is associated with a distinct increase in psychopathology, expressed by clearly elevated means or odds ratios for emotional problems, total difficulties, suicidal ideation, suicide attempts, and NSSI as well as a decrease in means of HRQL. This relationship underpins the harmful potential of bullying and is also in line with numerous previous large-scale studies and meta-analyses (Moore et al., 2017; Takizawa et al., 2014). Several researchers (Book, Volk, & Hosker, 2012; Hawley, 2015; Rodkin, Espelage, & Hanish, 2015) have noted that bullying perpetration can be adaptive, in the sense that

bullying others helps to maintain one's social position. It might therefore be plausible that being victimized is only detrimental if there is not subsequent perpetration. To check this assumption, we tested if controlling for bullying perpetration impacts the relationship of victimization to psychological outcomes, but the fact that a victim was also a perpetrator did not change the impact of victim status on its negative consequences.

The third important aim of our study was the investigation of potential effects of long-term bullying. The postulated additive effect could only be shown for HRQL and total difficulties, but not for specific mental health problems such as emotional problems, suicidality, or NSSI. This partly contradicts previous studies where chronic victimization of any type increased the likelihood for later depression compared with sporadic and no-victimization (Klomek et al., 2019). Further studies may be needed to finally clarify this issue. In these, also the frequency of bullying should be considered, assuming a possible dose-response-effect in which the more frequent the victimization, the higher the risk for adverse outcomes (Moore et al., 2017).

In summary, our LGCMs clearly show that the adverse psychosocial consequences of bullying arise quickly but seem to reduce much slower and partly persist over time. Future long-term studies are necessary to clarify if mental health problems will return to baseline after several years or if residual symptoms will remain. In the latter case, former victims of bullying certainly represent an important target group for therapeutic interventions to fully recover from their harmful experiences. Unfortunately, specific therapeutic concepts are rare and it is largely unknown to date which ones proof to be effective (Hess, Wirtz, Allroggen, & Scheithauer, 2017).

Underlying mechanisms between bullying and development of psychopathology

Potential mechanisms for explaining the endurance of mental health problems among bullied children can be divided into physiological and psychological mechanisms. Into the physiological segment, response to stress is a well-documented reaction among bullied children or children who experienced other forms of maltreatment. Changes in biological stress response systems such as the hypothalamic–pituitary–adrenal axis (HPAA) may alter victims' stress reactivity. Since development of HPAA functioning is influenced by contextual factors, exposure to stress and interpersonal trauma have the potential to interfere with its normative development during adolescence. Such atypical development may, in turn, reduce an individual's capacity to respond to stress leading to an increased risk for a variety of stress-related disorders like depression or NSSI (Roberts & Lopez-Duran, 2019). As an example, Ouellet-Morin et al. (2011) showed a blunted cortisol reactivity among bullied children, and Vaillancourt et al. (2008) reported that peer victimization has been linked to lower levels of both diurnal and reactive cortisol. In addition, being victimized has even been shown to affect telomere length of linear chromosomes, a very new and innovative biomarker of stress (Shalev et al., 2013). Evidence for a gene × environment interaction by variation in the serotonin transporter gene of victims of bullying has also been demonstrated (Karg, Burmeister, Shedden, & Sen, 2011), as well as neurobiological (Anda et al., 2006) or inflammatory (Copeland et al., 2014) changes in maltreated or bullied children. Finally, few neuroimaging studies have examined the underlying neural mechanisms associated with victimization (e.g. Eisenberger, 2012).

Besides, several social-cognitive mechanisms of explanation seem to mediate the long-lasting relationship between bullying and mental health problems. Dysregulation in the cognitive and emotional systems may be based on an inability to perform systematic coping strategies (e.g. problem solving) or to inhibit involuntary responses in the face of social stress. Furthermore, the experience of bullying could lead to a bias in the way children perceive their interpersonal environment. Victims may wrongly attribute reasons for negative events to themselves and generalize these cognitive biases on numerous situations in their lives. Victimized students were more likely to assign attributions for bullying that were internal and uncontrollable and this elevated self-blame increased the severity of internal problems (Perren, Ettekal, & Ladd, 2013). Eventually, bullying victimization could lead to further abuse from peers or adults, ending in a universal long-term cycle of victimization. Past studies have shown that minor victims of violence are at increased risk of revictimization of this kind and also of other forms of violence (Finkelhor, Ormrod, & Turner, 2007). This persistent victimization can prevent individuals from developing positive social skills.

Strengths, limitations, and future directions

This study had a number of strengths including the longitudinal design that comprised two years of development, the large sample size as well as the use of LGCMs for the statistical analyses. The interventional design (implementation of the OBPP) represents another advantage and supports the assumption that changes in psychological adjustment were indeed caused by onset or offset of bullying, respectively. However, despite the fact that a controlled intervention provides stronger evidence, only an RCT design would ultimately prove the direction of the effect and therefore permit causal attributions. Further limitations need to be acknowledged. First, our data come from students' self-reports only, and

other sources of information, such as clinical interviews for the assessment of depression, NSSI, and suicidal behavior should be included in future studies. In addition, a more valid recording of bullying through the additional use of observed behavior methods or teacher ratings would be desirable. Mere self-reports contain a further subjective component, which may result in an over- as well as underestimation of bullying frequencies. Bullying interventions may alter how individuals perceive social behaviors and might increase the salience of bullying and victimization. A good example of this was shown in Frey, Hirschstein, Edstrom, and Snell (2009), where informer reports showed decreased playground bullying after an intervention in grades 3–5, but participants actually reported increased bullying prevalence. It is therefore possible that an overreliance on self-reported data in the past has contributed to discouraging intervention results. Second, the impact of peer victimization is not the same for everyone. Therefore, further attention needs to be paid to factors that increase the risk for developing adverse consequences or protect against them, respectively. Looking at the risk and protective factors that moderate and/or mediate the relationship between the experience of victimization in childhood and psychological adjustment over time, Ttofi, Bowes, Farrington, and Lösel (2014) identified (a) individual factors such as social and cognitive skills, (b) family factors such as stability and positive relationships, and (c) social support via friendships as significant protective factors. The effect of victimization is not the same for everyone.

Conclusion

Bullying is a form of peer-to-peer maltreatment or as Zwierzynska, Wolke, and Lereya (2013) expressed, "...a trauma that works itself under the skin" (p. 318). The distress and suffering caused by school-based bullying is immense and long-lasting. Due to permanent changes in the victims´ physiological, social-cognitive, and emotional systems, these problems seem to be enduring and might outlast the actual harmful experience over an extended timespan. For this reason, the developed difficulties do not simply vanish with offset of bullying, but do persist over a longer period of time. In addition to preventive efforts, our findings suggest that tailored intervention measures, addressing mental health disturbances among victimized children, are needed. Not only may this stop children's present hardship, it may also help to prevent long-lasting problems persisting to later adolescence or even adulthood. Given the fact that bullying is a highly stressful experience which provokes long-lasting changes in the physiological stress-systems, targeted interventions should also focus on improving the ways in which children and adolescents cope with emotional distress caused by being bullied. Besides, future research should continue to identify specific causal pathways leading from the onset of bullying to the development of psychopathology. These mechanisms could become appropriate matter for intervention programs aimed at undoing the effects of adverse bullying experiences.

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Informed consent and ethics approval

The study was appraised and approved by the ethics committee of the faculty of medicine at the University of Heidelberg and the respective school authorities. All research meets these ethical guidelines, including adherence to the German legal requirements. Informed consent has been appropriately obtained.

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Key points

- Within a controlled intervention design, the longitudinal association between bullying, health- related quality of life (HRQL), and mental health problems was explored.

- Latent growth curve models (LGCMs) revealed that termination or decrease of bullying leads to a decrease of mental health problems as well to an increase in HRQL within one year. Conversely, onset of bullying is associated with a distinct increase in psychopathology as well as a decrease of HRQL.
- Interestingly, affected individuals lacked full recovery from mental health problems after termination of experienced victimization and continue to show increased strain.
- Future long-term studies are necessary to clarify if mental health problems will return to baseline after several years or if residual symptoms will remain.

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