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Why Do Students Become Cyberbullies? Elucidating the Contributions of Specific Developmental Risks to Cyberbullying

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Abstract: Cyberbullying is currently considered as a widespread problem among children and adolescents; in particular, the risks of cyberbullying have recently been examined. The empirical analyses of the present work are based on data from a German longitudinal study. The self-reports of adolescents from Dortmund and Nuremberg on both cyberbullying and individual and contextual characteristics were taken into account. The two-wave panel encompasses N = 871 adolescents (44.5% male); the average age was M = 15.1 years (SD = 0.83) at t1. Data on cyberbullying refer to sending insults or threats to others via the Internet, spreading rumours or talking badly about others via the Internet, and sending private e-mails, photos or similar from others in order to embarrass or ridicule the persons concerned. Other characteristics relate to single aspects of psychopathy (*egocentric egotism*, *low self-control*, empathy deficits), acceptance of violence, and delinquent peers. The path analytical findings illustrate the predictive relationships between both individual and contextual risks and cyberbullying in adolescence. The empirical results are discussed, among others, from the perspective of developmental and life-course criminology.

Keywords: cyberbullying; risk; psychopathic traits; longitudinal study; school-based survey

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1. Introduction

Along with the rapid increase, frequent use, and wide dissemination of modern technologies, with cyberbullying, a new type of bullying among children and adolescents has emerged. Cyberbullying refers to "(. . .) bullying via electronic forms of contact or communication—such as emails, mobile, chat room, instant messaging, websites (. . .)" [1] (p. 139). Considering the relation between age and cyberbullying, children are more likely to be involved in cyberbullying through online games, whereas adolescents are mainly burdened by cyberbullying through social networking sites (see a narrative review on a developmental approach to cyberbullying conducted by [2]). Since cyberbullying is currently considered a widespread problem across different age groups, recently, the risks for cyberbullying have been increasingly studied (e.g., [3]), with a focus on psychopathic traits (e.g., [4]), among others. The research on risks for cyberbullying outcomes is important in the context of prevention and intervention (e.g., [5]; see further [6] for a systematic and meta-analytical review of the effectiveness of cyberbullying intervention and prevention programs).

In general, regarding psychopathic traits, callous-unemotional (CU) traits, impulsivity, and narcissism are emphasized (see [7,8]). Recent criminological literature increasingly points to the need for a combined consideration of different psychopathic traits (e.g., cf. [9,10]); therefore, these traits in combination are significant in predicting various antisocial behaviors. For example, ref. [11] stressed the importance of CU traits, impulsive traits, and grandiosity (narcissism) traits for antisocial outcomes in early adolescence. Especially CU traits are important facets of psychopathy that are associated with severe

and/or persistent antisocial behavior (e.g., [12,13]; see further [14–16]) and that are focused in numerous criminological studies on different antisocial outcomes (e.g., see [17–20]). Because psychopathic characteristics may be linked to different antisocial behaviors as early as childhood and adolescence, a greater integration of the psychopathy concept into developmental and life-course criminology is strongly recommended (e.g., [21]; see also [15,22]).

Specifically, concerning cyberbullying, low empathy is a frequently reported risk factor (e.g., cf. [4,23], for a critical review and meta-analysis of cyberbullying research among youth). Relatedly, according to a systematic review and meta-analysis, cyberbullying perpetration was found to be associated with low empathy [24]. *Low self-control* is also connected with cyberbullying (e.g., cf. [3], for a narrative review; [25]). Related to this, comparable as with antisocial behaviors, *low self-control* can have an impact on cyberbullying in adolescence (e.g., see [26]). Narcicissm, another psychopathic trait, might also be linked to cyberbullying (e.g., cf. [27]). Furthermore, developmental-criminological research provides evidence that individual psychopathic traits can be associated with contextual developmental risks such as having deviant peer contacts (e.g., cf. [28–32]). Negative peer influence, in turn, is a risk for cyberbullying perpetration (e.g., cf. [3]). Moreover, developmental-criminological research on the emergence of antisocial behavior and well-known risk factor research considers both widely accepted individual (psychopathic) risks, for example, *low self-control*, and more behavior-related risks, such as having deviant beliefs (e.g., see [33]; see further [34,35]). Furthermore, research suggests that a lack of moral values and a lack of moral emotions constitute important predictors of cyberbullying (e.g., [36]). Hence, cyberbullies are characterized by normative beliefs about aggression (see [23]). However, the relatively rich body of literature on the predictive relationships between attitudinal and peer-related risk factors and later cyberbullying (e.g., see [3]) will not be further addressed here.

In the current study, the longitudinal associations between different risk variables and cyberbullying in adolescence are focused. Specifically, based on the literature summarized above, displaying developmental-criminological findings, the following core research questions were derived. First, individual risks concerning different facets of psychopathy in adolescence (t1), i.e., *egocentric egotism*, *low self-control*, and empathy deficits, are associated with behavior-related risks in adolescence, i.e., acceptance of violence and having delinquent peers (t1). Second, cyberbullying (t2) is the outcome of the acceptance of violence and having delinquent peers in adolescence (t1). Against this background, a developmental path model is tested, exploring the emergence of cyberbullying in an adolescent age cohort. Importantly, our model also includes a direct path from the strongly behavior-related predictor *low self-control* (t1) to cyberbullying (t2), supporting the developmental-criminological findings sketched above. In a nutshell, the general objective of the current study is to elucidate the associations between specific developmental risks and adolescent cyberbullying. The outlined research questions are illustrated in detail by the underlying path model (see Figure 1). The approach taken in the present study is a strictly confirmatory approach [37].

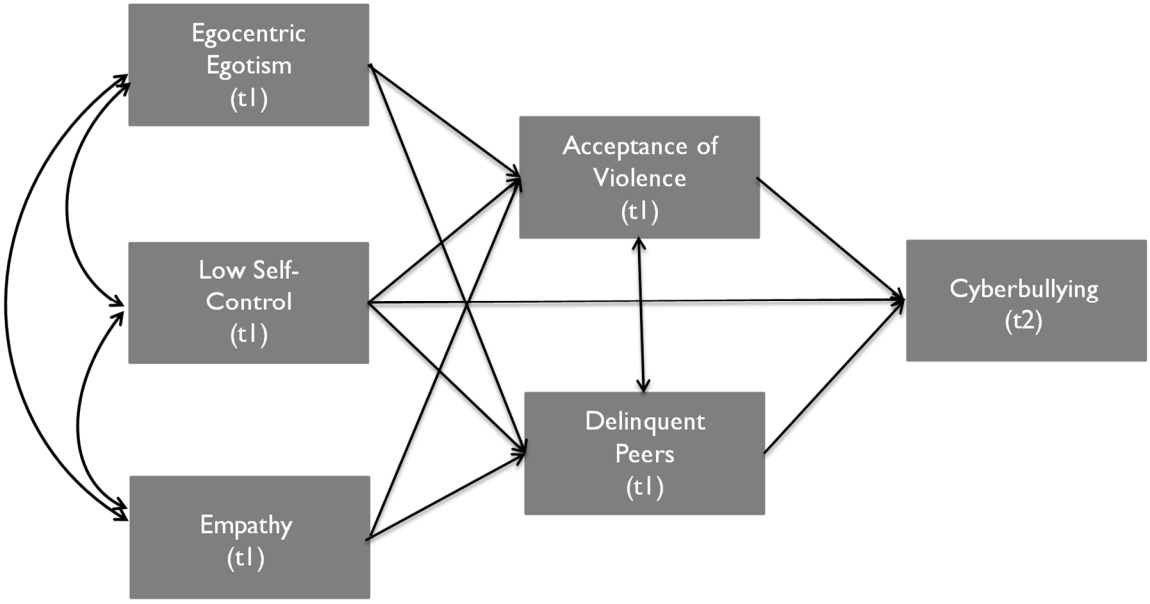

Figure 1. Underlying developmental path model for the youth cohort illustrating the derived hypotheses.

2. Methods

2.1. Research Project

The current work is based on the research project "Chances and Risks in the Life Course" (CURL; research project A2 "The Emergence and Development of Deviant and Delinquent Behavior over the Life Course and its Significance for Processes of Social Inequality"; e.g., [38–40]). This project is part of the Collaborative Research Center ("Sonderforschungsbereich", SFB) "From Heterogeneities to Inequalities" (SFB 882) that was established at Bielefeld University, Germany, in 2011 and that was funded by the German Research Foundation (DFG). The longitudinal investigation of the relations among deviant and delinquent behavior and meaningful precursors is crucial. The data of our research project are based on self-reports of male and female students who were interviewed once a year as part of school-based and postal surveys [41]. Only students who had parental consent were allowed to participate in the research project.

2.2. Sample

The longitudinal sample comprises male and female students participating in our study at the first and second assessment point (i.e., t1: 9th grade, t2: 10th grade). The timespan between the two measurement points was one year. This two-wave panel encompasses N = 871 adolescents. The average age was 15.1 years at t1. Participating students were assessed at the two German cities of Nuremberg and Dortmund. The Nuremberg sample is composed of students from lower-track schools, whereas the Dortmund sample covers a broader range of school types. Overall, about 46% (n = 399) of the students visited a lower-track school; nearly 56% (n = 484) of the sample have a migration background (t1; see Table 1). In general, definitions of migration background are quite different. Here, we apply to the broad definition of "migration background" utilized by the Federal Statistical Office (Destatis, Germany; [42]). According to this definition, those persons have a migration background who immigrated to Germany after 1949, as well as all persons born in Germany without German citizenship and all persons born in Germany with German citizenship with at least one parent who is an immigrant or born in Germany without a German passport. Importantly, due to the heterogeneity of our sample, limitations relating to the interpretability of the results have to be taken into account. Further details concerning the specific sample composition can be obtained from [41]. For information on panel mortality in our longitudinal study, see [43].

Table 1. Participant characteristics of the youth cohort (t1–t2, two-wave panel, $N = 871$).

Category	Descriptive Statistics
Age: years; *M* (*SD*)	15.10 (0.83)
Gender: male; % (*n*)	44.5 (388)
Migration background: yes; % (*n*)	55.6 (484)
School type: lower track school; % (*n*)	45.8 (399)

Notes. Descriptive statistics refer to t1.

2.3. Measures

2.3.1. Egocentric Egotism

The scale *Egocentric Egotism* from the PFK 9-14 ("Persönlichkeitsfragebogen für Kinder zwischen 9 und 14 Jahren"; [44]), a personality questionnaire for children between 9 and 14 years, was applied so that narcissistic personality facets could also be considered. *Egocentric egotism* is understood as a person's self-image of being better than other people. In the current study (at t1), an adapted version comprising six statements had to be answered with *true* or *not true*. Items refer to self-appreciation, self-overestimation, and self-embellishment (e.g., "My opinion is often more correct than the opinion of others"; cf. [45]). High scale values represent high levels of *egocentric egotism*. Although Cronbach's alpha was relatively low ($\alpha = 0.44$, 9th grade; [46]), we utilized this scale because of its high face validity.

2.3.2. Low Self-Control

Items relating to *Low Self-Control* were based on the German version of the Grasmick Scale ([47]; German version: [48]). At t1, we applied 10 items from the 5-point subscales *Risk Behavior*, *Impulsivity*, *Temper*, and *Simple Tasks* ranging from *strongly disagree* through *strongly agree*. Item examples are as follows: "I never think about what will happen to me in the future", "Sometimes I will take a risk just for the fun of it" (cf. [45]). In the current work, high scale values indicate low levels of self-control. Cronbach's alpha was satisfactory ($\alpha = 0.75$, 9th grade; cf. [46]).

2.3.3. Empathy

We employed a measure of empathy from a personality questionnaire called FEPAA ("Fragebogen zur Erfassung von Empathie, Prosozialität, Aggressionsbereitschaft und aggressivem Verhalten"; [49]; cf. [50]). This questionnaire is designed to assess empathy, prosocial behavior, disposition for aggression, and aggressive behavior. Considering a *low level of empathy* (i.e., empathy deficits) as a single aspect of callous-unemotional traits, eight dichotomous items from the subscale *Empathy* were used in the current work (t1), which were derived from four vignettes (cf. [45]). Participants had to answer questions on certain situations assessing the thoughts and feelings of peers (e.g., "The following questions ask about how you assess certain everyday situations. Please mark with a cross how you assess the thoughts and feelings of peers and how you would act: 'Felix has a new mobile phone. He shows it to his friend Lukas. Lukas would like to try it out. When Lukas takes the mobile, he stumbles. The mobile falls to the floor and is scratched. How does Felix feel when he sees that his mobile phone is scratched? How does Lukas feel?'"). Importantly, in the current work, high values relate to high levels of empathy. Restrictively, internal consistency (Cronbach's alpha) of this scale is relatively low: $\alpha = 0.28$ (9th grade, cf. [46]), however, the measure seemed to be useful because of its high content validity.

2.3.4. Acceptance of Violence

Acceptance of violence was assessed utilizing a measure from the CrimoC study ([51]; see [52]), which comprises nine items in a five-point rating format (t1). Items range from *does not apply at all* through *does definitely apply* (e.g., "When another person attacks me physically, then I fight back"). Emphasizing the relatedness to the behavior, according

to [52], the acceptance of violence is strongly positively associated with self-reported violent behavior in adolescents. High scale values indicate high levels of acceptance of violence. Further information on this measure can be obtained from [45]. Cronbach's alpha was satisfactory ($\alpha = 0.76$, 9th grade; [46]).

2.3.5. Delinquent Peers

A measure according to the CrimoC study (e.g., see [51]) and PADS+ (Peterborough Adolescent and Young Adult Development Study; e.g., see [53]) was utilized in order to operationalize the deviant and delinquent behavior of peers (at t1). According to the PADS+ scale *Peer Crime Involvement* and CrimoC delinquency items, the measure is related to peer delinquency (e.g., burglary) and peer deviance (drug use; cf. [45]). Seven items refer to the frequencies of committing different delinquent and deviant acts. The five-point rating format ranges from *never* through *very often*. Participating students had to answer the question how often it happened that some of their friends committed the specified delinquent and deviant acts. Item examples are as follows: "Does it often happen that some of your friends beat someone?", "Does it often happen that some of your friends use drugs?". High scale values represent high levels of delinquent peers. Cronbach's alpha was acceptable, i.e., $\alpha = 0.85$ (9th grade; cf. [46]).

2.3.6. Cyberbullying

Several self-reports on cyberbullying were taken into account (at t2). Three single items were developed in our research project following the work of [54–56]. These items include behaviors that are not generally relevant in a criminal law context. The introductory question was: "Have you ever done the following things?". In detail, the following questions were then asked, which could be answered with *yes* or *no*: "Have you ever sent insults or threats to another person via the internet?", "Have you ever spread rumours about others or talked badly about others via the internet?", "Have you ever sent private e-mails, photos or similar from others in order to embarrass or ridicule them?". Based on the answers to the three questions, we formed a sum score for each participating student that could take values between 0 and 3. Therefore, high values of the corresponding categorical variable indicate high levels of cyberbullying in adolescence.

3. Results

In line with the empirical analyses of the present work, we integrated the described aspects combining developmental risks and a cyberbullying measure. Hence, different individual and contextual variables (t1) were considered estimating a developmental path model that was tested for its power of investigating the emergence of later cyberbullying (t2) in a youth cohort. Specifically, in the following, empirical results referring to the contributions of *egocentric egotism*, *low self-control*, empathy, acceptance of violence and delinquent peers to the development of cyberbullying in adolescence are presented.

Data were modeled using a path model in the software program Mplus version 8.2 (Mplus user's guide: [57]). A path analysis with categorically dependent variables was applied. Dependent variables can be binary and/or ordered categorical (ordinal) variables [57]. Analyses were conducted using a robust weighted least square estimator (WLSMV, "weighted least square parameter estimates using a diagonal weight matrix with standard errors and mean- and variance-adjusted chi-square test statistic that use a full weight matrix", ref. [57], p. 668). The model fit was assessed utilizing Model Chi-Square, Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), and Comparative Fit Index (CFI). The path model was estimated utilizing the Mplus default Full Information Maximum Likelihood (FIML). Additionally conducted alternative analyses referring to the relatively strict option listwise deletion of cases and providing a general consolidation of our results are not presented here, as well as cross-sectional analyses (t1).

A path model for the youth cohort of $N = 871$ (t1–t2, two-wave panel; see methods section) was estimated (see Figure 2): Relating to the longitudinal results, cyberbullying at t2 seems to be the outcome of having delinquent peers at t1 ($\beta = 0.19$, $p < 0.001$). The results indicate that acceptance of violence increases the risk of later cyberbullying ($\beta = 0.11$, $p < 0.05$). A positive correlational relationship between having delinquent peers and the acceptance of violence is identified; the corresponding beta is 0.25, attaining statistical significance ($p < 0.001$). Moreover, there is a positive effect of *low self-control* on cyberbullying one year later (i.e., $\beta = 0.17$, $p < 0.01$) and a positive effect of *low self-control* on both acceptance of violence ($\beta = 0.40$, $p < 0.001$) and delinquent peers ($\beta = 0.33$, $p < 0.001$) at t1. *Egocentric egotism* at t1 increases the risk for both having delinquent peers ($\beta = 0.18$, $p < 0.001$) and acceptance of violence ($\beta = 0.17$, $p < 0.001$). Negative regression relationships between empathy and both acceptance of violence ($\beta = -0.13$, $p < 0.001$) and delinquent peers ($\beta = -.12$, $p < 0.001$) are observed (t1). Therefore, high levels of acceptance of violence and delinquent peers are regressed on low levels of empathy. Analyses revealed a positive correlational relationship between *egocentric egotism* and *low self-control* ($\beta = 0.26$, $p < 0.001$). Furthermore, results also show negative correlational relationships between empathy and both *egocentric egotism* ($\beta = -0.11$, $p < 0.001$) and *low self-control* ($\beta = -0.13$, $p < 0.001$).

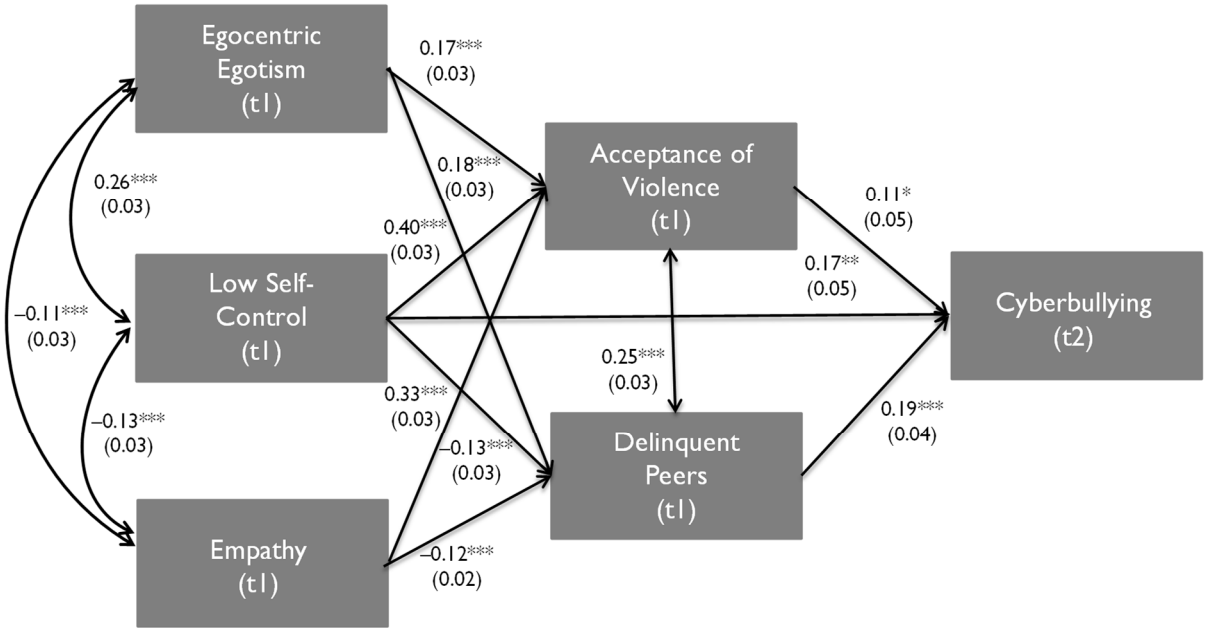

Figure 2. Developmental path model for the youth cohort (t1–t2, two-wave panel). * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

In the current work, the RMSEA value of 0.033 (90%-CI = [0.000; 0.082]) refers to a close fit, therefore, the model fit is excellent. In general, RMSEA is bounded below by zero; a value of about 0.05 or less indicates a close fit [58]. Ref. [59] recommended a cut-off value close to 0.06. Referring to the relevant literature in this area, ref. [60] considered values less than 0.05 as indicative of close fit and values above 0.10 as indicative of poor fit; values between 0.05 and 0.08 indicate fair fit, and values in the range of 0.08 to 0.10 indicate mediocre fit. Values for well-fitting models should be less than 0.08 (e.g., see [61] for an overview). Concerning our research, the additional fit statistics for the developmental path model are the following: $\chi^2 = 3.931$ (df = 2), $p = 0.1401$; SRMR = 0.014; CFI = 0.997.

4. Discussion

The present work contributes several findings to the literature on the development of cyberbullying in adolescence. Overall, our empirical results are in accordance with international developmental-criminological research on cyberbullying, confirming the assumption that both individual risks, also comprising psychopathic traits, and contextual risks in

combination are leading to the development of later cyberbullying in adolescence. Comparing our results with the results of other empirical studies, certain similarities emerge. Generally, the developmental-criminological literature outlined above (see introduction) indicates that single facets of psychopathy are associated with negative peer influence and normative beliefs about aggression and deviant beliefs, respectively (e.g., see [32,33]). Our empirical findings display a positive association between the acceptance of violence and having delinquent peers, providing evidence for a relatively strong cross-sectional connection between the mentioned variables. Specifically, our findings suggest that psychopathic personality facets in adolescence are associated with delinquent peer contacts and violence-accepting attitudes. Relatively strong, cross-sectional relations between psychopathic traits and acceptance of violence along with clear cross-sectional relationships between psychopathic traits and having delinquent peers highlight the potential importance of individual characteristics regarding psychopathy for the strongly behavior-related variables acceptance of violence and delinquent peers. Hence, relating to our study, the single individual characteristics might increase the risk for both socializing with delinquent peers and having violence-accepting attitudes and subsequently might increase the risk of cyberbullying, whereas *low self-control* seems to be of particular relevance. Since the developmental-criminological literature provides evidence that, comparable with antisocial behaviors, low levels of self-control can impact cyberbullying in adolescence (e.g., see [26]), we utilized this predictor, longitudinally capturing a single aspect of strongly behavior-related psychopathy traits for later adolescent cyberbullying. Referring to our results, cyberbullying appears to be the outcome of the acceptance of violence and having delinquent peers, i.e., it is also likely that the level of violence-accepting attitudes and the frequency of delinquent peer contacts have implications for later cyberbullying. Overall, these results are in accordance with the literature in this research field (e.g., see [3]). Incidentally, there are substantial correlational associations between the single psychopathic traits at t1, underlining the usefulness of a combined consideration of the different facets. Overall, our path model based on the mentioned crucial characteristics showed an excellent fit, providing evidence that the model fits the adolescent cohort data closely. However, against this background, developmental path models contributing to the explanation of cyberbullying in adolescence have to be refined continuously in the context of additional longitudinal studies.

The results of the current work need to be interpreted with its strengths and limitations in mind. Initially, the general limitations of the current study should be mentioned. Restrictively, the length of follow-up (i.e., one year) is not adequate to allow for extensive conclusions, so that further longer-term and more detailed analyses are necessarily required. In general—against the background of developmental and life-course criminology (e.g., cf. [62])—(first) further longitudinal evaluations for longer prediction periods are indicated, whereby the developmental context should be included, and (second) the change in antisocial behavior over time relating to the developmental course has to be considered (e.g., cf. [63]; see, for example, ref. [64] for more empirical work on this topic). Hence, specifically, additional analyses should consider data concerning (early, middle, and/or late) childhood to improve statements concerning the developmental course of cyberbullying, i.e., future studies might capture data relating to the childhood period, enabling more comprehensive results concerning the emergence of cyberbullying earlier in the life-course. Concerning our results, the relatively short time span examined should also be noted, especially with regard to the consequences of cyberbullying (see below). In general, relations between cyberbullying and risk variables might vary depending on the selected outcome measure. We utilized the number of cyberbullying acts, i.e., a sum score, as the outcome measure; however, different outcome measures of cyberbullying relate to, for example, cyberbullying frequency and should be focused by future work. Empirical analyses utilizing more comprehensive cyberbullying measures might also be useful to enhance clarity, i.e., data on, for example, serious, persistent cyberbullying and combined bullying and cyberbullying might be also relevant. Age-specific outcome measures (see introduction) and related out-

come measures, for example, cyberhate, should be also studied in future work. Therefore, empirical studies should also investigate the predictors of cyberbullying for different ages within the framework of developmental criminology. Moreover, additional and/or different risk variables could have been utilized as independent variables. Limitations relating to the selected measures have to be considered, however, the justification for the variables chosen is based on theory (see introduction). Nonetheless, further analyses should take into account, for example, more specific psychopathy characteristics, as well as other contextual predictors, e.g., family risks or parenting deficits, that have to be incorporated in more differentiated analyses. Therefore, the utilized variables provide just a small selection of possible predictors of cyberbullying, so that not all relevant aspects could be considered in the present work. In conclusion, further studies on cyberbullying in adolescence should take into account both more individual and more contextual/environmental characteristics to increase the explained variable. It seems important to note that the independent variables *acceptance of violence* and *delinquent peers* are strongly behavior-related, i.e., both predictors capture antisocial behavior facets (see measures section), therefore, partly similar information is captured in independent and outcome measures. Moreover, protective factors should also be focused on in future work (e.g., cf. [65]); correspondingly, including protective factors would improve statements relating to possible flexibility in development considering processes of resilience (e.g., see [66]). Specifically, concerning protective factors against bullying and cyberbullying, ref. [67] provided a systematic review of meta-analyses, providing findings which are useful to improve, for example, anti-bullying programs. Relatedly, research concerning prevention and intervention topics are of major importance, however, these topics are addressed elsewhere (e.g., see [68], for a review of characteristics, prevention, and intervention strategies relating to adolescent cyberbullying; see further [6]). Further limitations related to the independent variables *egocentric egotism* and *empathy* should be mentioned: The internal consistencies (Cronbach's alphas) of the rather short scales are relatively low (see measures section). When interpreting the results, it is essential to take this into account. Due to general constraints concerning available indicators for the predictors in our research study, more complex models comprising latent variables could not be implemented. Mechanisms of interaction of individual risks as well as contextual risks should also be investigated in more detail. In addition, various covariates should be included in the course of future analyses. Gender-specific analyses have already been carried out and the findings here were basically similar. In order to reduce the heterogeneity of our sample, further analyses should also consider information on, for example, school type, migration background, and/or socioeconomic status. Moreover, the specific sample composition of our study has to be taken into account. The Dortmund sample includes a broad range of school types, whereas the Nuremberg sample only comprises students from lower-track schools. Hence, restrictively, our sample comprises a high proportion of students from lower-track schools, so that—on the basis of these unweighted data—conclusions relating to the population are not possible (see methods section; cf. [69]). Another general limitation relates to the attrition in the sample of our longitudinal study. In general, we suppose that our findings are tolerably robust concerning dropout issues. However, despite the fact that we account our data relatively robust regarding the issue of dropout, these aspects have to be taken into account, even though their influence seems to be minor (see [43], for further details on panel mortality).

Finally, we briefly address the strengths of our research. Firstly, we should emphasize the longitudinal design of our work which enables the study of the development of cyberbullying over time. Relatedly, a strength of the present research is the use of a longitudinal sample of adolescents. Correspondingly, findings of a narrative review on a developmental approach to cyberbullying conducted by [2] suggest that more research utilizing a developmental perspective is urgently needed. Against this background, longitudinal studies should further investigate the risk (and protective) factors for cyberbullying, also taking into account the possibly devastating consequences of cyberbullying (e.g., see [70]). In addition, the relatively large sample of adolescents should also be emphasized, as well

as the point that we were able to draw on self-report data for all variables utilized. The last-mentioned aspect is particularly relevant with regard to the fact that individual characteristics and emotions in particular are often not (or only with certain difficulties) accessible to other persons and should therefore preferably be inquired via self-report. In general, the current study enhances our knowledge about the relevance of different predictors for later cyberbullying, focusing upon both individual and contextual variables. Specifically, the contributions of *egocentric egotism*, *low self-control*, empathy, acceptance of violence and delinquent peers to the development of cyberbullying in adolescence are clarified simultaneously, enhancing our knowledge about the complex conditions of the development of cyberbullying in adolescence. Correspondingly, we combined the mentioned aspects in one single developmental path model that was tested for its power investigating the emergence of later cyberbullying in a youth cohort.

In conclusion, the current study provides a contribution to the explanation of the associations between specific developmental risks and later cyberbullying. In particular, the results suggest that (first) individual psychopathic traits, i.e., *egocentric egotism*, *low self-control*, and empathy deficits, are related to the behavior-related risks *delinquent peers* and *acceptance of violence*, and (second) cyberbullying seems to be the outcome of the mentioned behavior-related variables, whereby the individual risk factor *low self-control* is also particularly important. Finally, our empirical findings should be beneficial for future developmental-criminological research on combined individual and contextual antecedents of cyberbullying in adolescence—contributing to answering the question of why students become cyberbullies; however, much remains to be elucidated in future work.

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Institutional Review Board Statement: The current study was conducted in accordance to the guidelines of the Declaration of Helsinki.

Informed Consent Statement: Informed consent was obtained from all study participants (parental consent). Authors gratefully acknowledge the cooperation of the students, their parents and schools participating in the research project.

Data Availability Statement: Data cannot be shared due to privacy issues (consent not given by participants/parents).

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