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Latent Profiles of Bully/Assistants and Associations with Empathy

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Abstract

Empathy is widely regarded as a critical socio-emotional skill for reducing bullying in schools. However, evidence from intervention studies suggests that empathy training in bullying prevention programs does not consistently reduce bullying behaviors, raising questions about the contexts in which empathy influences bullying dynamics. Previous correlational research has highlighted links between empathy deficits and increased bullying, as well as enhanced empathy and defender behaviors, but findings remain inconclusive regarding the roles of cognitive and affective empathy. Most studies adopt a variable-centered approach that examines average relationships across samples, obscuring how empathy dimensions and bullying behaviors co-occur within individuals and whether these configurations differ across students. A person-centred approach is necessary to identify distinct subgroups of students with different empathy-bullying profiles and to examine how these profiles evolve over time, potentially explaining inconsistent findings in the literature. This repeated measurement study utilizes latent profile analysis (LPA) to explore how cognitive empathy, affective empathy, and bullying behaviors intersect at two time points six months apart among 120 adolescents aged 10 to 16 from an inclusive educational setting, including students with and without special educational needs (SEN) in emotional and social development. Latent profiles identified distinct patterns of stability and change. While some students maintained low bullying and average empathy profiles, others transitioned from high bullying/low empathy profiles to profiles characterized by reduced bullying and improved empathy. This variability in profile stability over time suggests that empathy-bullying relationships are dynamic and heterogeneous rather than static and uniform across students. These findings highlight the value of person-centred approaches for revealing how empathy and bullying co-occur in distinct configurations within different subgroups of students. The existence of distinct profiles with different developmental trajectories suggests that school-based bullying prevention may benefit from differentiated approaches tailored to students' profile memberships rather than universal empathy training programs that assume homogeneous needs across all students.

Keywords: Bullying Perpetration, Empathy, longitudinal, latent profile analysis

Latente Profile von Bully-Assistenten und Zusammenhänge mit Empathie

Zusammenfassung

Empathie gilt weithin als eine zentrale sozio-emotionale Kompetenz zur Reduktion von Bullying in Schulen. Befunde aus Interventionsstudien zeigen jedoch, dass Empathietraining in Präventionsprogrammen Bullying nicht konsistent reduziert, was Fragen nach den Bedingungen aufwirft, unter denen Empathie die Bullying-Dynamik beeinflusst. Frühere Korrelationsstudien haben Zusammenhänge zwischen Empathiedefiziten und verstärktem Bullying sowie zwischen ausgeprägter Empathie und Verteidigungsverhalten aufgezeigt, jedoch bleiben die Befunde hinsichtlich der Rollen kognitiver und affektiver Empathie uneinheitlich. Die meisten Studien verwenden einen variablenzentrierten Ansatz, der durchschnittliche Zusammenhänge über Stichproben hinweg untersucht und dabei verdeckt, wie Empathiedimensionen und Bullying innerhalb von Individuen zusammen auftreten und ob diese Konfigurationen zwischen Schülerinnen und Schülern variieren. Ein personen-zentrierter Ansatz ist notwendig, um distinkte Teilgruppen mit unterschiedlichen Empathie-Bullying-Profilen zu identifizieren und zu untersuchen, wie sich diese Profile im Zeitverlauf entwickeln, was möglicherweise die inkonsistenten Befunde in der Literatur erklären kann. Diese Studie mit Mehrfachmessung nutzt latente Profilanalyse (LPA), um zu untersuchen, wie kognitive Empathie, affektive Empathie und Bullying zu zwei Messzeitpunkten im Abstand von sechs Monaten bei 120 Jugendlichen im Alter von 10 bis 16 Jahren in einem inklusiven Bildungssetting zusammenwirken, einschließlich Schülerinnen und Schüler mit und ohne sonderpädagogischen Förderbedarf im Bereich der emotionalen und sozialen Entwicklung. Die latenten Profile zeigten distinkte Muster von Stabilität und Veränderung. Während einige Schülerinnen und Schüler Profile mit geringem Bullying und durchschnittlicher Empathie beibehielten, wechselten andere von Profilen mit hohem Bullying und geringer Empathie zu Profilen mit reduziertem Bullying und verbesserter Empathie. Diese Variabilität in der Profilstabilität über die Zeit deutet darauf hin, dass Empathie-Bullying-Zusammenhänge dynamisch und heterogen sind und nicht statisch und einheitlich über Schülerinnen und Schüler hinweg. Diese Befunde unterstreichen den Wert personenzentrierter Ansätze, um aufzuzeigen, wie Empathie und Bullying in distinkten Konfigurationen innerhalb verschiedener Schülergruppen zusammen auftreten. Die Existenz distinkter Profile mit unterschiedlichen Entwicklungsverläufen legt nahe, dass die schulische Bullyingprävention von differenzierten Ansätzen profitieren könnte, die auf die Profilizugehörigkeit der Schülerinnen und Schüler abgestimmt sind, statt universeller Empathietrainingsprogramme einzusetzen, die homogene Bedürfnisse bei allen Schülerinnen und Schülern voraussetzen.

Schlagwörter: Bullying, Empathie, Längsschnitt, latente Profilanalyse

Bullying prevention programs often include components aimed at fostering empathy, grounded in the assumption that enhancing students' ability to understand and share others' emotions will reduce aggressive behaviors (Zych & Llorent, 2019; Zych et al., 2017). However, meta-analyses such as those conducted by Gaffney et al. (2021) challenge this premise, revealing that em-

pathy training has limited efficacy in reducing bullying perpetration. These findings raise questions about why and under what circumstances empathy does, or does not, play a role in the bullying dynamic. Empirical studies on the association between empathy and bullying present inconsistent results, further raising complicating our understanding (Stavrinides et al., 2012; Zych

et al., 2018; Zych & Llorent, 2019). Furthermore, the type of empathy (i.e., cognitive or affective) appears to differentially relate to bullying roles. Some studies find associations only with affective empathy (Eilts & Bäker, 2023), while others highlight the importance of cognitive empathy in understanding bullying behaviors (Zych et al., 2019). These inconsistencies may stem from the predominant use of variable-centred approaches, which examine average relationships across samples and may obscure meaningful heterogeneity in how empathy relates to bullying across different subgroups of students (e.g., Batanova & Loukas, 2011; Eilts & Bäker, 2023). This highlights the need for person-centred analyses to identify distinct subgroups of individuals with different empathy profiles and bullying behaviors (Eilts et al., 2025). Such an approach allows for the examination of stability and change in these profiles over time, potentially revealing patterns that explain inconsistent findings in the variable-centred literature. The current study addresses these gaps by employing a longitudinal latent profile analysis (LPA) to examine the interplay between cognitive empathy, affective empathy, and bullying over two time points. By identifying profiles and their transitions over time, this study aims to uncover when empathy-bullying configurations remain stable or change among different subgroups of students.

Bullying Perpetration

Bullying is a dynamic process (Hong & Espelage, 2012), which is characterized by the intensity of bullying experiences, the different roles students can assume and the variety in types of bullying (Rose et al., 2015). Generally, bullying is defined as aggressive behavior intended to harm others repeatedly over time, involving a perceived power imbalance between victims and perpetrators (Olweus, 2013; Smith 2016) and can manifest in three primary forms:

verbal bullying (insults and name-calling), physical bullying (hitting and kicking), and relational bullying (social exclusion and spreading rumors; Card & Little, 2006; Margraf & Pinquart, 2016). The literature distinguishes four primary roles in bullying: victims (being victimized), bullies (victimizing), bully-victims (those who are both bullies and victims), and individuals who are neither (Salmivalli, 1999; Salmivalli et al., 1999; Salmivalli & Nieminen, 2002). Salmivalli et al. (1996) further expanded these roles to include assistants (active followers), reinforcers (those who encourage bullying through actions like laughing), defenders (who support and protect victims), and outsiders (those who remain uninvolved). These roles are fluid, often overlapping due to the complex interactions between individuals and their environments (Hong & Espelage, 2012; Rose et al., 2015). Especially, the roles of bullies and assistants often overlap or are highly correlated (Eilts et al., 2025; Jenkins et al., 2022; Jenkins & Canivez, 2021; Qiu et al., 2021), and both roles are associated with severe consequences (Leraya et al., 2015; Moore et al., 2017; Zych et al., 2017). Bullies and assistants tend to support pro-bullying behaviors. The bully is typically described as proactive, taking initiative, and exhibiting leadership qualities. In contrast, the assistant is also active but tends to follow rather than take a leading role (Salmivalli et al., 1996). Furthermore, students may assume different or multiple roles in various bullying episodes (Chen et al., 2017; Jenkins & Nickerson, 2017; Qiu et al., 2021). Nevertheless, it's important to recognize that roles can vary based on individual interactions and perceptions (Leraya et al., 2015; Zych et al., 2017). Understanding these roles and their potential overlaps is crucial for comprehensively addressing the bullying dynamic (Eilts et al., 2025).

Studies focusing on the stability of bullying roles indicate that students who are uninvolved in bullying remain stable over time (e.g., Ryoo et al., 2015). However, the results focusing on different roles find

inconsistent results. Some studies indicate that students who are involved as bullies or victims show changes as they grow older (Pellegrini & Long, 2002; Ryoo et al., 2015) while others indicate that these roles are relatively stable over time with some students becoming uninvolved (Demaray et al., 2021; Mazzone et al., 2016; Zych et al., 2018).

Students involved in the bullying dynamic are at risk for numerous negative outcomes for example later criminal behavior, suicidal thoughts, depression, school avoidance or loss of academic performance (Moore et al., 2017; Zych et al., 2017). Despite the knowledge on the severe consequences of bullying, current studies lack detailed insights into the risk profiles of different adolescents' groups as perpetrators or victims within the bullying dynamic (Bäker et al., 2023; Eilts et al., 2023). Certain characteristics identified in the literature, such as behavioral problems and inadequate social skills like lacking empathy, elevate the probability of adolescents becoming involved in bullying (Rose & Espelage, 2012; Zych et al., 2017).

Research indicates varying prevalence rates and gender-related differences in bullying involvement. Cosma et al. (2020), conducted a meta-analysis across 37 countries and found comparable victimization rates of traditional bullying, with approximately 46.5% for boys and 45.3% for girls. Nevertheless, studies discuss gender differences in bullying involvement, with boys more commonly experiencing verbal and physical bullying, while girls tend to encounter relational bullying (Card & Little, 2006; Margraf & Pinquart, 2016). Age-related differences also emerge (Rivers & Smith, 1994), such as higher incidences of physical bullying in lower grades (i.e., five to seven) compared to higher grades (Scheithauer et al., 2006). The meta-analytic study by Eilts and Koglin (2022) underscores that students with special educational needs (SEN) in emotional and social development exhibit significantly higher mean scores in bullying

perpetration and victimization compared to students without special needs. Further studies suggest an overrepresentation of students with SEN in bullying (e.g., Cho et al., 2009, 2020; Rodríguez-Hidalgo et al., 2019; Rose & Espelage, 2012; Schütz et al., 2022). However, Schütz et al. (2022) highlighted that externalizing behavior problems, rather than SEN status, are the primary predictor of both bullying perpetration and victimization experiences.

Empathy

Empathy has been defined in multiple ways (Cuff et al., 2016), but it commonly describes the sharing and understanding of others' emotional states. It encompasses thus both an affective and a cognitive component (Decety & Jackson, 2006; Joliffe & Farrington, 2006). Affective empathy refers to sharing an emotion, experiencing the same emotional state as the other individual. Cognitive empathy describes the understanding of others' emotions. It is thus similar to the broader concept of perspective taking, yet particularly focuses on understanding the emotion of others rather than generally taking their perspective (Joliffe & Farrington, 2006). While affective and cognitive empathy are often moderately correlated and thus seem to have some overlap (Ang & Goh, 2010; Eilts & Bäker, 2024; Joliffe & Farrington, 2006), they also show different patterns in the context of disorders (Blair, 2005), they are associated with different neural processes (Shamay-Tsoori et al., 2009), and they show distinct relations with social behavior (Dillon-Owens et al., 2022; Van Lissa et al., 2017).

The theoretical rationale for examining affective and cognitive empathy separately in relation to bullying can be strengthened by drawing on the broader aggression literature, which distinguishes between different forms of aggressive behavior. Research differentiates between reactive (impulsive, emotionally-driven) and proactive (planned, goal-oriented) aggression (Dodge & Coie,

1987; Vitaro & Brendgen, 2005; Vitaro et al., 2006). Reactive aggression is characterized by impulsive responses to perceived provocation or threat, while proactive aggression is instrumental, used strategically to achieve goals such as dominance or resource acquisition. These distinctions are relevant to bullying, as research demonstrates that bullying behaviors can manifest both reactively and proactively (Salmivalli & Nieminen, 2002). Bullies, and particularly bully-victims, exhibit both reactive aggression (impulsive, emotionally-driven responses) and proactive aggression (planned, goal-oriented behaviors such as strategic relational aggression to maintain dominance), although the relative prominence of each type varies across individuals and bullying roles (Dodge & Coie, 1987; Salmivalli & Nieminen, 2002; Vitaro et al., 2006).

Affective empathy, which involves experiencing and sharing others' emotional states, may serve as an inhibitory mechanism for reactive aggression by triggering emotional discomfort when witnessing others' distress (Miller & Eisenberg, 1988). Students with lower affective empathy may be less likely to experience this emotional brake, potentially increasing their propensity for impulsive aggressive acts including physical and verbal bullying. This aligns with findings that affective empathy deficits are associated with various forms of bullying perpetration (Eilts & Bäker, 2023; Stavrinides et al., 2010).

Cognitive empathy, however, may play a more complex role, particularly in proactive or instrumental forms of aggression. The ability to understand others' emotions and perspectives could theoretically facilitate strategic bullying behaviors, such as relational aggression, by enabling perpetrators to identify vulnerabilities, manipulate social dynamics, and recruit assistants (Jolliffe & Farrington, 2006; Sutton et al., 1999a, b). This "cold cognition" approach to understanding others without the emotional component of sharing their distress may explain findings showing positive associations

between perspective-taking and relational bullying perpetration (Batanova & Loukas, 2011). Consequently, differentiating between affective and cognitive empathy is essential when investigating bullying, as these dimensions may relate differently to various forms of bullying behavior.

Despite theoretical reasons to expect differential relationships, empirical findings remain inconsistent. Some studies find that both aspects of empathy are negatively associated with bullying perpetration, while others suggest that only affective empathy is relevant (Stavrinides et al., 2010; Zych & Llorent, 2019; Zych et al., 2019). These inconsistencies may reflect methodological differences, but they may also indicate meaningful heterogeneity in how empathy relates to bullying across different subgroups of students. Research using person-centred approaches provides preliminary support for this interpretation. Antoniadou et al. (2019) conducted a latent profile analysis examining traditional and cyber bullying and victimization and identified distinct profiles that differed significantly in their levels of affective empathy. Specifically, bullying perpetrators or bully-victims exhibited lower affective empathy compared to Victims and the uninvolved students. This finding suggests that the relationship between empathy and bullying may not be uniform across all students, but rather varies depending on individuals' overall pattern of involvement in bullying dynamics. Such heterogeneity could explain why empathy training in universal prevention programs shows limited effectiveness (Gaffney et al., 2021), interventions may be beneficial only for certain subgroups of students with specific empathy-bullying configurations, while being ineffective or even counterproductive for others.

Current Study

The current study extends this line of research by applying LPA to examine cognitive and affective empathy alongside bully-

ing perpetration over two time points. LPA is a model-based person-centred approach that probabilistically assigns individuals to latent subgroups (profiles) based on patterns of observed variables tests (Masyn, 2013; Spurk et al., 2020). It offers methodological advantages over traditional cluster analysis through the use of fit indices and formal statistical tests. This approach captures individual differences in empathy-bullying configurations and examines transitions between profiles, analyzing patterns of stability or change in these configurations over time.

Focusing on combined Bully and Assistant roles, which frequently overlap and represent high-risk profiles (Eilts et al., 2025; Jenkins et al., 2022), we explore distinct empathy-bullying profiles and their developmental trajectories. Our sample includes students from an inclusive educational setting, including those with and without special educational needs in emotional and social development, contexts where bullying behaviors and empathy deficits are particularly salient concerns.

It is important to clarify the scope and limitations of this approach. While person-centred analysis can identify distinct subgroups with different empathy-bullying configurations and reveal when profiles remain stable or change, it does not explain why these profiles emerge or what mechanisms drive transitions between them. Our study describes patterns of heterogeneity and temporal stability/change, but understanding causal mechanisms underlying profile membership and transitions requires additional research incorporating potential explanatory variables (e.g., environmental factors, interventions, developmental changes). Nevertheless, by identifying distinct empathy-bullying profiles and documenting their patterns of stability and change, this study provides foundational knowledge for developing more targeted, profile-specific interventions. Understanding whether students show different empathy-bullying configurations, and when these configurations change, is a necessary first

step toward tailoring more effective school-based interventions that foster safer and more inclusive educational environments.

Method

Procedure and Participants

This study is part of a larger project examining bullying among students with and without special educational needs. For the current research question, we use longitudinal questionnaire data, focusing only on information relevant to this question. The study received approval from the institutional review board, data protection board, and the regional school authority board. Employing a convenience sampling approach, we informed inclusive schools in northern Germany about the study. At participating schools, we distributed informed consent forms to the parents or primary caregivers of children in grades 5 to 10. Participation was voluntary, and written informed consent was obtained from parents or primary caregivers and the adolescents before data collection. There were no exclusion criteria for participation. Data collection occurred in group settings at the school twice within six months, from spring 2022 to fall 2023. The recruited sample consisted of 120 adolescents aged ten to sixteen ($M_{\text{ageT2}} = 13.01$, $SD_{\text{ageT2}} = 1.50$), in Grades 5 to 10. 60 (50%) students were male and 60 (50%) were female. The sample size of 120 participants is modest and below recommended guidelines for LPA. Nylund-Gibson and Choi (2018) suggest that 300 or more cases is generally desirable for mixture models, though smaller samples may be adequate with simpler models and well-separated classes. Tein et al. (2013) found that the ability to correctly identify the number of classes depends critically on class separation, with adequate power requiring large effect sizes (Cohen's $d = 0.8$ or greater) when sample sizes are small to moderate (Masyn, 2013). Our selected 4-class models achieved en-

tropy values of .81 (T1) and .89 (T2), with minimum class assignment probabilities of .71 (T1) and .82 (T2), indicating good to excellent classification quality and suggesting reasonable class separation. However, with our sample of 120 participants, we likely have limited statistical power to definitively determine the optimal number of profiles and to detect all profile transitions, particularly those involving smaller classes. These results should be considered exploratory and require replication in larger, more diverse samples to confirm the identified profile structure and transition patterns.

Instruments

BPBQ

Bullying perpetration was measured using the Bully Participant Questionnaire (Summers & Demaray, 2008), a self-report tool in which students answered questions about various roles in the bullying dynamic (Bully, Victim, Assistant, Defender, and Outsider). For the purpose of this study we will focus on the role of Bully and Assistant. Each role is assessed with 10 items. Due to results revealed in psychometric studies (e.g., Jenkins et al., 2022; Jenkins & Canivez, 2021; Qiu et al., 2021) the roles Bully and Assistant can be summarized in a Bully/Assistant role. The exploratory factor analysis supports the summarizing of those two factors in one factor ($KMO = .80$; Bartlett Test: $\chi^2 = 1226.56$, $df = 190$, $p < .001$; Bartlett, 1950; Kaiser, 1974; Lloret et al., 2017). Thus, the two roles were summarized in one perpetration role for the purpose of this study ($\alpha = .89$). Students reported the frequency of these behaviors in the past 30 days on a scale from 0 (never) to 4 (7 or more times). The questionnaire's authors provide evidence for congruent, convergent, and divergent validity (Demaray et al., 2016).

BES

The Basic Empathy Scale (BES; Jolliffe & Farrington, 2006) consists of 20 items divided into affective empathy (11 items; e.g., "My friends' emotions don't affect me much", $\alpha = 0.70$) and cognitive empathy (9 items; e.g., "I can understand my friend's happiness when she/he does well at something", $\alpha = 0.77$). Students rated their agreement with each statement on a 5-point Likert scale (0 = strongly disagree, 1 = disagree, 2 = neither agree nor disagree, 3 = agree, 4 = strongly agree). Scores were calculated by reverse coding the negatively worded items and summing the responses for each scale. Jolliffe and Farrington (2006) provide evidence of the instrument's validity. Consistent with other studies, females scored higher on the BES. The correlations with other personality constructs matched theoretical expectations, and the correlation between cognitive and affective empathy further supports the validity of the measure (Jolliffe & Farrington, 2006).

The Bully Participant Questionnaire (BPBQ) and Basic Empathy Scale (BES) were originally developed in English. For the current study, we used existing German translations. The BES German version has been validated in a German adolescent sample (Heynen et al., 2016), showing comparable factor structure and adequate psychometric properties. The BPBQ was translated following standard back-translation procedures and has been used in previous German studies with satisfactory reliability (Eilts et al., 2025).

To address potential comprehension difficulties, particularly for students with special educational needs or limited German proficiency, research assistants were present during data collection to answer questions and clarify item meanings. Items were read aloud in group settings when requested. All students with SEN in our sample had sufficient German language skills to participate in regular classroom instruction, which served as our minimum inclusion threshold for comprehension.

Data Analysis

The statistical software R was employed to analyze the data and identify profiles using Latent Profile Analysis (LPA). LPA is a statistical technique that models subjects as belonging to one of several latent clusters or profiles (Lazarsfeld et al., 1968; Vermunt & Magidson, 2002). This approach accounts for measurement error in the probability of membership in a given class. LPA describes a mixture of profiles represented by multivariate normal distributions, also known as Gaussian mixture modeling or model-based clustering (Aghabozorgi et al., 2015).

To facilitate comparability across different measures, the cognitive, affective, and bully/assistant measures at both Time 1 (T1) and Time 2 (T2) were standardized using z-scores. Data were imputed using Full Information Maximum Likelihood (FIML) under the assumption that data were Missing Completely at Random (MCAR), as supported by a chi-square test ($\chi^2 = 14.52$, $df = 12$, $p = .269$; Little, 1988). The intercorrelation among the cluster variables was below $r = .8$ (see Table 1), indicating that multicollinearity was not a concern (Field, 2018). The latent profile analysis aimed to identify underlying subgroups of cognitive empathy, affective empathy and the bully/assistant role within the dataset at both time points. It was conducted using the tidyLPA (Rosenberg et al., 2018) package, which allows for the estimation of models with varying numbers of profiles. Models with 1 to 6 profiles were estimated for both time points. To determine the most appropriate number of clusters, we utilized the Bayesian Information Criterion (BIC), a widely used metric in longitudinal clustering analysis (Van de Schoot et al., 2017). A lower BIC value a better-fitting model. In cases where BIC values were similar between adjacent solutions, the final choice of the number of clusters relied on a subjective analysis of the identified patterns (Nagin & Odgers, 2010). Additionally, the Akaike Information Criterion (AIC), Log-Likelihood (LogLik),

Sample-Size Adjusted BIC (SABIC), and Entropy were used to evaluate the optimal number of clusters at each time point. For LogLik and Entropy, higher values indicate a better fit, while for AIC, BIC, and SABIC, lower values suggest a superior model fit. According to the model fit and theoretical assumptions a four cluster solution for both timepoints was chosen (see Table 2).

Profile Analysis and Transitions

After determining the optimal number of profiles, participants were assigned to latent profiles based on the profile with the highest probability. A transition table was then created to analyze the movement of individuals between profiles from T1 to T2. Thus, we present transitions descriptively and acknowledge that we cannot determine whether observed transitions differ significantly from chance. To visualize these transitions, a Sankey diagram was generated using the ggalluvial package (Brunson & Read, 2023). This diagram illustrates the flow of individuals between profiles at T1 and T2, providing a clear representation of profile transitions (Brunson & Read, 2023; Brunson, 2020). To further explore the clusters, descriptive statistics for each profile were computed, offering a detailed view of the characteristics associated with each latent profile. The R code is available under OSF (https://osf.io/dshxv/?view_only=8d0e8b-c4254d412fa348c1a963c8c1ca).

Results

Table 1 presents the intercorrelations among the study variables. The results indicate that gender is negatively correlated with cognitive empathy at Time 1 (T1) ($r = -.36$, $p < .001$) and Time 2 (T2) ($r = -.41$, $p < .001$), as well as with affective empathy at T1 ($r = -.29$, $p = .001$) and T2 ($r = -.36$, $p < .001$). This suggests that male students exhibit lower levels of both cognitive and affective empathy compared to female students.

Table 1
Descriptive Statistics and Correlations

	M	SD	4	5	6	7	8	9
1) Age T1	12.63	1.33	-.09	.05	-.02	.01	-.03	.00
2) Age T2	13.01	1.35	-.09	.07	-.06	.01	-.03	-.03
3) Gender			-.36***	-.41***	-.29**	-.36***	.13	.26**
4) Cognitive Empathy T1	0.00	1.00		.55***	.74***	.28**	-.01	-.16
5) Affective Empathy T1	0.00	1.00			.55***	.75***	-.16	-.13
6) Cognitive Empathy T2	0.00	1.00				.44***	-.16	-.22*
7) Affective Empathy T2	0.00	1.00					-.22*	-.16
8) Bully/Assisstant T1	0.00	1.00						.45***
9) Bully/Assisstant T2								

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

Additionally, gender shows a positive correlation with the Bully/Assistant scale at T2 ($r = .26, p = .005$), indicating that males score higher on this scale at T2 than females. Cognitive empathy at T1 is positively correlated with affective empathy at T1 ($r = .55, p < .001$), cognitive empathy at T2 ($r = 0.74, p < 0.001$), and affective empathy at T2 ($r = .28, p = .002$). Moreover, affective empathy at T1 is positively correlated with cognitive empathy at T2 ($r = .55, p < .001$) and affective empathy at T2 ($r = .75, p < .001$).

Cognitive empathy at T2 is positively correlated with affective empathy at T2 ($r = .44, p < .001$) but negatively correlated with the Bully/Assistant scale at T2 ($r = -.22, p = .019$). Furthermore, affective empathy at T2 is negatively correlated with the Bully/Assistant scale at T1 ($r = -.22, p = .016$), and Bully/Assistant at T1 is positively correlated with Bully/Assistant at T2 ($r = .45, p < .001$).

Latent Profile Analysis

For Time 1, the model with 4 profiles was selected as it exhibited the lowest BIC value, balancing fit and complexity effectively, while maintaining good entropy. For Time 2, a similar approach was adopted. Models

with 1 to 6 profiles were evaluated using the same fit indices. The model with 4 profiles was again found to provide the best balance between fit and complexity, with favorable BIC and entropy values. Table 2 depicts the different fit indices for the models.

The means of the four classes show that the class numbers are not representing the same thing throughout the two timepoints (Table 3 and 4). Class 1 for T1 comprises 16 individuals characterized by very low levels of Cognitive Empathy ($M = -1.76, SD = 0.68$) and Affective Empathy ($M = -1.27, SD = 0.87$). This group also shows low scores in the Bully/Assistant dimension ($M = -0.46, SD = 0.44$). These findings suggest that individuals in this class tend to exhibit a lack of both cognitive and affective empathy and are less likely to engage in or be involved in bullying behavior or assisting roles.

Class 2 includes 75 individuals with average levels of Cognitive Empathy ($M = 0.11, SD = 0.54$) and Affective Empathy ($M = 0.01, SD = 0.61$). This class also demonstrates low scores on the Bully/Assistant scale ($M = -0.14, SD = 0.61$). Members of this class exhibit typical levels of empathy, without significant deviations from the mean, and show low involvement in bullying behavior or assisting roles.

Table 2
Model Fit Classes T1 and T2

T1	LogLik	AIC	BIC	SABIC	Probability for any Class		Entropy
					Min	Max	
1 Class	-500.80	1013.60	1030.22	1011.25	1.00	1.00	1.00
2 Classes	-479.23	978.47	1006.17	974.56	.86	.99	.86
3 Classes	-470.99	969.98	1008.77	964.52	.81	.92	.77
4 Classes	-443.14	922.29	972.16	915.26	.71	.97	.81
5 Classes	-443.17	930.32	991.30	921.75	.00	.97	.61
6 Classes	-441.98	935.96	1008.00	925.81	.00	.97	.71

T2	LogLik	AIC	BIC	SABIC	Probability for any Class		Entropy
					min	Max	
1 Class	-500.80	1013.60	1030.22	1011.25	1.00	1.00	1.00
2 Classes	-480.89	981.77	1009.48	977.87	.84	.99	.92
3 Classes	-470.70	969.40	1008.19	963.93	.82	.97	.86
4 Classes	-468.25	972.51	1022.38	965.48	.82	.97	.89
5 Classes	-468.25	980.50	1041.46	971.91	.00	.97	.61
6 Classes	-429.51	911.03	983.07	900.87	.77	1.00	.87

Note. LogLik = Log-Likelihood; AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; SABIC = Sample-Size Adjusted BIC

In Class 3, consisting of 19 individuals, both Cognitive Empathy ($M = 1.16$, $SD = 0.51$) and Affective Empathy ($M = 1.32$, $SD = 0.72$) are notably high. This class also scores low on the Bully/Assistant dimension ($M = -0.29$, $SD = 0.40$). Individuals in this cluster are characterized by high levels of both cognitive and affective empathy and tend not to engage in bullying behaviors or assisting roles.

Class 4, with 8 individuals, exhibits high scores in the Bully/Assistant dimension ($M = 2.90$, $SD = 1.21$) and low levels of Cognitive Empathy ($M = 0.30$, $SD = 0.99$) and Affective Empathy ($M = -0.72$, $SD = 0.95$). This cluster is distinguished by a high tendency towards bullying or assisting roles while showing relatively low levels of both cognitive and affective empathy.

Class 1 for T2 consists of 13 individuals who exhibit very low levels of Cognitive Empathy ($M = -2.09$, $SD = 0.62$) and Affective Empathy ($M = -0.99$, $SD = 1.02$). This class is characterized by high scores on the Bully/Assistant dimension ($M = 0.71$, $SD = 2.09$). Individuals in this class show significant deficits in both cognitive and affective empathy while demonstrating a high tendency towards bullying behavior or involvement in assisting roles. The high variability in the Bully/Assistant scores suggests a wide range of bullying or assisting behaviors within this group.

Class 2 includes 19 individuals who score high on both Cognitive Empathy ($M = 1.34$, $SD = 0.36$) and Affective Empathy ($M = 1.05$, $SD = 0.73$). This class shows low scores on the Bully/Assistant dimension ($M = -0.37$, $SD = 0.58$). Members of this class

Table 3
Means per Class T1

Class	N	Cognitive Empathy		Affective Empathy		Bully/Assistant	
		M	SD	M	SD	M	SD
1 Low Empathy/Low Bullying	16	-1.76	0.68	-1.27	0.87	-0.46	0.44
2 Average Empathy/Low Bullying	75	0.11	0.54	0.01	0.61	-0.14	0.61
3 High Empathy/Low Bullying	19	1.16	0.51	1.32	0.72	-0.29	0.40
4 Low Empathy/High Bullying	8	0.30	0.99	-0.72	0.95	2.90	1.21

Table 4
Means per Class T2

Class	N	Cognitive Empathy		Affective Empathy		Bully/Assistant	
		M	SD	M	SD	M	SD
1 Low Empathy/High Bullying	13	-2.09	0.62	-0.99	1.02	0.71	2.09
2 High Empathy/Low Bullying	19	1.34	0.36	1.05	0.73	-0.37	0.58
3 High Cognitive/Low Affective Empathy/Low Bullying	1	0.89	-	-2.92	-	-0.72	-
4 Average Empathy/Low Bullying	85	0.01	0.47	-0.05	0.79	-0.02	0.76

exhibit strong cognitive and affective empathy while showing minimal engagement in bullying behavior or assisting roles. This suggests that they are both highly empathetic and less likely to exhibit or experience bullying.

Class 3, comprising a single individual, shows a high level of Cognitive Empathy ($M = 0.89$) but an extremely low level of Affective Empathy ($M = -2.92$). The Bully/Assistant score is not available for this class. This unique profile suggests a person with high cognitive empathy but very low affective empathy, suggesting a strong ability to understand others' thoughts without necessarily sharing their feelings.

Class 4 consists of 85 individuals with average levels of Cognitive Empathy ($M = 0.01$, $SD = 0.47$) and Affective Empathy ($M = -0.05$, $SD = 0.79$). Their scores on the Bully/Assistant dimension are also low (M

$= -0.02$, $SD = 0.76$). This class is characterized by typical levels of both cognitive and affective empathy and shows low involvement in bullying behavior or assisting roles. Individuals in this class generally have a balanced level of empathy and minimal engagement in bullying.

Correspondence Between T1 and T2 Classes

The clustering results reveal notable correspondences between classes at Time Point 1 (T1) and Time Point 2 (T2). Specifically, Class 4 at T1, characterized by low empathy and high involvement in bullying behaviors, corresponds closely with Class 1 at T2, which exhibits similar low empathy and high bullying tendencies. Similarly, Class 2 at T1 and Class 4 at T2 show an average level of empathy and minimal bullying. Addi-

tionally, Class 3 at T1 and Class 2 at T2 correspond with each other. The other Classes (1 at T1 and 3 at T2) do not correspond well to each other.

Latent Profile Transition Analysis

The transition of the latent profiles is depicted in the supplement (Figure S1). Table 5 presents the transitions between latent profiles over the two time points (T1 and T2). Each cell in the table shows the number of individuals who transitioned from a given profile at T1 (rows) to a profile at T2 (columns). These transitions provide insight into the stability or change in empathy and bullying behavior over time.

Profile 1. Low Empathy/Low Bullying at T1: Out of those who started in this profile at T1, 9 transitioned to a low empathy/high bullying profile at T2, while 7 transitioned to Profile 4 (Average Empathy/Low Bullying). This suggests no stability, but a shift either towards an increase in bullying or to an increase in empathy.

Profile 2. Average Empathy/Low Bullying at T1 seems to be the most stable profile. Of the 75 adolescents in this profile 64 remain in the same profile at T2. 9 adolescents moved to the high empathy/low bullying profile at T2 indicating an increase in empathy, whereas one individual decreased

in empathy and increased in bullying. The last individual showed differences between the two empathy variables at T2 with higher cognitive empathy.

Profile 3. High Empathy/Low Bullying at T1: Ten individuals from this profile remained stable at T2, while 9 transitioned to Profile 4, indicating moderate stability, but with some movement toward the Average Empathy/Low Bullying profile.

Profile 4. High Bullying/Low Empathy at T1: Three individuals remained in this profile, and five transitioned to Profile 4 at T2. This suggests a notable shift, where most individuals moved from a high-bullying/low-empathy profile to an average empathy profile with low bullying, highlighting potential reductions in bullying behavior.

In summary, the transitions reveal a tendency for individuals across different profiles to shift towards Profile 4 (Average Empathy/Low Bullying) at T2. This suggests a trend toward lower bullying and more moderate levels of empathy over time, reflecting potential changes in behavior and emotional regulation as time progresses. Additionally, some profiles (e.g., Profile 2: Average Empathy/Low Bullying) exhibited moderate stability, while others (e.g., Profile 1: Low Empathy/Low Bullying) demonstrated more fluid transitions.

Table 5
Latent Profile Transition

	Profile T2	1 Low Empathy/ High Bullying	2 High Empathy/ Low Bullying	3 High Cognitive/ Low Affective Empathy	4 Average Empathy/Low Bullying
Profile T1					
1 Low Empathy/Low Bullying		9	0	0	7
2 Average Empathy/Low Bullying		1	9	1	64
3 High Empathy/Low Bullying		0	10	0	9
4 High Bullying/Low Empathy		3	0	0	5

Discussion

The present study aimed to explore the interplay between cognitive empathy, affective empathy, and bullying behaviors using a person-centered approach through longitudinal LPA. The results revealed four distinct latent profiles at both time points, highlighting patterns of stability and change. Notably, while some students maintained low bullying and average empathy profiles, others transitioned from high bullying/low empathy profiles to profiles characterized by reduced bullying and improved empathy. These findings emphasize the complexity of empathy and bullying dynamics, underscoring the need for tailored, profile-specific interventions in school settings.

The study's findings partly align with prior research suggesting that empathy deficits are associated with increased bullying behaviors, while higher empathy is linked to defender roles (Zych & Llorent, 2019; Eilts & Bäker, 2023). The identification of a stable profile (Profile 2: Average Empathy/Low Bullying), with 64 out of 75 individuals remaining in this profile across time points, supports the theoretical assumption that average empathy and low bullying may represent a more balanced and stable behavioral state during adolescence (Ryoo et al., 2015). This is consistent with studies indicating that uninvolved students tend to maintain their status over time, while those involved in bullying roles often exhibit changes (Pellegrini & Long, 2002).

However, this study extends previous findings by demonstrating that not all bullying roles are equally stable. Most interestingly, some students moved from profiles with low bullying to high bullying, while others moved from high bullying to low bullying. Specifically, Profiles 1 (Low Empathy/Low Bullying) and 4 (High Bullying/Low Empathy) showed significant transitions, with many individuals moving towards profiles with lower bullying behavior. Adolescents in Profile 1 showed a bifurcation: some moved towards higher bullying behaviors

while keeping a low level of empathy, others exhibited improved empathy levels while showing continued low bullying. This dual pathway suggests that both risk escalation and positive behavioral shifts are possible from a starting point of low empathy. This complexity underscores the need for differentiated intervention strategies tailored to adolescents' specific empathy-bullying profiles. This dynamic aligns with developmental theories suggesting that adolescence is a critical period for socio-emotional growth and that shifts in empathy and bullying behaviors may reflect developmental changes or the effects of school-based interventions (Gaffney et al., 2021). The transition observed in Profile 4 (from high bullying/low empathy to average empathy/low bullying) may reflect improved socio-emotional abilities. This aligns with the assumption that empathy training might not uniformly reduce bullying across all groups (Gaffney et al., 2021). Profile 2 and Profile 3 showed an increase in empathy over time, which may indicate natural emotional development during adolescence. The progression from average to higher empathy levels suggests a growing sensitivity to others' perspectives, which is consistent with developmental theories of socio-emotional growth during adolescence (Zych et al., 2017). The increase in empathy, particularly cognitive empathy, among some adolescents implies that interventions focusing on perspective-taking might be more effective than those emphasizing affective empathy alone. This distinction is important as previous studies have shown mixed results regarding the effectiveness of empathy training in bullying prevention (Stavrinides et al., 2010; Zych et al., 2019). The unique case in Profile 3 at T2, where an individual showed an increase in cognitive empathy but not affective empathy, highlights the importance of distinguishing between these two components. Cognitive empathy's association with lower bullying involvement suggests that enhancing perspective-taking skills could be a promising direction for anti-bullying

interventions. This finding aligns with prior research suggesting that cognitive empathy may play a more critical role in understanding and reducing bullying behaviors (Batanova & Loukas, 2011).

These findings can be interpreted through the theoretical lens of reactive and proactive aggression discussed earlier. The transition from Profile 4 (high bullying/low empathy) toward profiles with reduced bullying and improved empathy may reflect developmental increases in affective empathy, which serves as an inhibitory mechanism for reactive, impulsive aggression (Miller & Eisenberg, 1988; Salmivalli & Nieminen, 2002). Students who develop the capacity to share others' emotional distress may find it increasingly uncomfortable to engage in bullying behaviors. However, the pathway observed in Profile 1, where some students escalate to high bullying despite low empathy, suggests that other factors beyond empathy deficits contribute to bullying perpetration, possibly including proactive motivations such as status-seeking or instrumental goals that cognitive empathy might actually facilitate in some contexts (Sutton et al., 1999b).

The increase in cognitive empathy observed among students transitioning from Profile 2 to Profile 3 (from average to high empathy) without corresponding changes in bullying behavior further supports the complex role of cognitive empathy. Understanding others' perspectives does not automatically reduce bullying if it is not accompanied by the affective component that motivates prosocial action. This distinction has important implications for intervention design: programs focusing exclusively on perspective-taking without fostering emotional connection may be insufficient for reducing bullying, particularly for students engaging in more strategic, proactive forms of aggression such as relational bullying (Batanova & Loukas, 2011; Joliffe & Farrington, 2006).

While our study documents distinct empathy-bullying profiles and patterns of sta-

bility and change, it does not examine the mechanisms underlying profile membership or transitions. Understanding why some students in Profile 1 escalate to high bullying while others improve in empathy requires examining additional variables such as peer relationships, family context, school climate, exposure to interventions, and developmental factors. Similarly, the transitions observed in Profile 4 (from high bullying to average empathy) may reflect natural maturation, intervention effects, changes in peer groups, or other unmeasured factors. Future research incorporating these explanatory variables through latent transition analysis with covariates would provide critical insights into the mechanisms driving profile membership and change. Our contribution lies in establishing that meaningful heterogeneity exists and that transitions occur, providing a foundation for future mechanism-focused research.

Limitations

While this study provides valuable insights, several limitations should be acknowledged. First, although four different profiles were examined, one profile contained only a single participant. This limited sample size for that specific profile reduces the reliability and generalizability of findings related to it. While our sample of 120 participants meets methodological guidelines for LPA profile identification (Nylund et al., 2007; Tein et al., 2013) and achieved good classification quality (entropy = .81-.89), it is insufficient for conducting formal statistical tests of profile transitions or for adequate power to detect small effect sizes. The modest sample size, particularly the presence of one profile with only a single participant at T2, limits our ability to draw definitive conclusions about transition patterns and necessitates caution in generalizing findings beyond this specific sample. We present transitions descriptively and acknowledge that we cannot determine whether observed transitions differ significantly from chance.

Future research with larger samples would enable latent transition analysis with covariates to formally test transition probabilities and examine predictors of profile membership changes.

Second, the standardized mean values for the bully and assistant roles range only from -0.72 to 0.72, indicating a restricted variability in these measures. This limited range may constrain the ability to detect stronger effects or variations in bullying behavior. Expanding the range of scores in future studies could provide a more comprehensive understanding of these roles.

Third, the study relies on self-report questionnaires, which are subject to biases such as social desirability and self-perception inaccuracies. Participants may have underreported or misrepresented their behaviors, potentially affecting the accuracy of the findings. Incorporating additional data sources, such as peer reports or behavioral observations, could enhance the validity of the results. Nevertheless, the study offers some practical implications and impulses for future research.

Additionally, we did not test for measurement invariance across time points. Our analytical approach treats profiles as emergent configurations at each time point rather than assuming equivalent measurement structures. While this limits our ability to make strong claims about whether profile meanings remain identical across time, it allows for the possibility that empathy-bullying configurations may naturally reorganize during adolescence. Future research with larger samples should examine measurement invariance to determine whether profiles represent equivalent constructs across time.

Practical Implications and Further Perspectives

The findings of this study underscore the complex role of empathy in bullying dynamics, highlighting that it should not be viewed as a one-size-fits-all solution.

While empathy can play a significant role in reducing bullying, its impact varies depending on individual profiles and the socio-emotional context of each adolescent. The stability of certain profiles may explain the limited effectiveness of empathy training reported in meta-analyses, such as that by Gaffney et al. (2021). If empathy is already well-developed, further training may not significantly reduce bullying behaviors. Conversely, for profiles with less developed empathy, especially those with variable characteristics, targeted interventions focusing on cognitive empathy might facilitate transitions towards profiles with lower bullying involvement. The study's results suggest that a person-centered approach is essential when designing interventions. Before implementing empathy training, it is crucial to assess the baseline levels of cognitive and affective empathy for each individual. Training may only be effective for those with initially low empathy levels. For students already displaying average or high levels of empathy, additional training might not yield significant results and could even lead to frustration or disengagement.

Moreover, empathy skills could also be "misused" in bullying dynamics. Individuals who excel at perspective-taking may leverage this ability to inflict greater harm within bullying processes, as they could use bullying to enhance their social status (Hensums et al., 2023; Samson et al., 2021). Therefore, it is essential to assess the underlying motivations for bullying behavior before initiating empathy training. Interventions should differentiate between adolescents who lack empathy and those who might exploit their empathy skills for manipulative or aggressive purposes. Additionally, bullying is not solely an individual problem but also a group phenomenon (Salmivalli et al., 1996). Competitive environments might exacerbate bullying by rewarding aggressive behaviors that secure higher status within the group (Hensums et al., 2023; Samson et al., 2021). In contrast, cooperative settings could reduce bullying by promoting shared

goals and empathy-based interactions (Gaffney et al., 2021). The immediate social environment significantly shapes whether aggressive behaviors are tolerated or sanctioned and influences which roles within the group are seen as desirable. This is consistent with Bronfenbrenner's socio-ecological model (1977, 1981), which emphasizes that individual behaviors cannot be fully understood without considering the broader social systems in which they occur. Empathy operates on an individual level, but a systemic approach would require focusing on group dynamics, peer norms, and the school climate. For instance, interventions might benefit from addressing peer norms that tolerate or even reinforce bullying behaviors, in addition to fostering empathy.

In conclusion, the study demonstrates the complexity of the relationship between empathy and bullying behaviors, highlighting the need for nuanced, profile-specific intervention strategies. The findings suggest that while average empathy levels may promote stability in low bullying involvement, shifts towards higher empathy and lower bullying may require targeted interventions addressing both cognitive and affective empathy. The findings also align with theoretical perspectives suggesting that empathy's influence on bullying may depend on the type of empathy and the specific context of the bullying dynamic (Zych et al., 2019). The observed variability in profile stability and transitions suggests that both individual characteristics and contextual factors (such as school interventions or peer influences) may shape the empathy-bullying relationship.

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Offener Code	Der zur Analyse der Daten verwendete R Code ist verfügbar unter https://osf.io/dshxv/?view_only=8d0e8bc4254d412fa348c1a963c8c1ca
Offene Materialien	Die Fragebögen der Studie können über die Autor:innen der Fragebögen angefragt werden.
Präregistrierung	Die Studie wurde nicht Präregistriert.
Votum Ethikkommission	Die Ethikkommission der Carl von Ossietzky Universität Oldenburg hat das Desing der vorliegenden Studie geprüft (Drs. Nr.EK/2020/047).
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KI und generative Modelle	ChatGPT wurde genutzt um den R Code zu überprüfen.