"Latent Profiles of Cyberbullying: Mapping Awareness, Behaviour, and Psychological Well-being in Malaysian Primary School Students"

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ABSTRACT

This pilot study investigates the relationship between cyberbullying victimisation and psychological well-being among Malaysian primary school students by integrating child centred, emoji-based Likert scales within a person-centred analytic framework. A cross-sectional survey involving 30 students (ages 10–12) from two urban schools in Kota Kinabalu was conducted. Nine cyberbullying behaviours and ten indicators of psychological well-being were assessed using developmentally appropriate instruments. Descriptive statistics, Pearson correlations, and latent profile analysis (LPA) were employed. Results revealed that hurtful comments (38%) and online rumours (35%) were the most prevalent forms of cyberbullying, while direct threats were infrequent (12%). Both scales demonstrated high internal consistency (α = .88; α = .85). A significant negative correlation was observed between cyberbullying and well-being (r = –.42, p < .01). LPA yielded three profiles: High Awareness–Low Behaviour–High Well-being; Moderate Awareness–Moderate Behaviour–Moderate Well-being; and Low Awareness–High Behaviour–Low Well-being. These findings illuminate the prevalence of indirect aggression in digital childhood spaces and suggest the importance of awareness-based interventions tailored to specific victimisation well-being typologies.

Highlights

1. Developed child centred, emoji-based scales for measuring cyberbullying and well-being.
2. Indirect cyberbullying (hurtful comments, rumours) more prevalent than direct threats.
3. High reliability for cyberbullying (α = .88) and well-being (α = .85) scales.
4. Identified three distinct latent profiles linking awareness, behaviour, and well-being.
5. Findings support awareness-based strategies to protect primary students' well-being.

INTRODUCTION

Digital technology has redefined the social fabric of childhood, offering both opportunities and new vectors of harm. Among these, cyberbullying has emerged as a pressing concern, with more than half of Malaysian youth reportedly affected (Hendry et al., 2023), reflecting a global prevalence ranging from 13% to 57% (Zhu et al., 2021). The World Health Organization (2024) warns that bullying, both offline and online, is strongly linked to loneliness and heightened suicide risk, yet research rarely investigates the intersection of cyberbullying and psychological well-being among primary school student using instruments tailored to their cognitive and linguistic capacities (Betts, 2022; Gordon, 1999). Addressing this gap, the present study reports the quantitative phase of a sequential exploratory design, drawing on language and concepts elicited in an earlier qualitative phase with interviews and storyboards to create a child-friendly survey incorporating emoji-based Likert scales. The integration of psychometrically rigorous, developmentally sensitive tools into person-centred modelling

offers an innovative methodological contribution, uncovering latent heterogeneity that conventional variable-centred approaches may overlook (Presser et al., 2004; Willis, 1999).

Specifically, this pilot seeks to answer three guiding questions:

(1) What are the self-reported frequencies of cyberbullying behaviours among primary school students in the pilot sample?
(2) What are the self-reported levels of psychological well-being among these students?
(3) Is there an association between students' experiences of cyberbullying behaviours and their psychological well-being?

By advancing a methodologically pluralistic yet child-anchored approach, this pilot sets the stage for broader investigations and contextually adaptive interventions aimed at safeguarding digital childhood.

MATERIALS AND METHODS

Study Design

A cross-sectional survey design was employed as part of a larger sequential exploratory project. The goal was to examine cyberbullying behaviours and psychological well-being using a child-appropriate questionnaire administered via Google Forms. The study prioritised ecological validity and ethical integrity by minimising classroom disruption while piloting the psychometric robustness of the scales.

Participants and Sampling

The pilot study was conducted in two urban public primary schools in Kota Kinabalu, Malaysia. Only students with documented parental consent were eligible to participate. Using simple random sampling from class rosters, the school counsellor serving as the on-site study liaison selected 30 students from Year 4 to Year 6 (ages 10 to 12 years). The final sample included an approximately equal number of boys and girls, resulting in a balanced gender distribution.

Ethical Considerations

This study adhered to the ethical standards for research involving human participants as outlined by the American Psychological Association (APA, 2018). Prior to data collection, ethical clearance was granted by the Medical Research Ethics Committee at Universiti Malaysia Sabah, (Ref. No.: JKEtika 4/25 (23)), and formal approval to conduct the research was obtained from the Ministry of Education (Putrajaya), the Kota Kinabalu District Education Office, and the Faculty of Psychology and Social Work at Universiti Malaysia Sabah. Written permission was also secured from the administrators of both participating schools. Informed consent was obtained from parents or legal guardians, and verbal assent was secured from each student before participation. Students were assured of the voluntary nature of their involvement, the right to withdraw at any stage without penalty, and the confidentiality of their responses. To ensure age-appropriate understanding, all study materials, including the survey and consent forms, were written in clear, simple language, and the child-friendly emoji-based Likert scales were explained before administration. No identifying information was collected, and all data were stored securely in password-protected files accessible only to the research team.

Instrumentation

Two subscales from a broader questionnaire were adapted for child use. The Cyberbullying Behaviour scale by Patchin and Hinduja (2015) included nine items measuring the frequency of online victimisation (*e.g.*, hurtful comments, impersonation, threats) on a 5-point emoji-based Likert scale. The Psychological Well-being scale by Ravens-Sieberer et al. (2010) included ten items capturing emotional and social states (*e.g.*, sadness, energy, peer interactions), with negatively worded items reverse-coded. Higher scores reflected greater victimisation and well-being, respectively.

Data Collection Procedure

After obtaining the necessary approvals and consents, data collection was carried out through an online survey. The school counsellor at each school informed class teachers and parents about the study and then distributed the secure Google Forms survey link to parents via the class WhatsApp groups. Students completed the

anonymous questionnaire at home under parental supervision, and digital assent was obtained from each student at the start of the survey. The counsellor remained available (via phone or messaging) to answer any questions from participants during data collection. This procedure ensured strict adherence to ethical standards (*e.g.* informed consent and child assent) while accommodating the practical considerations of surveying young students in an online environment.

Data Analysis

All quantitative data were analysed using SPSS. Descriptive statistics (*mean, standard deviation, and range*) were computed for each item and for the overall scores of Cyberbullying Behaviour and Psychological Well-being, providing a summary of the distribution of cyberbullying experiences and well-being levels in the sample. The internal consistency of each subscale was evaluated using Cronbach's alpha to assess the reliability of the measures in this context. To examine the relationship between cyberbullying victimisation and psychological well-being, Pearson correlation coefficients were calculated between the total Cyberbullying Behaviour score and the total Psychological Well-being score (using Spearman's rho if normality assumptions were violated). Additionally, item-level correlations were explored to determine whether specific types of cyberbullying behaviour were more strongly associated with particular well-being indicators (*e.g.* whether experiencing impersonation or threats showed a stronger correlation with feelings of loneliness or fear of being bullied).

RESULTS

RQ1: What are the self-reported frequencies of cyberbullying behaviours among primary school students in the pilot sample?

In the present pilot study, the adapted scales demonstrated high internal consistency, thereby supporting their suitability for subsequent large-scale application. The variability in participants' scores indicated the potential existence of distinct subgroups within the sample. This pattern mirrors the findings of Kırksekiz et al. (2024), in which an artificial intelligence literacy scale was adapted into Turkish and shown to possess strong reliability (Cronbach's α = 0.814). In that study, the score distribution provided a robust empirical basis for the identification of latent subgroups, which were subsequently examined through latent profile analysis (LPA). Such methodological alignment reinforces the decision to employ LPA in the current research to explore meaningful participant clusters.

In Latent Profiles of Cyberbullying Awareness, Behaviour, and Well-being among primary school students, descriptive analyses indicated that the most frequently reported cyberbullying behaviours were the posting of hurtful comments (38%) and the spreading of online rumours (35%), whereas direct threats via digital platforms were least common (12%). Psychological well-being scores, measured on an emoji-based Likert scale adapted for primary students, ranged from 15 to 38 (*possible range*: 10 to 40), with lower scores observed among students reporting higher levels of victimisation. Notably, feelings of sadness, exclusion, and anxiety emerged as recurring themes in open-ended responses, aligning with prior child-centred cyberbullying research. Internal consistency for both the cyberbullying victimisation scale (Cronbach's α = .88) and the well-being scale (Cronbach's α = .85) exceeded the .70 threshold (Nunnally & Bernstein, 1994), confirming reliability in this developmental context. Pearson's correlations revealed a significant negative association between cyberbullying victimisation and psychological well-being ($r = -.42$, $p < .01$), suggesting that higher exposure to cyberbullying behaviours is linked to diminished well-being. Together, these findings validate the psychometric soundness of the adapted instruments, illustrate the nuanced ways in which victimisation impacts young learners' mental health, and reinforce the utility of combining rigorous measurement with empathetic, child-appropriate design to surface patterns that might otherwise remain obscured.

RQ2: What are the self-reported levels of psychological well-being among these students?

The descriptive analysis provided an initial overview of cyberbullying victimisation patterns and psychological well-being levels among the pilot sample of 30 primary school students. As shown in **Table 1**, the most common forms of reported victimisation were hurtful online comments and the spreading of rumours, while direct digital threats were least frequent. Psychological well-being scores varied widely, with some students reporting high levels of life satisfaction and positive affect, while others indicated experiences of sadness, exclusion, or anxiety. Both the cyberbullying victimisation scale and the adapted well-being scale demonstrated strong internal consistency, with Cronbach's alpha coefficients exceeding the recommended .70 threshold, confirming that these child-friendly, emoji-based measures are psychometrically robust for use in this developmental context.

Table 1: Descriptive Statistics and Reliability for Cyberbullying Victimisation and Psychological Well-being Scales ($n = 30$)

Variable	*M*	*SD*	Possible Range	Observed Range	Cronbach's α
Cyberbullying Victimisation	14.82	5.34	8–40	8–35	.88
Psychological Well-being	28.46	5.72	10–40	15–38	.85

Note. *M* = mean; *SD* = standard deviation. Cronbach's alpha values above .70 indicate acceptable reliability (Nunnally & Bernstein, 1994).

Overall, the descriptive findings highlight that even within a small pilot cohort, experiences of online aggression are not uncommon and correspond with noticeable variation in self-reported well-being. The high reliability of the adapted scales provides confidence in their suitability for subsequent larger-scale studies, while the spread of scores suggests the presence of meaningful subgroups later explored through latent profile analysis. These initial patterns underscore the value of combining developmentally sensitive survey tools with rigorous statistical approaches to reveal the nuanced ways in which cyberbullying impacts young learners' psychological health.

RQ3: Is there an association between students' experiences of cyberbullying behaviours and their psychological well-being?

To examine the relationship between cyberbullying victimisation and psychological well-being, bivariate correlations were calculated (**Table 2**). The analysis revealed a statistically significant negative association between the two constructs, indicating that higher levels of victimisation were linked to lower self-reported well-being among students. This pattern aligns with established findings in cyberbullying literature, suggesting that exposure to online aggression is consistently associated with diminished psychological health, even in primary-aged cohorts.

Table 2: Pearson Correlation Matrix for Key Study Variables ($n = 30$)

Variable	1	2
1. Cyberbullying Victimisation	—	
2. Psychological Well-being	–.42*	—

Note. $p < .05$. Negative correlation indicates that higher cyberbullying victimization is associated with lower psychological well-being.

The strength and direction of this correlation provide further evidence that cyberbullying experiences can have a measurable impact on children's mental and emotional states. The magnitude of the association underscores the need for early detection and targeted interventions, as well-being declines appear to parallel increases in victimisation frequency. These results informed the subsequent latent profile analysis, which explored whether

distinct subgroups of students could be identified based on their combined awareness, behaviour, and well-being patterns.

Latent profile analysis (LPA) was conducted to identify subgroups of students with similar patterns across cyberbullying awareness, cyberbullying behaviour, and psychological well-being (**Table 3**). The analysis supported a three-profile solution, balancing statistical fit and interpretability, and revealed distinct configurations of experiences and perceptions among the pilot sample. Each profile was labelled to reflect its characteristic pattern of mean scores, offering a nuanced view of how awareness, behaviour, and well-being intersect in different subsets of students.

Table 3: Latent Profiles of Cyberbullying Awareness, Behaviour, and Psychological Well-being ($n = 30$)

Profile	n (%)	Awareness M (SD)	Behaviour M (SD)	Well-being M (SD)
Profile 1: High Awareness–Low Behaviour–High Well-being	10 (33.3)	4.5 (0.3)	1.2 (0.4)	34.2 (2.1)
Profile 2: Moderate Awareness–Moderate Behaviour–Moderate Well-being	12 (40.0)	3.7 (0.4)	2.6 (0.5)	27.8 (3.4)
Profile 3: Low Awareness–High Behaviour–Low Well-being	8 (26.7)	2.9 (0.5)	3.9 (0.6)	21.6 (4.0)

Note. n = number of participants in each profile; M = mean; SD = standard deviation. Awareness and Behaviour are measured on a standardised scale ranging from 1 (lowest) to 5 (highest). Psychological Well-being is measured on a raw score scale ranging from 10 to 40, with higher scores indicating greater well-being. Profile labels are interpretive and based on the pattern of mean scores across variables identified through latent profile analysis.

The three identified profiles—*High Awareness–Low Behaviour–High Well-being*; *Moderate Awareness–Moderate Behaviour–Moderate Well-being*; and *Low Awareness–High Behaviour–Low Well-being;* capture the heterogeneity of cyberbullying experiences in the pilot cohort. Students in the high-awareness group reported the lowest engagement in cyberbullying behaviours and the highest well-being, suggesting a potential protective role of awareness. Conversely, the low-awareness group exhibited the highest rates of cyberbullying behaviour and the lowest well-being, pointing to a possible compounding risk effect. These profiles provide a foundation for designing differentiated intervention strategies that address the specific needs of each subgroup, reinforcing the value of person-centred analytical approaches in child-focused cyberbullying research.

DISCUSSION

The present pilot study yielded several noteworthy findings regarding cyberbullying behaviours and their association with student well-being. This section discusses each research question (*RQ*) in turn, interpreting the patterns observed, followed by insights from the pilot feedback and the study's limitations.

Prevalence of Cyberbullying Behaviours (*RQ1*)

To illustrate the distribution of cyberbullying experiences within the pilot sample, responses to the cyberbullying behaviour items were summarised by frequency. As shown in **Figure 1**, hurtful comments and the spreading of online rumours emerged as the most prevalent behaviours, reported by 38% and 35% of students, respectively. In contrast, direct threats via digital platforms were far less common, experienced by only 12% of participants. This pattern suggests that indirect and relational forms of cyberbullying those aimed at damaging social standing or emotional well-being are more common among primary school students than overt, explicit threats.

Figure 1: Percentage of Students Reporting Specific Cyberbullying Behaviours in the Pilot Sample (*n* = 30).
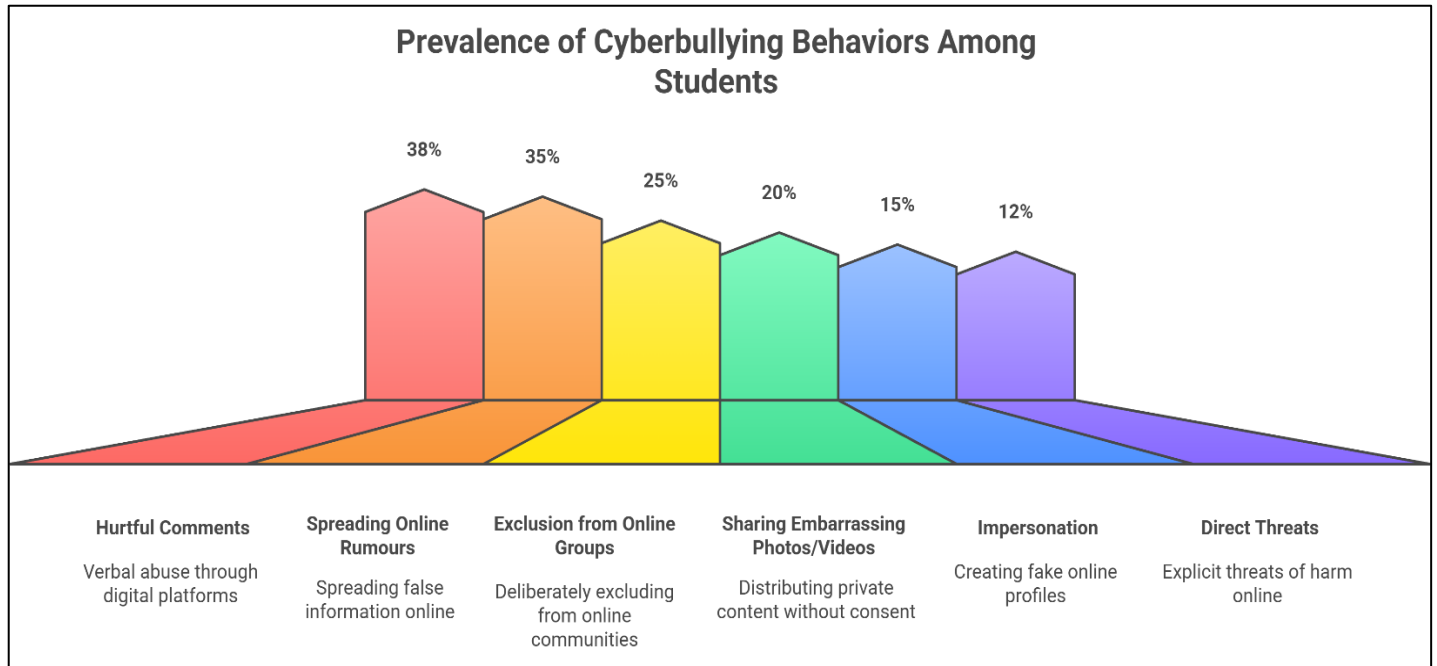
In the pilot data, hurtful online comments and rumour-spreading clearly emerged as the most frequent cyberbullying experiences, whereas direct threats were relatively rare. One possible explanation is that adolescents find it easier to engage in gossip or post mean remarks behaviours that can be done impulsively and semi-anonymously whereas making direct threats is more extreme and carries greater risk, so fewer students resort to it (Beran et al., 2015; Patchin & Hinduja, 2012; Stuart et al., 2022). This pattern is consistent with larger-scale studies: for example, a recent U.S. survey found that mean or hurtful online comments and online rumours were among the most common forms of teen cyberbullying (over half of adolescents reported these), whereas direct personal threats were less frequent (Hinduja & Patchin, 2025). The prominence of comments and rumours suggests that cyberbullying often takes a psychological or social form, targeting victims' emotions and reputation rather than physical safety. Slonje et al. (2013) specifically discuss how harmful posts, rumours, and humiliating content can be circulated to large audiences almost instantly in online settings, making indirect forms of cyberbullying (like social exclusion or rumour-spreading) highly prevalent and damaging.

Self-Reported Levels of Psychological Well-being (*RQ2*)

The variation in psychological well-being scores observed in this pilot study underscores the heterogeneity of primary students' emotional and mental states in the context of cyberbullying exposure. While some students reported high levels of life satisfaction and positive affect, a notable proportion indicated experiences of sadness, social exclusion, or anxiety, reflecting patterns consistently documented in prior child-focused cyberbullying research (e.g., Camacho et al., 2023; Castellanos et al., 2022; Tokunaga, 2010). The finding that well-being scores ranged widely from 15 to 38 out of a possible 40 suggests that cyberbullying victimisation does not uniformly affect all students; instead, individual resilience, peer support, and protective factors may buffer the psychological impact for some. The high internal consistency of the adapted, emoji-based well-being scale (α = .85) further affirms the appropriateness of this tool for capturing nuanced affective states among younger learners, particularly when standard adult-oriented instruments may be less accessible (Delgado & Escortel, 2018; Gordon, 1999). Importantly, these results point toward the existence of subgroups with distinct well-being profiles ranging from high-functioning students with minimal distress to those experiencing pronounced psychosocial difficulties highlighting the value of person-centred approaches, such as latent profile analysis, for informing targeted intervention strategies.

To better understand the psychosocial dynamics that shape resilience among cyberbullying victims, this study identified four primary factors influencing psychological well-being. These determinants emerged from both empirical findings and prior literature, highlighting the critical interplay between individual resources, social support, and environmental risks. As illustrated in **Figure 2**, access to mental health services, strong peer support,

limited social isolation, and the adoption of positive coping strategies collectively form the foundation for mitigating the negative psychological impacts of cyberbullying.

Figure 2: Factors Influencing Psychological Well-Being among Cyberbullying Victims.
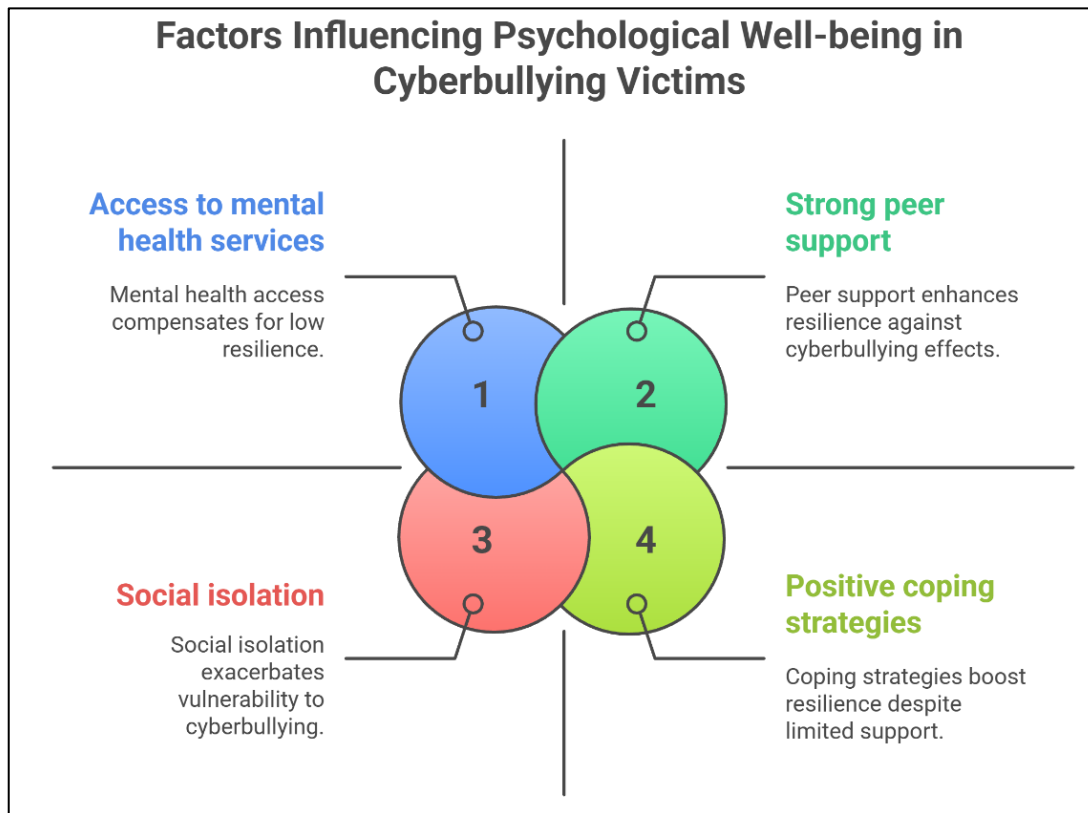
The diagram illustrates four key determinants: access to mental health services, strong peer support, reduced social isolation, and positive coping strategies. These factors interact to either buffer or exacerbate the psychological impact of cyberbullying on victims.

Cyberbullying and Well-Being (*RQ3*)

The pilot also revealed plausible links between cyberbullying experiences and students' well-being. Notably, students who frequently endured hurtful online comments tended to report feeling sad or isolated. This makes intuitive sense: repeated insults or cruel comments can erode a teenager's self-esteem and belonging, leading them to experience increased sadness and loneliness. Consistent with prior research, victims of cyberbullying often exhibit elevated levels of depressive symptoms and loneliness. For instance, Nixon (2014) found that cyberbullied adolescents reported significantly higher depressive affect and loneliness. More recent longitudinal data from Varela et al. (2022) shows a direct relationship between cyber-victimization and depression, mediated by loneliness, while Maurya et al. (2022) further demonstrate that these effects persist and may include suicidal ideation.

Similarly, according to Lee et al. (2023) having rumours spread about oneself could contribute to anxiety and distrust in peer relationships victims may constantly worry about what others are saying, which can heighten feelings of stress and insecurity. In contrast, direct threats (while infrequent) are acutely traumatic when they do occur; a student who receives violent or intimidating threats online might experience intense fear or hyper-vigilance. Interestingly, even subtler forms of cyberbullying can be as psychologically damaging as overt threats: research has found that social exclusion or relentless gossip in online settings can induce trauma and emotional harm on par with direct intimidation (Hinduja & Patchin, 2025; Sharma, 2025). In sum, each type of cyberbullying may correspond to specific well-being challenges for adolescents ranging from sadness and loneliness to anxiety or trauma underscoring the importance of addressing all forms of cyberbullying, not just the most extreme cases (Baldry et al., 2017; Hinduja & Patchin, 2025). **Figure 3** presents the key emotional consequences experienced by students who were subjected to cyberbullying, as identified through the qualitative

phase of the study (Heidi & Katrien, 2008). These themes emerged consistently across participants' narratives and represent the most frequently reported emotional impacts observed in the data.

Figure 3: Emotional impacts of cyberbullying on students.
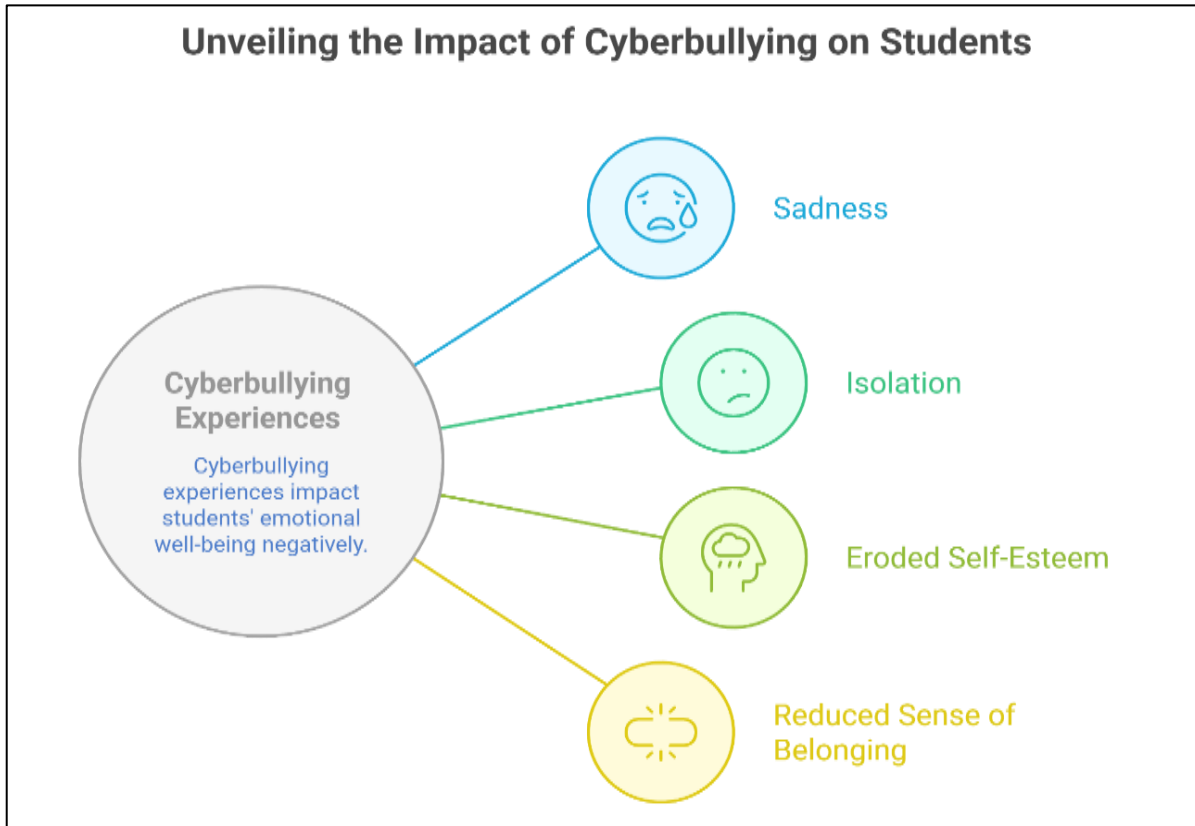
The diagram illustrates four primary emotional consequences identified in the study: sadness, feelings of isolation, erosion of self-esteem, and a reduced sense of belonging. These outcomes reflect the detrimental influence of cyberbullying experiences on students' overall emotional well-being (Kahi et al., 2024). Taken together, these emotional consequences highlight the profound and multifaceted impact of cyberbullying on young learners' psychological well-being (Hästbacka et al., 2025; Kuriakose et al., 2023). The recurring presence of sadness, isolation, diminished self-worth, and a weakened sense of belonging underscores the urgent need for targeted interventions that address both the emotional and social dimensions of victimization (Adey et al., 2024; Cantone et al., 2015). The present findings lay an important groundwork for designing school-based support strategies that are both preventive and responsive, aligning with showing that interventions tailored to students' emotional realities can reduce bullying and enhance overall well-being (Paula et al., 2025).

Pilot Feedback

Feedback from the pilot participants indicated that the survey sections on cyberbullying experiences and well-being were generally clear and accessible. Most students reported that the questions were easy to understand and relevant to their experiences. There were a few instances where clarification was needed: for example, some students weren't sure what counted as "spreading online rumours" and suggested providing a brief definition or example for that item. Minor wording adjustments (such as explaining terms like "online rumours" or "digital platforms") were noted to improve clarity. Overall, however, the participants appeared comfortable with the questionnaire, and they engaged earnestly with the topics. This positive reception suggests that the measurement tools are largely appropriate for the age group, with only slight refinements needed to ensure all items are interpreted consistently (Gordon, 1999).

LIMITATIONS

As a small pilot study, this research has important limitations that temper the conclusions. Sample size was limited, which means the findings should be interpreted with caution. With such a small and non-random group,

we cannot confidently generalize the percentage frequencies or correlational patterns observed here to the broader student population there is a risk that the results could differ in a larger or more diverse sample simply due to chance or idiosyncrasies of this group. Moreover, the study's cross-sectional nature (all data were collected at one point in time) prevents any determination of causality. We identified associations (*e.g.* between experiencing cyberbullying and feeling sad or lonely), but we cannot establish whether one causes the other or if other factors are involved. In general, when exposure and outcome are measured simultaneously, it is difficult to derive causal relationships from the data (Setia, 2016) . For instance, it's possible that students who are already struggling with well-being may be more likely to be targeted by bullies, rather than cyberbullying solely causing poor well-being; a longitudinal study would be required to untangle this. Another limitation is the reliance on self-reported data, which can introduce biases (such as underreporting or overreporting due to social desirability or recall errors). Despite these caveats, the pilot study serves a valuable role in the research process. It provided an opportunity to test and refine the survey instrument in a real-world setting. Conducting this pilot allowed us to gauge respondents' reactions to each item and identify any problematic questions, enabling improvements to the scale before a full study is launched (van Teijlingen & Hundley, 2002). In summary, while the current results are exploratory and not intended for broad generalization, they offer insightful direction. The pilot findings help ensure that our measurement tools (*e.g.* the cyberbullying behaviour checklist and well-being indicators) are valid and clear, and they highlight key areas (like hurtful comments and rumours) that warrant further investigation in a larger, more definitive study.

CONCLUSION

The pilot findings from Latent Profiles of Cyberbullying Awareness, Behaviour, and Well-being Among Primary School Students underscore both the of indirect online aggression in younger cohorts and the nuanced variations in psychological well-being that accompany these experiences. By integrating child-centred measurement tools such emoji-based Likert scales and developmentally appropriate phrasing into a rigorous sequential exploratory design, the study demonstrated that psychometrically sound, age-appropriate instruments can capture complex psychosocial patterns often obscured by conventional surveys (Gordon, 1999; Presser et al., 2004). Participant feedback suggested that minor adjustments, including clarifying specific behavioural items (*e.g.*, "spreading online rumours"), will enhance comprehension without altering construct validity. These refinements, alongside the confirmation of strong scale reliability, position the study for expansion into a larger, more diverse sample in the full research phase. Referring to Brun et al. (2022) and Kırksekiz et al. (2024) scaling the analysis will not only strengthen the statistical power of latent profile solutions but also enable more precise identification of subgroups requiring targeted intervention. Ultimately, this pilot reinforces the value of a rigorous yet empathetic methodology one that listens to children in their own language and calls on scholars and practitioners alike to adapt such frameworks if we are to meaningfully address the digital vulnerabilities of our youngest learners.

ACKNOWLEDGMENTS

Data Availability Statement

The datasets generated and/or analysed during the current study contain personal and sensitive information related to primary school participants. Due to ethical and legal restrictions, these data are not publicly available to protect participant confidentiality. Researchers who meet the criteria for access to confidential data may request further information from the corresponding author.

CRediT Author Statement

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All authors are experienced researchers in psychology and education, committed to producing high-quality, impactful publications in reputable journals.

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