

ORIGINAL RESEARCH ARTICLE

Belonging Matters: Pathways from Bullying and Family Support to Reading Literacy among Filipino Adolescents

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ABSTRACT

Functional illiteracy continues to constrain students' academic and long-term opportunities in the Philippines. One factor that heightens this risk is bullying, which undermines both psychosocial well-being and academic achievement. This study used 2022 Programme for International Student Assessment (PISA) data to examine whether school belonging mediates the effect of bullying on reading literacy, and whether family support moderates these pathways. A moderated mediation model across ten plausible values, controlling for socioeconomic status, gender, and school risk, showed that bullying was negatively associated with reading literacy, partly through reduced belonging. The negative impact of bullying on belonging was stronger when family support was higher, but family support did not moderate the belonging-literacy link. These findings suggest that while families can buffer psychosocial harm, their role in mitigating bullying's academic consequences is more complex and context dependent.

Keywords: *Bullying, family support, reading literacy, school belonging*

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INTRODUCTION

The Philippines faces a deepening educational crisis marked by persistent literacy challenges. A large majority of children cannot read and comprehend age-appropriate text by the end of primary school, a condition known as learning poverty. According to the World Bank and UNESCO Institute for Statistics (2022), around 90–91% of Filipino children experience learning poverty, one of the highest rates globally (World Bank, 2024). National data reinforce this concern: the 2024 Functional Literacy, Education, and Mass Media Survey (FLEMMS) reported that while 93.1% of Filipinos aged 10–64 possess basic literacy, only 70.8% demonstrate functional literacy, which requires the ability to interpret and integrate information effectively (Philippine Statistics Authority, 2024; Philippine Statistics Authority, 2025).

These difficulties extend into adolescence. Results from the Programme for International Student Assessment (PISA) show that in both 2018 and 2022, the Philippines ranked near the bottom in reading, mathematics, and science. Only about 24% of 15-year-olds reached minimum proficiency in reading, far below global benchmarks (Organisation for Economic Co-operation and Development [OECD], 2019, 2023b). These persistent gaps highlight the urgency of examining not only instructional quality but also psychosocial and contextual influences on literacy performance.

One critical but often overlooked factor is school bullying. In PISA 2018, 65% of Filipino students reported being bullied at least a few times per month, nearly triple the OECD average of 23%.

The trend continued in 2022, when about one in three students reported weekly bullying, with boys (53%) reporting higher prevalence than girls (43%) (OECD, 2019, 2023b). Bullying carries measurable academic costs: students who faced threats scored, on average, 56 points lower in reading, while those mocked by peers scored 13 points lower (OECD, 2023b). These patterns illustrate how bullying not only undermines social well-being but also compounds academic disadvantages.

The consequences of bullying extend beyond learning outcomes. Victimized students face increased risks of anxiety, depression, and diminished self-esteem (Balluerka et al., 2023; Han et al., 2025), which reduce motivation and engagement in schoolwork. Economically, bullying-related learning deficits are estimated to cost the Philippines ₱10–20 billion annually—an amount comparable to the Department of Education's 2024 allocations for textbooks and computerization (Abrigo et al., 2024; Philippine Institute for Development Studies, 2024). International evidence echoes these findings, linking bullying to long-term losses in earnings and productivity (Brimblecombe et al., 2018; Gimenez et al., 2024). These studies emphasize that bullying imposes not only educational and social costs but also significant economic burdens.

Despite the passage of the Anti-Bullying Act of 2013 (Republic Act No. 10627), implementation remains inconsistent. Many schools underreport cases, mandated anti-bullying committees are often non-functional, and administrators frequently underestimate bullying's academic impact (Pinera et al., 2022;

World Bank Group, 2020). This gap between student experiences and institutional responses reflects both policy weaknesses and limited awareness of bullying's broader consequences.

The co-occurrence of low literacy and high bullying prevalence presents a particularly concerning challenge. Struggling readers may be more vulnerable to peer victimization, while bullying further erodes concentration, motivation, and reading engagement (Morgan et al., 2022; Turunen et al., 2017). However, research in the Philippines remains limited. Local studies often address either literacy or bullying in isolation (Marvas et al., 2024; Paguyan and Taoc, 2022; Samara et al., 2021; Tiauzon and Malquisto, 2019), leaving the intersection of these issues underexplored.

Recent PISA-based research highlights several psychosocial factors relevant to reading achievement. Bernardo and Mante-Estacio (2023) found that metacognitive strategies strongly predict reading proficiency, though Filipino students often lack awareness of the most effective approaches. Similarly, Bernardo (2023) showed that growth mindset positively influences reading outcomes, but its benefits are weaker among students from lower socioeconomic backgrounds, underscoring structural inequities. Haw et al. (2021) demonstrated that need-supportive teaching practices improve reading achievement across socioeconomic levels, while Haw and King (2023), using a bioecological framework and machine learning, identified school belonging as a critical predictor alongside socioeconomic status and mindset. These findings illustrate that literacy outcomes are shaped not only by individual dispositions but also by broader relational and contextual support. Yet little is known about how peer-level risks such as bullying interact with protective factors like belonging and family support. International evidence indicates that school belonging mediates the effects of bullying on academic outcomes (Arslan, 2018; Wormington et al., 2016), while family support can buffer negative effects, though findings are mixed (Hill and Tyson, 2009).

Accordingly, this study investigates the relationship between bullying and reading proficiency among Filipino adolescents using PISA 2022 data. It tests a moderated mediation model in which school belonging mediates the bullying–literacy link and family support moderates these pathways. By situating international frameworks within the Philippine context, this study aims to contribute both theoretically—by clarifying psychosocial processes underlying literacy—and practically—by providing evidence to inform interventions that enhance reading outcomes while fostering safer, more inclusive school environments.

Theoretical framework

Social-ecological theory

This study is grounded in Bronfenbrenner's social-ecological theory (1979), later expanded into the bioecological model (Bronfenbrenner and Morris), which emphasizes that student development is shaped by multiple interacting systems. Applied to bullying by (Espelage and Holt, 2013), this perspective underscores how peer victimization, school belonging, family support, and literacy outcomes are interconnected. Rather than viewing bullying as a dyadic exchange between perpetrators and victims, research demonstrates that it is a dynamic process influenced by family, peers, teachers, communities, and cultural contexts (Barboza et al., 2009; Espelage et al., 2014; Hong and Espelage, 2012; Hong and Garbarino, 2012; Patton et al., 2013; Rose et al., 2015).

Within this framework, bullying represents a peer-level risk factor that undermines school belonging. Peer victimization has been linked to diminished engagement, well-being, and academic performance (Hong and Espelage, 2012; Juvonen and Graham,

2014). Longitudinal evidence shows that bullying predicts emotional and behavioral difficulties, which lower achievement over time (Murphy et al., 2022). Conversely, school belonging functions as a key psychosocial resource that fosters motivation, persistence, and reading performance (Arslan, 2018; Tan et al., 2022). The (OECD, 2023c) identifies belonging as one of the strongest psychosocial correlates of student achievement in PISA.

Family contexts further shape these processes. Supportive family involvement—through communication, expectations, and monitoring—has been linked to literacy and socioemotional outcomes (Borgonovi and Montt, 2012; Wilder, 2014). Family contexts further shape these processes. Supportive family involvement—through communication, expectations, and monitoring—has been linked to literacy and socioemotional outcomes (Estell and Perdue, 2013; Xiang et al., 2025). However, recent studies show mixed or non-significant effects (Tan et al., 2022), suggesting the need for deeper contextual investigation. Building on the reviewed literature, this study examines how bullying, school belonging, and family support jointly shape reading literacy in the Philippines, where challenges of low performance and functional illiteracy persist. In addressing these gaps, the present study is guided by the following research questions and hypotheses.

RQ1: To what extent does bullying victimization negatively affect students' reading literacy?

RQ2: How does school belonging influence the relationship between bullying and reading literacy?

RQ3: Does family support moderate the relationship between bullying, belonging, and reading literacy?

H1: Bullying victimization is negatively associated with students' academic performance, including reading literacy.

H2: Bullying victimization is negatively associated with students' sense of school belonging.

H3: Sense of school belonging mediates the relationship between bullying victimization and reading literacy.

H4a: Family support would moderate the negative association between bullying and school belonging.

H4b: Family support would moderate the association between school belonging and reading literacy.

Furthermore, Figure 1 presents the study's conceptual framework. It outlines the hypothesized relationships among key constructs: bullying, school belonging, and reading literacy including the proposed moderating role of family support.

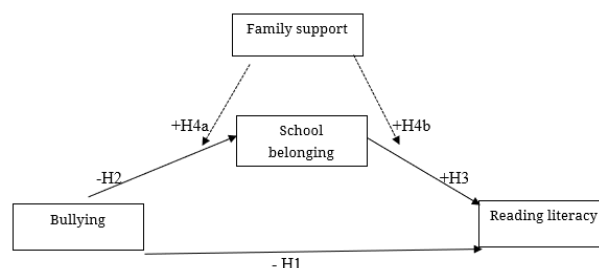


Figure 1. Conceptual framework of the study.

MATERIALS AND METHODS

Data source and sample

This study used data from the Philippine sample of the 2022 Programme for International Student Assessment (PISA), coordinated by the Organisation for Economic Co-operation and

Development (OECD). PISA evaluates the competencies of 15-year-old students in reading, mathematics, and science, as well as their backgrounds, through a two-stage stratified sampling design that ensures national representativeness. In the Philippines, 7,193 students participated in 2022. After listwise deletion due to missing data on background indices and covariates, the analytic sample included 4,226 students. When applying PISA's student weights, this corresponds to a nationally representative population estimate of 1 million 15-year-old students (OECD, 2023a). Thus, weighted population figures should be interpreted as nationally representative, while unweighted sample sizes reflect the actual number of cases included in the analysis.

Measures

Bullying, school belonging, and family support were measured using weighted likelihood estimates (WLEs) provided in the PISA database. Reading literacy served as the primary outcome variable and was represented by ten plausible values (PVs) generated through Item Response Theory (IRT) scaling. These PVs are not single test scores but multiple imputed estimates of student proficiency that capture measurement error and uncertainty. Following OECD guidelines (OECD, 2009, 2023a), all ten PVs were used in analyses to obtain unbiased estimates.

Covariates included socioeconomic status (ESCS), gender (ST004D01T, coded 1 = female, 2 = male), and the school risk index. ESCS and school risk were retained in their standardized PISA metric form (OECD mean = 0, SD = 1) without re-centering, as they were used strictly as control variables.

Analytic strategy

Analyses were conducted using the IEA IDB Analyzer and SPSS version 28. To account for PISA's complex sampling design, final student weights (W_FSTUWT) and 80 replicate weights (W_FSTR1–W_FSTR80) were applied using Fay's method ($\rho = 0.5$), producing unbiased point estimates and design-adjusted standard errors (Judkins, 1990).

Because reading literacy is represented by ten plausible values, regression analyses were performed separately for each PV dataset. The IEA IDB Analyzer generated the necessary SPSS syntax, which was executed to run the regression models. The resulting coefficients and standard errors were then combined using Rubin's (1987) rules. This procedure accounts for two sources of uncertainty: sampling error within each PV dataset and variability across the ten imputed datasets. The pooled estimates therefore provide statistically valid results that reflect both sampling and imputation processes.

Moderated mediation framework

The study employed a moderated mediation framework to examine the role of school belonging and family support in the

relationship between bullying and reading literacy. Mediation was assessed through the following pathways:

- Path a: bullying → belonging (expected negative association).
- Path b: belonging → literacy, controlling for bullying.
- Path c: total effect of bullying on literacy.
- Path c': direct effect of bullying on literacy after accounting for belonging.

The indirect effect of bullying on literacy ($a \times b$) captured the mediation pathway. Moderation was tested by interaction terms with family support. Specifically, the bullying \times family support interaction tested moderation on Path a (bullying → belonging), while the belonging \times family support interaction tested moderation on Path b (belonging → literacy). Significant interactions were probed using simple slopes analysis to examine how effects varied across different levels of family support.

For reading literacy, regression paths involving PVs (Paths b, c, and c') were estimated separately for each plausible value, and the results were pooled using Rubin's rules. Path a was estimated directly from a single regression because belonging was measured as a single WLE index. All models adjusted for gender, ESCS, and school risk index. Indirect and conditional indirect effects were derived from pooled coefficients, with standard errors estimated via the delta method.

RESULTS

Descriptive statistics

Table 1 presents descriptive statistics for the study variables. On average, Filipino students reported a lower sense of school belonging ($M = -0.34$, $SE = .01$) relative to the international mean of zero, with moderate variability ($SD = 0.73$, $SE = .02$). Reports of bullying victimization were above the OECD average ($M = 0.47$, $SE = .03$), with relatively high variability ($SD = 1.20$, $SE = .01$). In contrast, students reported slightly higher family support compared to the OECD average ($M = 0.29$, $SE = .02$; $SD = 0.84$, $SE = .01$).

With respect to achievement, the mean reading literacy score was 366.90 ($SE = 3.73$), substantially below the OECD average of 476, consistent with the persistent performance gap highlighted in the PISA 2022 report. The relatively large standard deviation ($SD = 88.03$, $SE = 2.52$) further suggests significant heterogeneity in students' literacy outcomes.

These findings underscore the importance of psychosocial constructs in the learning environment. Filipino students are navigating school with weaker feelings of belonging and higher levels of bullying exposure, both of which are known to hinder motivation, engagement, and cognitive performance. Although family support appears relatively strong, it may not be sufficient to compensate for the adverse effects of low belonging and high bullying on reading literacy (OECD, 2019; World Bank Group, 2020). These descriptive patterns set the stage for further testing of the hypothesized mediation and moderation processes involving

Table 1. Descriptive statistics for study variables (Philippines, PISA 2022).

| Variable | N | Population | Mean | SE Mean |
|--------------------------|-------|------------|-------|---------|
| Sense of Belonging (WLE) | 4,226 | 1,049,025 | -0.34 | 0.01 |
| Bullying (WLE) | 4,226 | 1,049,025 | 0.47 | 0.03 |
| Family Support (WLE) | 4,226 | 1,049,025 | 0.29 | 0.02 |
| Reading Literacy (PV) | 4,226 | 1,049,025 | 366.9 | 3.73 |

Notes:

1. Weighted descriptive statistics are based on the final analytic sample ($n = 4,226$) after listwise deletion as implemented by IEA IDB Analyzer. Because students with missing background data were excluded, the analytic sample mean for reading literacy ($M=366.9$) is higher than the Philippine average score reported in the official PISA 2022 report ($M=347$).

2. Unweighted sample size = 4,226 students. Weighted population estimate ($N = 1,049,025$).

Correlation analysis

Table 2 presents the bivariate correlations among the key study variables. As expected, bullying victimization was negatively associated with both sense of belonging ($r = -.24, p < .001$) and reading literacy ($r = -.43, p < .001$), whereas belonging was positively related to reading literacy ($r = .22, p < .001$). On the other hand, family support showed a small positive correlation with belonging ($r = .09, p < .001$) but a negative association with reading literacy ($r = -.14, p < .001$). This counterintuitive result may reflect the contextual meaning of the PISA family support index, which

often captures parental involvement in school-related activities. In many educational systems, including the Philippines, parents may become more involved when students are struggling academically, creating a negative bivariate association with achievement. However, as shown in the regression and moderated mediation models, the functional role of family support is clarified when adjusting for covariates (ESCS, gender, and school risk), where it operates as a significant buffer in the pathway from bullying to belonging rather than as a direct predictor of literacy outcomes.

Table 2. Correlation matrix among key variables (Philippines, PISA 2022).

| Variables | Belong | Bullied | FamSup | PV_Read |
|------------|---------------|---------------|---------------|---------------|
| 1. Belong | 1.00 | -.24 (.02)*** | .09 (.02)*** | .22 (.01)*** |
| 2. Bullied | -.24 (.02)*** | 1.00 | .04 (.02)* | -.43 (.01)*** |
| 3. FamSup | .09 (.02)*** | .04 (.02)* | 1.00 | -.14 (.02)*** |
| 4. PV_Read | .22 (.01)*** | -.43 (.01)*** | -.14 (.02)*** | 1.00 |

Notes:

1. BELONG = sense of school belonging (BELONG_WLE1); BULLIED = bullying victimization (BULLIED_WLE1); FAMSUP = family support (FAMSUP_WLE1); PV_READ = reading literacy plausible values (PISA 2022).

2. Values below the diagonal are correlation coefficients; values in parentheses are standard errors. * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed).

3. All correlations are weighted using final student weights (W_FSTUWT) and replicate weights following PISA methodology (BRR with Fay's adjustment, $k = 0.5$).

Analysis of moderation and mediation effect

A moderated mediation analysis was conducted to examine the relationships among bullying victimization, school belonging, family support, and reading literacy. Reading literacy was estimated using all ten plausible values, and coefficients and standard errors were pooled across ten plausible values using Rubin's (1987) rule, following PISA guidelines.

RQ1 / Hypothesis 1: Bullying and Reading Literacy

Bullying victimization showed a robust negative association with students' reading literacy. After accounting for socioeconomic status (ESCS), gender, and school risk, the regression results indicated that higher levels of bullying were associated with significantly lower reading performance ($B = -20.50, SE = 1.11, t = -18.49, p < .001, \beta = -0.28$). This effect remained strong even when covariates were included, highlighting that bullying exerts a unique and detrimental impact on literacy outcomes beyond demographic and contextual background factors.

RQ2 / Hypotheses 2 and 3: Mediation via Sense of School Belonging

The mediating role of school belonging was supported. Consistent with expectations, bullying was negatively associated with belonging ($B = -0.12, SE = 0.01, t = -9.71, p < .001, \beta = -0.19$), while belonging was positively related to reading literacy ($B = 14.95, SE = 2.03, t = 7.36, p < .001, \beta = 0.12$). When both bullying and belonging were entered as predictors of literacy, the direct negative effect of bullying on reading

($B = -20.50, SE = 1.11, t = -18.49, p < .001, \beta = -0.28$) remained substantial but was somewhat reduced, confirming partial mediation (Baron and Kenny, 1986). Importantly, this pattern persisted even after adjusting for ESCS, gender, and school risk, suggesting that the mediating role of belonging is not simply explained by background influences but represents a substantive psychosocial pathway linking bullying to literacy.

RQ3 / Hypotheses 4a and 4b

Family support was further examined as a moderator. In the bullying → belonging pathway, the interaction between bullying and family support was significant ($B = -0.03, SE = 0.01, t = -2.97, p = .003, \beta = -0.05$). This indicates that the negative impact of bullying on belonging was more pronounced under high family support, contrary to the expected buffering role. In the belonging → literacy pathway, the interaction was non-significant ($B = 0.36, SE = 1.98, t = 0.18, p = .85, \beta = 0$), suggesting that family support did not alter the strength of belonging's effect on reading achievement. Thus, moderated mediation results revealed that the indirect effect of bullying on literacy via belonging varied with levels of family support, but not in the anticipated protective direction. These effects were estimated while adjusting for ESCS, gender, and school risk, underscoring the robustness of the findings.

Table 3 presents the pooled coefficients, variances, and significance levels for all hypothesized paths and interactions using Rubin's rules. As shown, bullying was negatively associated with both belonging and reading literacy, while ESCS and family support emerged as positive predictors. The interaction between bullying and family support was significant in predicting belonging, supporting H4a.

Table 3. Pooled regression coefficients for moderated mediation of bullying on reading literacy via sense of belonging, with family support as moderator (Philippines, PISA 2022), 10 plausible values, $N = 1,049,025$.

| Predictor | B | SE | t | β (Std.) | 95% C.I. | p |
|--|-------|------|-------|----------|----------------|------------|
| Equation 1 (Mediator: Sense of Belonging) | | | | | | |
| Bullying (BULLIED_WLE1) | -0.12 | 0.01 | -9.71 | -0.19 | [-0.14, -0.10] | < .001 *** |
| ESCS | -0.02 | 0.01 | -1.68 | -0.03 | [-0.04, 0.00] | 0.094 |
| Family Support (FAMSUP_WLE1) | 0.1 | 0.02 | 6.41 | 0.12 | [0.07, 0.13] | < .001 *** |
| Bullying × Family Support (INT_BULLYFAM) | -0.03 | 0.01 | -2.97 | 0.05 | [-0.05, -0.01] | .003 ** |
| School Risk (SCHRISK) | -0.05 | 0.01 | -5.16 | -0.08 | [-0.07, -0.03] | < .001 *** |
| Gender (ST004D01T_D2) | -0.05 | 0.02 | -2.17 | -0.04 | [-0.09, -0.01] | .030 * |

| | | | | | | |
|---|--------|------|--------|-------|------------------|------------|
| Constant | -0.28 | 0.02 | -14.31 | — | [-0.32, -0.24] | < .001 *** |
| Equation 2 (Outcome: Reading Literacy) | | | | | | |
| Sense of Belonging (BELONG_WLE1) | 14.95 | 2.03 | 7.36 | 0.12 | [10.96, 18.94] | < .001 *** |
| Bullying (BULLIED_WLE1) | -20.50 | 1.11 | -18.49 | -0.28 | [-22.67, -18.33] | < .001 *** |
| ESCS | 21.94 | 1.78 | 12.35 | 0.28 | [18.46, 25.42] | < .001 *** |
| Family Support (FAMSUP_WLE1) | -13.51 | 2.06 | -6.57 | -0.13 | [-17.53, -9.49] | < .001 *** |
| Belonging × Family Support (INT_BELFAM) | 0.36 | 1.98 | 0.18 | 0.00 | [-3.52, 4.24] | 0.854 |
| School Risk (SCHRISK) | -14.80 | 1.29 | -11.49 | -0.20 | [-17.32, -12.28] | < .001 *** |
| Gender (ST004D01T_D2) | -22.91 | 2.27 | -10.10 | -0.13 | [-27.35, -18.47] | < .001 *** |
| Constant | 429.74 | 4.85 | 88.67 | — | [420.23, 439.25] | < .001 *** |

Notes.
 1. B = unstandardized coefficient; β = standardized coefficient. All estimates are pooled across 10 plausible values using Rubin's rules.
 2. All models adjusted for ESCS, gender, and school risk; p-values: *p < .05, **p < .01, ***p < .001.

To illustrate this interaction effect, Figure 2 plots the predicted values of belonging across levels of bullying, separately for students with high versus low family support. The figure indicates that the

association between bullying and belonging varied by levels of family support, with a steeper negative slope observed among students reporting higher support.

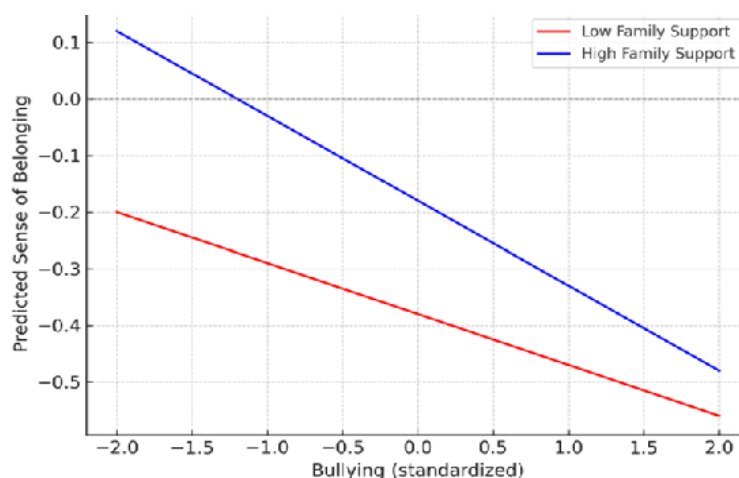


Figure 2. Interaction effect of family support on the relationship between bullying and belonging.

Notes:
 Interaction plot showing the moderating effect of family support on the relationship between bullying and sense of belonging. Students with higher family support (blue line) showed a weaker negative association between bullying victimization and belonging compared to those with lower family support (red line). All models adjusted for ESCS, gender, and school risk

Furthermore, to visually summarize the overall findings, Figure 3 presents the tested path model, including the estimated coefficients for direct, indirect, and moderated effects.

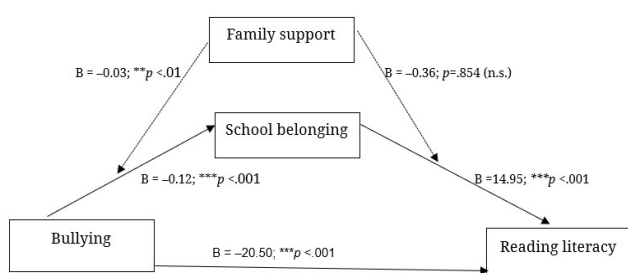


Figure 3. Path diagram.

DISCUSSIONS

The regression analysis examined the effects of bullying, school belonging, and family support on reading literacy, as well as their interactions. Consistent with extensive prior research, bullying emerged as a strong negative predictor of reading literacy, suggesting that students who experience higher levels of bullying tend to achieve lower reading literacy scores. This aligns with studies highlighting the detrimental impact of peer

victimization on cognitive engagement, motivation, and overall academic outcomes (Espelage et al., 2014; Juvonen and Graham, 2014).

In contrast, a greater sense of belonging positively predicted reading literacy, indicating that students who feel connected and accepted in their school environment are more likely to achieve higher academic performance. This finding corroborates previous evidence that belonging enhances motivation, engagement, and performance (Allen et al., 2018; Goodenow and Grady, 1993), underscoring the protective role of supportive peer and school environments in promoting literacy.

My findings further suggest that family support moderates the bullying–belonging pathway but does not significantly influence the belonging–literacy link. This implies that its role is expressed more through psychosocial resilience than through direct cognitive outcomes. This implies that its role is expressed more through psychosocial resilience than through direct cognitive outcomes. From a social ecological perspective (Bronfenbrenner, 1979), the family microsystem provides emotional resources that help students cope with adversity. However, the significant interaction effect indicates that students with higher family support may experience a sharper decline in belonging when bullied. Drawing on Self-Determination Theory (Deci and Ryan, 2000), this pattern can be interpreted as a reaction to violated expectations: strong relational support at home fosters a sense of relatedness and autonomy, but bullying

at school undermines these needs, creating a more pronounced gap. This suggests that while relational forms of family involvement generally enhance intrinsic motivation, the incongruence between secure family ties and hostile peer contexts may intensify the negative impact of bullying on belonging. Consistent with prior work, achievement-focused or controlling forms of support may further limit direct academic benefits (Cheung and Pomerantz, 2012; Soenens and Vansteenkiste, 2010), while parent-oriented motivation does not independently predict achievement among Filipino students (Bernardo, 2008).

Cultural context further explains these dynamics. In Southeast Asia, parental involvement often emphasizes moral guidance, emotional closeness, and home-based support rather than school-based engagement (Bartolome et al., 2020; Langputeh et al., 2023). Thus, family support may effectively buffer students' belonging but exert weaker and less consistent influence on literacy. Moreover, in the Philippines, the availability of family support varies with socioeconomic conditions such as conditional cash transfer membership, community participation, and parental education (Jabar et al., 2023).

Thus, these findings suggest that while families provide critical motivational and emotional resources, school-embedded processes may exert greater influence on reading literacy. Meta-analytic and cross-national research shows that school and classroom climate strongly predict achievement (Erdem and Kaya, 2024; Maxwell et al., 2017). In the Philippine context, need-supportive teaching has been shown to enhance reading outcomes (Haw et al., 2021), echoing PISA 2022 evidence that bullying, safety, and belonging are central to literacy performance (OECD, 2023c).

CONCLUSION

This study shows that functional illiteracy among Filipino 15-year-olds is shaped not only by academic factors but also by psychosocial experiences, particularly bullying and school belonging. Bullying consistently undermined belonging and, in turn, reading literacy. Unexpectedly, the negative effect of bullying on belonging was stronger under higher family support, while the belonging–literacy pathway was not moderated. This suggests that certain parental practices may heighten adolescents' sensitivity to peer rejection, especially when support is experienced as controlling rather than autonomy supportive. From a social-ecological and self-determination perspective, family resources provide coping mechanisms but their impact is nuanced and context-dependent. In the Philippines, school climate, safety, and pedagogical quality remain more decisive for literacy outcomes than family support. This study has several limitations. First, the cross-sectional PISA 2022 design restricts causal inferences. Second, self-reported measures of bullying and belonging may be subject to bias. Third, although family support was examined as a moderator, other contextual factors (e.g., instructional practices, peer influences) were not fully addressed. Fourth, findings are specific to 15-year-olds and may not generalize to other groups. Finally, while plausible values captured literacy, unmeasured variables such as motivation or mental health may also play roles. Future research should (a) use culturally grounded measures of family support, (b) integrate multi-informant data from parents, teachers, and students, and (c) examine cross-level interactions between family and school contexts. Mixed methods designs would capture cultural nuances and clarify whether family support moderates bullying–belonging–literacy relationships in diverse settings.

Based on the findings, several recommendations can be drawn to inform both education policy and school-level practice in the Philippines. 1. Strengthen anti-bullying initiatives. Bullying showed the strongest negative association with reading literacy,

underscoring the need for robust implementation of the Anti-Bullying Act of 2013. Schools should adopt evidence-based interventions that not only punish bullying but also promote positive peer relationships and restorative practices. 2. Foster a culture of belonging. Because school belonging emerged as a key mediator between bullying and literacy, schools should prioritize creating safe, inclusive, and supportive learning environments. Programs that encourage peer mentoring, collaborative learning, and teacher–student connectedness can reinforce students' sense of acceptance and engagement. 3. Support families in providing autonomy-supportive involvement. While family support buffered the bullying–belonging pathway, its academic influence was uneven. Policies should focus on parent education programs that emphasize relational forms of involvement (e.g., communication, emotional support) rather than solely achievement pressure. This aligns with Self-Determination Theory's emphasis on autonomy-supportive practices. 4. Integrate psychosocial and academic interventions. Literacy initiatives should not be limited to pedagogy and curriculum but should also include social-emotional learning (SEL), resilience training, and teacher capacity building to address both academic and psychosocial needs. 5. Contextualize support for disadvantaged households. Given socioeconomic disparities in family involvement, policies should provide targeted support to low-income families, such as parenting workshops, community partnerships, and resource access, to reduce inequalities in both home- and school-based engagement. 6. Enhance school climate and teacher practices. Consistent with international evidence, improving classroom climate, teacher support, and instructional quality should remain central to literacy reforms, ensuring that all learners benefit from equitable, need-supportive education.

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AUTHOR CONTRIBUTIONS

M. D. S: Conception and design of the study, data acquisition and analysis, interpretation of results, drafting of the manuscript, and final approval of the version to be published.

DECLARATION

Conflict of interest

The author declares that there are no conflicts of interest—financial or non-financial—that are relevant to the content of this manuscript. It is further affirmed that there are no affiliations, funding sources, or personal relationships that could have influenced the research, analysis, or presentation of findings.

AI Disclosure

The authors declare that no Artificial Intelligence (AI) or AI-assisted technologies were used in the preparation of this manuscript.

REFERENCES

- Abrigo, M. R. M., Lingatong, E. E., and Relos, C. M. L. (2024). School bullying contributes to lower PISA achievement among Filipino students: Who gets bullied? Why does it matter? (Philippine Institute for Development Studies (PIDS) Discussion Paper Series, Issue. <https://doi.org/10.62986/dp2024.45>
- Allen, K., Kern, M. L., Vella-Brodrick, D., Hattie, J., and Waters, L. (2018). What Schools Need to Know About Fostering School Belonging: A Meta-analysis. *Educational Psychology Review*, 30(1), 1-34. <https://doi.org/10.1007/s10648-016-9389-8>
- Arslan, G. (2018). Social Exclusion, Social Support and Psychological Wellbeing at School: A Study of Mediation and Moderation Effect. *Child Indicators Research*, 11(3), 897-918. <https://doi.org/10.1007/s12187-017-9451-1>
- Balluerka, N., Aliri, J., Goñi-Balentiaga, O., and Gorostiaga, A. (2023). Association between bullying victimization, anxiety and depression in childhood and adolescence: The mediating effect of self-esteem. *Revista de Psicodidáctica(English ed.)*, 28(1), 26-34. <https://doi.org/10.1016/j.psicoe.2022.11.001>
- Barboza, G. E., Schiamburg, L. B., Oehmke, J., Korzeniewski, S. J., Post, L. A., and Heraux, C. G. (2009). Individual Characteristics and the Multiple Contexts of Adolescent Bullying: An Ecological Perspective. *Journal of Youth and Adolescence*, 38(1), 101-121. <https://doi.org/10.1007/s10964-008-9271-1>
- Baron, R. M., and Kenny, D. A. (1986). The moderator- mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182. <https://psycnet.apa.org/doi/10.1037/0022-3514.51.6.1173>
- Bartolome, M. T., Mamat, N., and Masnan, A. H. (2020). Exploring kindergarten teachers' perspectives in parental involvement in the Philippines. *Southeast Asia Early Childhood Journal*, 9(2), 73-86.
- Bernardo, A. B. (2008). Individual and social dimensions of Filipino students' achievement goals. *International Journal of Psychology*, 43(5), 886-891. <https://doi.org/10.1080/00207590701837834>
- Bernardo, A. B. I. (2023). Growth mindset and reading proficiency of ESL learners: examining the role of students' socioeconomic status using PISA 2018 Philippine data. *European Journal of Psychology of Education*, 38(2), 675-693. <https://doi.org/10.1007/s10212-022-00629-6>
- Bernardo, A. B. I., and Mante-Estacio, M. J. (2023). Metacognitive reading strategies and its relationship with Filipino high school students' reading proficiency: insights from the PISA 2018 data. *Humanities and Social Sciences Communications*, 10(1), 400. <https://doi.org/10.1057/s41599-023-01886-6>
- Borgonovi, F., and Montt, G. (2012). *Parental Involvement in Selected PISA Countries and Economies* (No. 73). (OECD Education Working Papers, Issue. OECD Publishing. <https://doi.org/10.1787/5k990rk0jsj-en>
- Brimblecombe, N., Evans-Lacko, S., Knapp, M., King, D., Takizawa, R., Maughan, B., and Arseneault, L. (2018). Long term economic impact associated with childhood bullying victimisation. *Social Science and Medicine*, 208, 134-141. <https://doi.org/10.1016/j.socscimed.2018.05.014>
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press.
- Bronfenbrenner, U. and Morris, P.A. (2007). The Bioecological Model of Human Development. In *Handbook of Child Psychology* (eds W. Damon, R.M. Lerner and R.M. Lerner). <https://doi.org/10.1002/9780470147658.chpsy0114>
- Cheung, C. S.-S., and Pomerantz, E. M. (2012). Why does parents' involvement enhance children's achievement? The role of parent-oriented motivation. *Journal of Educational Psychology*, 104(3), 820-832. <https://doi.org/10.1037/a0027183>
- Deci, E. L., and Ryan, R. M. (2000). The "What" and "Why" of Goal Pursuits: Human Needs and the Self-Determination of Behavior. *Psychological Inquiry*, 11(4), 227-268. https://doi.org/10.1207/S15327965PLI1104_01
- Erdem, C., and Kaya, M. (2024). The relationship between school and classroom climate, and academic achievement: A meta-analysis. *School Psychology International*, 45(4), 380-408. <https://doi.org/10.1177/01430343231202923>
- Espelage, D. L., and Holt, M. K. (2013). Suicidal Ideation and School Bullying Experiences After Controlling for Depression and Delinquency. *Journal of Adolescent Health*, 53(1, Supplement), S27-S31. <https://doi.org/10.1016/j.jadohealth.2012.09.017>
- Espelage, D. L., Polanin, J. R., and Low, S. K. (2014). Teacher and staff perceptions of school environment as predictors of student aggression, victimization, and willingness to intervene in bullying situations. *School Psychology Quarterly*, 29(3). <https://psycnet.apa.org/doi/10.1037/spq0000072>
- Estell, D. B., and Perdue, N. H. (2013). Social Support and Behavioral and Affective School Engagement: The Effects of Peers, Parents, and Teachers. *Psychology in the Schools*, 50(4), 325-339. <https://doi.org/10.1002/pits.21681>
- Gimenez, G., Mediavilla, M., Giuliodori, D., and Rusteholz, G. C. (2024). Bullying at School and Students' Learning Outcomes: International Perspective and Gender Analysis. *J Interpers Violence*, 39(11-12), 2733-2760. <https://doi.org/10.1177/08862605231222457>
- Goodenow, C., and Grady, K. E. (1993). The Relationship of School Belonging and Friends' Values to Academic Motivation Among Urban Adolescent Students. *The Journal of Experimental Education*, 62(1), 60-71. <https://doi.org/10.1080/00220973.1993.9943831>
- Han, Z. Y., Ye, Z. Y., and Zhong, B. L. (2025). School bullying and mental health among adolescents: a narrative review. *Translational Pediatrics*, 14(3), 463-472. <https://doi.org/10.21037/tp-2024-512>
- Haw, J. Y., and King, R. B. (2023). Understanding Filipino students' achievement in PISA: The roles of personal characteristics, proximal processes, and social contexts. *Social Psychology of Education*, 26(4), 1089-1126. <https://doi.org/10.1007/s11218-023-09773-3>
- Haw, J. Y., King, R. B., and Trinidad, J. E. R. (2021). Need supportive teaching is associated with greater reading achievement: What the Philippines can learn from PISA 2018. *International Journal of Educational Research*, 110, 101864. <https://doi.org/10.1016/j.ijer.2021.101864>
- Hill, N. E., and Tyson, D. F. (2009). Parental involvement in middle school: A meta-analytic assessment of the strategies that promote achievement. *Developmental Psychology*, 45(3), 740-763. <https://doi.org/10.1037/a0015362>
- Hong, J. S., and Espelage, D. L. (2012). A review of research on bullying and peer victimization in school: An ecological system analysis. *Aggression and Violent Behavior*, 17(4), 311-322. <https://doi.org/10.1016/j.avb.2012.03.003>
- Hong, J. S., and Garbarino, J. (2012). Risk and Protective Factors for Homophobic Bullying in Schools: An Application of the Social-Ecological Framework. *Educational Psychology Review*, 24(2), 271-285. <https://doi.org/10.1007/s10648-012-9194-y>
- Jabar, M., Kasilag, R., Collado, Z., and Jamoral, R. (2023). Family capital and parental involvement among parents in public elementary and secondary schools in the Philippines: perspectives of parents and children. *Asia Pacific Journal of Education*, 43(2), 555-571. <https://doi.org/10.1080/02188791.2021.1944841>
- Judkins, D. R. (1990). Fay's method for variance estimation. *Journal of Official Statistics*, 6(3), 223-239.
- Juvonen, J., and Graham, S. (2014). Bullying in Schools: The Power of Bullies and the Plight of Victims. *Annual Review of Psychology*, 65(Volume 65, 2014), 159-185. <https://doi.org/10.1146/annurev-psych-010213-115030>

- Langputeh, S., Embong, R., and Mansor, N. (2023). Parents' motivational beliefs and parental involvement on moral values cultivation of Muslim children in Southern Thailand. *Bitara International Journal of Civilizational Studies and Human Sciences*, 6(2), 148-168. <https://www.bitarajournal.com/index.php/bitarajournal/article/view/376>
- Marvas, C. R. C., Libres, G. E., Benitez, A. J. D., Natividad, A. P., Oliva, M. M. J., and Legaspino, F. G. (2024). Enhancing reading comprehension in Grade 5 students using the Kiddie ReCom app. *Davao Research Journal*, 15(3), 100-110. <https://doi.org/10.59120/drj.v15i3.251>
- Maxwell, S., Reynolds, K. J., Lee, E., Subasic, E., and Bromhead, D. (2017). The Impact of School Climate and School Identification on Academic Achievement: Multilevel Modeling with Student and Teacher Data [Original Research]. *Frontiers in Psychology*, Volume 8 - 2017. <https://doi.org/10.3389/fpsyg.2017.02069>
- Morgan, P. L., Woods, A. D., Wang, Y., Farkas, G., Oh, Y., Hillemeier, M. M., and Mitchell, C. (2022). Which Children are Frequently Victimized in U.S. Elementary Schools? Population-based Estimates. *School Mental Health*, 14(4), 1011-1023. <https://doi.org/10.1007/s12310-022-09520-7>
- Murphy, D., Leonard, S. J., Taylor, L. K., and Santos, F. H. (2022). Educational achievement and bullying: The mediating role of psychological difficulties. *British Journal of Educational Psychology*, 92(4), 1487-1501. <https://doi.org/10.1111/bjep.12511>
- Organisation for Economic Co-operation and Development. (2009). *PISA data analysis manual: SPSS* (2nd ed.). OECD Publishing. <https://doi.org/10.1787/9789264056275-en>
- Organisation for Economic Co-operation and Development. (2019). *PISA 2018 results (Volume II): Where all students can succeed*. OECD Publishing. <https://doi.org/10.1787/b5fd1b8f-en>
- Organisation for Economic Co-operation and Development. (2023). *PISA 2022 Database (dataset)*. Organisation for Economic Co-operation and Development. Retrieved: August 2026, 2025, from <https://www.oecd.org/en/data/datasets/pisa-2022-database.html>
- Organisation for Economic Co-operation and Development. (2023b). *PISA 2022 Results (Volume I): The State of Learning and Equity in Education*. OED Publishing. <https://doi.org/10.1787/53f23881-en>
- Organisation for Economic Co-operation and Development. (2023c). *PISA 2022 Results (Volume II): Learning During – and From – Disruption*. OECD Publishing. <https://doi.org/10.1787/a97db61c-en>
- Paguyan, P. C. R., and Taoc, A. J. (2022). Factors affecting reading performance among Grade 3 pupils. *Davao Research Journal*, 13(2), 10-21. <https://doi.org/10.59120/drj.v13i2.85>
- Patton, D. U., Hong, J. S., Williams, A. B., and Allen-Meaers, P. (2013). A Review of Research on School Bullying Among African American Youth: An Ecological Systems Analysis. *Educational Psychology Review*, 25(2), 245-260. <https://doi.org/10.1007/s10648-013-9221-7>
- Philippine Institute for Development Studies. (2024, January 15). Bullying crisis in PH schools threatens education, economy. <https://www.pids.gov.ph/details/news/in-the-news/bullying-crisis-in-ph-schools-threatens-education-economy>
- Philippine Statistics Authority. (2025, April 4). *For every 10 Filipinos, 9 have basic literacy, while 7 have functional literacy: 2024 Functional Literacy, Education, and Mass Media Survey (FLEMMS)* (Reference No. 2025-118). https://psa.gov.ph/system/files/sdsd/Press%20Release%20on%202024%20FLEMMS%20_signed.pdf
- Pinera, J. B., Mercado, M. T. M., Seguritan, L. C. L., and Malazzab, O. E. (2022). Awareness and Implementation of the Anti-Bullying Law among Secondary Schools in Northeastern Cagayan. *International Journal of Advanced Research*, 10(891-898). <https://dx.doi.org/10.21474/IJAR01/14467>
- Republic Act No. 10627. Republic Act No. 10627: An Act requiring all elementary and secondary schools to adopt policies to prevent and address the acts of bullying in their institutions (Anti-Bullying Act of 2013). Republic of the Philippines
- Rose, C. A., Simpson, C. G., and Moss, A. (2015). The Bullying Dynamic: Prevalence of Involvement among a Large-Scale Sample of Middle and High School Youth With and Without Disabilities. *Psychology in the Schools*, 52(5), 515-531. <https://doi.org/10.1002/pits.21840>
- Rubin, D. B. (1987). *Multiple imputation for nonresponse in surveys*. John Wiley & Sons, Inc. DOI:10.1002/9780470316696
- Samara, M., Da Silva Nascimento, B., El-Asam, A., Hammuda, S., and Khattab, N. (2021). How Can Bullying Victimization Lead to Lower Academic Achievement? A Systematic Review and Meta-Analysis of the Mediating Role of Cognitive-Motivational Factors. *International Journal of Environmental Research and Public Health*, 18(5). <https://doi.org/10.3390/ijerph18052209>
- Soenens, B., and Vansteenkiste, M. (2010). A theoretical upgrade of the concept of parental psychological control: Proposing new insights on the basis of self-determination theory. *Developmental Review*, 30(1), 74-99. <https://doi.org/10.1016/j.dr.2009.11.001>
- Tan, Y., Fan, Z., Wei, X., and Yang, T. (2022). School Belonging and Reading Literacy: A Multilevel Moderated Mediation Model. *Frontiers in Psychology*, 13, 816128. <https://doi.org/10.3389/fpsyg.2022.816128>
- Tiauzon, B. A., and Malquisto, P. R. (2019). Incidence of bullying and academic performance of Grade 7 learners. *European Journal of Education Studies*, 6(1).
- Turunen, T., Poskiparta, E., and Salmivalli, C. (2017). Are reading difficulties associated with bullying involvement? *Learning and Instruction*, 52, 130-138. <https://doi.org/10.1016/j.learninstruc.2017.05.007>
- Wilder, S. (2014). Effects of parental involvement on academic achievement: a meta-synthesis. *Educational Review*, 66(3), 377-397. <https://doi.org/10.1080/00131911.2013.780009>
- World Bank Group. (2020). Philippines – Programme for International Student Assessment 2018 country report (Vol. 1 of 2): Main report (English). World Bank Group. <https://documents.worldbank.org/en/publication/documents-reports/document-detail/184251593328815913/main-report>
- World Bank. (2024). Philippines learning poverty brief 2021 (Learning poverty defined as inability to read and understand age appropriate text by age 10). World Bank & UNESCO Institute for Statistics. <https://documents.worldbank.org/curated/en/972851624613012971/pdf/Philippines-Learning-Poverty-Brief-2021.pdf>
- World Bank and UNESCO Institute for Statistics. (2022). *The state of global learning poverty: 2022 update* (Conference ed.). World Bank. <https://www.worldbank.org/en/topic/education/publication/state-of-global-learning-poverty>
- Wormington, S. V., Anderson, K. G., Schneider, A., Tomlinson, K. L., and Brown, S. A. (2016). Peer Victimization and Adolescent Adjustment: Does School Belonging Matter? *Journal of School Violence*, 15(1), 1-21. <https://doi.org/10.1080/15388220.2014.922472>
- Xiang, X., Huang, X., Zhao, M., Wang, J., and Shao, Q. (2025). Parental/grandparental education involvement and adolescents' learning engagement: a moderated mediation model. *Front Psychol*, 16, 1564880. <https://doi.org/10.3389/fpsyg.2025.1564880>

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