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# Association of High Levels of Bullying and Cyberbullying with Study Time Management and Effort Self-Regulation in Adolescent Boys and Girls

**Jose Luis Solas-Martínez [1], Alba Rusillo-Magdaleno [1,*], Ramón Garrote-Jurado [2] and Alberto Ruiz-Ariza [1]**

[1] Department of Didactics of Musical, Plastic and Corporal Expression, University of Jaen, 23071 Jaén, Spain; jsolas@ujaen.es (J.L.S.-M.); arariza@ujaen.es (A.R.-A.)
[2] Department of Educational Work, University of Borås, 503 32 Borås, Sweden; ramon.garrote@hb.se
* Correspondence: arusillo@ujaen.es

**Abstract:** This study examined the association between bullying and cyberbullying (both victims and perpetrators) and resource management strategies for learning in students aged 10 to 16. A cross-sectional study was conducted with 1330 Spanish students (48.95% boys; mean age = 13.22 ± 1.75 years). Learning strategies were assessed using the Motivated Strategies for Learning Questionnaire (MSLQ), bullying levels with the European Bullying Intervention Project Questionnaire (EBIP-Q), and cyberbullying with the European Cyberbullying Intervention Project Questionnaire (ECIP-Q). ANCOVA and binary logistic regression were used to analyze associations and exposure risk. Girls who were victims of bullying and cyberbullying showed significantly lower scores in study time management (−5.9%, $p = 0.001$ for bullying; −6.2%, $p = 0.025$ for cyberbullying) and effort self-regulation (−7.7%, $p < 0.001$; −8.3%, $p = 0.002$). Victimized girls were also up to 4.2 times more likely to struggle with effort self-regulation. Female aggressors exhibited up to 10.2% lower effort self-regulation, while male cyberbullies had 9.6% lower study time management compared to their peers and a 4.4 times greater risk of low effort self-regulation ($p < 0.001$). These findings emphasize the importance of designing targeted school interventions to strengthen self-regulation strategies, particularly for female victims and male cyberbullies, contributing to improved academic outcomes.

**Keywords:** academic effort; adolescents; aggressors; bullying; study time; victims

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Academic Editor: Luca Tateo

Received: 10 February 2025
Revised: 25 April 2025
Accepted: 29 April 2025
Published: 30 April 2025

**Citation:** Solas-Martínez, J. L., Rusillo-Magdaleno, A., Garrote-Jurado, R., & Ruiz-Ariza, A. (2025). Association of High Levels of Bullying and Cyberbullying with Study Time Management and Effort Self-Regulation in Adolescent Boys and Girls. *Education Sciences*, *15*(5), 563. https://doi.org/10.3390/educsci15050563

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## 1. Introduction

Bullying and cyberbullying are two widely recognized forms of social harassment that negatively impact the emotional well-being and academic performance of children and adolescents (Esquivel et al., 2023). Both are characterized by deliberate, repeated aggression involving a power imbalance, where the aggressor exerts control over the victim (Pereira Neto & Barbosa, 2019; Waseem & Nickerson, 2023). These forms of aggression are characterized by repetitive, intentional behavior involving a power imbalance in which the aggressor exerts control over the victim (Waseem & Nickerson, 2023). Globally, it is estimated that 30.4% of adolescents have been victims of some form of social harassment (Hosozawa et al., 2021). Cyberbullying, in particular, is a digital form of intimidation that occurs through platforms such as social media, text messages, and emails, and introduces additional risk factors such as anonymity, persistent accessibility, and the enduring nature of online content, which can intensify the psychological harm to victims (Bozyiğit et al., 2021). This type of online harassment transcends physical and temporal boundaries, extending

intimidation beyond the school environment (Waseem & Nickerson, 2023), with prevalence rates reaching up to 57.5% among adolescents (Zhu et al., 2021) and presents specific challenges for educators, families, and policymakers that demand tailored prevention and intervention strategies (El Asam & Samara, 2016).

Recent research has demonstrated that bullying and cyberbullying negatively impact the mental health and learning processes of young individuals (Carvalho et al., 2021; Jackson et al., 2019; Jaskulska et al., 2022). Victims often experience heightened levels of anxiety, depressive symptoms, and low self-esteem, conditions that hinder the formation of social bonds and contribute to school absenteeism (Obregón-Cuesta et al., 2022; Weinreich et al., 2023). This environment of anxiety and fear restricts students' ability to manage their time, maintain a suitable study environment, and regulate their persistence in academic tasks, ultimately impairing their learning process (C. Li et al., 2022; Peled, 2019). Meanwhile, aggressors also tend to struggle with low self-esteem and disruptive behaviors (Leiner et al., 2014), factors that negatively impact concentration and contribute to academic demotivation (Weinreich et al., 2023).

Resource management in education refers to the strategies and methods students use to organize and control the material, personal, and emotional factors within their environment that influence their learning process (Kizilcec et al., 2017; Vaezi et al., 2018). Some of the most essential resource management strategies include time management, study environment optimization, and effort self-regulation (Eggers et al., 2021). Time management involves planning and organizing study periods, allowing students to distribute their efforts efficiently and avoid excessive workload during critical moments (Trentepohl et al., 2022). Students proficient in this strategy tend to achieve better academic performance as they can adjust their work pace to meet environmental demands (Eggers et al., 2021; Trentepohl et al., 2022). Within this strategy, Pintrich et al. (1991) also emphasized the importance of optimizing the study environment, highlighting that a well-organized, distraction-free space enhances concentration and facilitates information processing (Vásquez, 2021). On the other hand, effort self-regulation enables students to sustain motivation and perseverance when facing academic challenges. This skill has also been shown to strengthen resilience and adaptability, qualities that are fundamental for overcoming obstacles and ensuring sustained academic performance over time (Guo et al., 2021).

These negative effects are not homogeneous, as factors such as gender and other sociodemographic variables can influence how students cope with bullying and apply different learning strategies. Boys and girls exhibit distinct behavioral patterns and responses to bullying, as well as differences in their use of study strategies (Obregón-Cuesta et al., 2022; Ruffing et al., 2015). Girls tend to achieve higher academic performance, demonstrate a stronger sense of personal responsibility, and have a more developed self-concept, all of which facilitate the effective implementation of time management and effort self-regulation (Ogden et al., 2023). One possible explanation for this is that girls often display higher levels of intrinsic motivation, emotional intelligence, and emotion regulation skills, which enhance emotional communication and amplify the positive impact of social support on their emotional well-being (Barros & Sacau-Fontenla, 2021; Ruffing et al., 2015). In contrast, boys tend to have a less favorable perception of their academic abilities and rely more on external stimuli to stay motivated (Wang & Yu, 2023). Regarding bullying, girls are more vulnerable to psychological harassment, whereas boys are more frequently involved in physical violence and threats, reflecting distinct patterns of exposure and interaction with these dynamics (Feijóo et al., 2022). Additionally, girls are generally more inclined to seek emotional support and openly express their emotions, fostering the creation of support networks that can mitigate the long-term effects of bullying. Boys, on the other hand, are more likely to adopt coping strategies based on denial or minimization of the issue, which

may hinder the early detection of bullying incidents and limit the implementation of timely intervention strategies (Hellström & Beckman, 2020).

Similarly, other biometric and sociodemographic variables may mediate the effects of bullying behaviors on study time management and effort regulation. Age appears to influence students' ability to navigate complex learning and social situations (El Zaatari & Maalouf, 2022; Urruticoechea et al., 2021), while higher maternal education levels are associated with greater expectations for their children and, consequently, improved academic performance (Baharvand et al., 2021). Additionally, families with greater economic resources can provide their children with supplementary tools, such as personalized tutoring and access to diverse educational materials, thereby creating a more favorable learning environment (Rodríguez-Hernández et al., 2020). Furthermore, body mass index (BMI) and weekly physical activity levels represent important factors in students' development. A healthy BMI is directly linked to a positive body perception and higher self-esteem, which contribute to greater self-confidence and improved social interactions (Bacon & Lord, 2021). Likewise, increased physical activity promotes both physical and mental well-being by boosting energy levels, reducing stress, and enhancing overall mood (Seum et al., 2022). Both factors significantly influence the quality of social relationships and students' engagement in the learning process (Bacon & Lord, 2021; Seum et al., 2022).

As previously discussed, existing research has shown that bullying and cyberbullying are negatively associated with various learning factors, such as motivation toward studying (Aparisi et al., 2021) and academic performance (Huang, 2020). However, the specific impact of these behaviors on resource management strategies for learning has not yet been quantified after isolating the potential effects of the most relevant covariates. Based on this premise, the objective of the present study was to analyze the association between victimization and aggression in bullying and cyberbullying situations and the use of study time management and effort self-regulation strategies among boys and girls aged 10 to 16. Additionally, this study aimed to assess the level of risk that bullying and cyberbullying victimization/aggression pose for lower study time management and effort self-regulation scores. It was hypothesized that bullying and cyberbullying behaviors, particularly in the role of the victim, would be negatively associated with resource management strategies for learning, specifically study time management and effort self-regulation. While previous research has explored the impact of bullying on academic motivation, this study uniquely quantifies its effects on study time management and effort self-regulation while controlling for key sociodemographic variables.

## 2. Method

### 2.1. Participants

This cross-sectional quantitative study included a total of 1330 Spanish children and adolescents (651 boys, 48.95%, and 679 girls) enrolled in seven different educational institutions. The schools were selected through convenience sampling, with four situated in urban environments (populations exceeding 10,000 residents) and three in rural areas (populations under 10,000 residents). To achieve a balanced representation of students, a random cluster sampling method was applied within each school. Table 1 outlines the participants' sociodemographic and anthropometric details. The age range of the sample spanned from 10 to 16 years, with a mean age of 13.22 $\pm$ 1.75 years. In comparison to girls, boys presented with a higher body mass index (BMI) and reported engaging in more weekly physical activity ($p = 0.037$ and $p < 0.001$, respectively). Moreover, aggressive behaviors were significantly more frequent among boys than among girls ($p = 0.007$). In contrast, girls outperformed boys in several domains, including maternal education level

($p < 0.001$), academic performance ($p = 0.007$), and self-regulation skills related to time management and study effort (both $p < 0.001$).

**Table 1.** Biometric characteristics, sociodemographic, and behavioral insights data of participants, segmented by sex.

| | | All (n = 1330) | | Boys (n = 651) | | Girls (n = 679) | | |
|---|---|---|---|---|---|---|---|---|
| **Variables** | | **Mean** | **SD/%** | **Mean** | **SD/%** | **Mean** | **SD/%** | ***p*** |
| Age (years) | | 13.22 | 1.75 | 13.22 | 1.787 | 13.22 | 1.72 | 0.965 |
| Weight (kg) | | 52.31 | 13.40 | 54.65 | 14.81 | 50.06 | 11.44 | <0.001 |
| Height (m) | | 1.59 | 0.11 | 1.61 | 0.13 | 1.57 | 0.08 | <0.001 |
| BMI (kg/m$^2$) | | 20.47 | 3.97 | 20.70 | 3.91 | 20.25 | 4.03 | 0.037 |
| Maternal Education Level (%) | No education | 64 | 4.8% | 32 | 5.0% | 32 | 4.7% | <0.001 |
| | Primary | 136 | 10.2% | 68 | 10.6% | 68 | 10.0% | |
| | Secondary | 188 | 14.1% | 70 | 11.0% | 118 | 17.4% | |
| | Professional training | 174 | 13.1% | 84 | 13.1% | 90 | 13.3% | |
| | University | 487 | 36.6% | 226 | 35.5% | 261 | 38.4% | |
| | Do not know | 269 | 20.2% | 159 | 24.9% | 110 | 16.2% | |
| Weekly Physical Activity (average) | | 4.01 | 1.76 | 4.30 | 1.81 | 3.73 | 1.67 | <0.001 |
| Academic performance | | 6.89 | 1.55 | 6.76 | 1.53 | 7.02 | 1.55 | 0.007 |
| Bullying Victimization | Never | 198 | 14.9% | 112 | 17.2% | 86 | 12.7% | 0.085 |
| | Occasionally | 703 | 52.9% | 327 | 50.2% | 376 | 55.4% | |
| | Once or twice/month | 322 | 24.2% | 156 | 24.0% | 166 | 24.4% | |
| | Once/week | 83 | 6.2% | 46 | 7.1% | 37 | 5.4% | |
| | More than once/week | 24 | 1.8% | 10 | 1.5% | 14 | 2.1% | |
| Bullying Aggression | Never | 362 | 27.2% | 162 | 24.9% | 200 | 29.5% | 0.007 |
| | Occasionally | 767 | 57.7% | 371 | 57.0% | 396 | 58.3% | |
| | Once or twice/month | 156 | 11.7% | 93 | 14.3% | 63 | 9.3% | |
| | Once/week | 37 | 2.8% | 23 | 3.5% | 14 | 2.1% | |
| | More than once/week | 8 | 0.6% | 2 | 0.3% | 6 | 0.9% | |
| Cyberbullying Victimization | Never | 582 | 43.8% | 304 | 46.7% | 278 | 40.9% | 0.101 |
| | Occasionally | 664 | 49.9% | 311 | 47.8% | 353 | 52.0% | |
| | Once or twice/month | 61 | 4.6% | 26 | 4.0% | 35 | 5.2% | |
| | Once/week | 21 | 1.6% | 8 | 1.2% | 13 | 1.9% | |
| | More than once/week | 2 | 0.2% | 2 | 0.3% | 0 | 0.0% | |
| Cyberbullying Aggression | Never | 755 | 56.8% | 363 | 55.8% | 392 | 57.7% | 0.368 |
| | Occasionally | 515 | 38.7% | 255 | 39.2% | 260 | 38.3% | |
| | Once or twice/month | 37 | 2.8% | 23 | 3.5% | 14 | 2.1% | |
| | Once/week | 23 | 1.7% | 10 | 1.5% | 13 | 1.9% | |
| | More than once/week | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | |
| Resource Management Strategies | Time and Study Environment | 5.25 | 0.97 | 5.07 | 0.94 | 5.41 | 0.97 | <0.001 |
| | Effort Regulation | 5.19 | 1.20 | 5.01 | 1.20 | 5.36 | 1.19 | <0.001 |

Note: Data are presented as mean for continuous variables and frequency (%) for categorical variables. BMI = body mass index; SD = standard deviation.

### *2.2. Measures*

#### 2.2.1. Dependent Variables: Resource Management Learning Strategies

To assess learning strategies, the Motivated Strategies for Learning Questionnaire (MSLQ) developed by Pintrich et al. (1991) was employed. This self-reported measure

comprises 81 items distributed across 15 subscales, aiming to evaluate both students' motivational dispositions toward academic content and their implementation of different learning strategies. However, for this study, only the dimensions related to study time and environment management and effort self-regulation were considered. Participants provided their responses on a seven-point Likert scale, ranging from 1 (Completely false for me) to 7 (Completely true for me). Higher scores in the study time and environment management subscale denote effective planning and the ability to choose appropriate study settings. Similarly, elevated scores in effort self-regulation indicate strong persistence and dedication to academic tasks, even when faced with difficulties. The internal consistency of these two subscales, as measured by Cronbach's alpha, was satisfactory, yielding values of 0.74 and 0.86, respectively.

#### 2.2.2. Predictor/Independent Variables: Bullying and Cyberbullying

To evaluate bullying levels, the European Bullying Intervention Project Questionnaire (EBIPQ) in its Spanish adaptation by Ortega-Ruiz et al. (2016) was utilized. This instrument comprises 14 items and demonstrated satisfactory internal consistency, with Cronbach's alpha values of 0.83 for victimization and 0.79 for aggression. In the case of cyberbullying, the assessment was conducted using the Spanish version of the European Cyberbullying Intervention Project Questionnaire (ECIPQ), developed by Del Rey et al. (2015), which consists of 22 items. The reliability of this measure was also acceptable, with Cronbach's alpha scores of 0.87 for cybervictimization and 0.82 for cyberaggression. Both instruments differentiate between the victimization and aggression dimensions and employ a five-point Likert scale, ranging from 1 (never) to 5 (more than once a week). The questionnaires were administered individually, with an estimated completion time of approximately 15 min. The items focus on the frequency of these behaviors over the past two months.

#### 2.2.3. Confounding Variables

- Age and Maternal Education Level

Participants' age and maternal education level were collected through a sociodemographic questionnaire. Given its importance in prior research, age was treated as a confounding variable, as studies have shown that both cognitive and emotional development play a crucial role in shaping learning processes and interactions with the environment (El Zaatari & Maalouf, 2022; Urruticoechea et al., 2021). Moreover, the existing literature indicates that maternal education level is significantly linked to academic achievement, mental well-being, and intelligence quotient, highlighting its relevance in educational and psychological outcomes (Baharvand et al., 2021).

- Body Mass Index (BMI) and Weekly Physical Activity Level

Physical activity level was considered a covariate, as recent studies have highlighted its impact on cognitive development and academic achievement (D. Li et al., 2023; Petrigna et al., 2022). To assess this variable, the PACE+ Adolescent Physical Activity Measure (Prochaska et al., 2001) was employed. This instrument consists of two items, in which participants report the number of days they engaged in at least 60 min of moderate-to-vigorous physical activity both in the past week and during a typical week. The final score was computed as the average of both responses: (P1 + P2)/2. The internal consistency of this measure was found to be acceptable ($\alpha = 0.79$). Additionally, BMI was included due to its relevance in physical and mental health, as well as its potential role in students' learning processes, self-esteem, and the effective application of learning strategies (Bacon & Lord, 2021; Seum et al., 2022). Body mass index was determined using Quetelet's formula: weight (kg)/height$^2$ (m$^2$). Anthropometric data were collected using a digital ASIMED® Type B, Class III scale, and a SECA® 214 portable stadiometer (SECA Ltd., Hamburg, Germany).

All measurements were taken with participants wearing light clothing and no footwear to ensure accuracy.

### 2.3. Procedure

The objectives and procedures of the study were clearly communicated to parents, legal guardians, teachers, and school administrators, all of whom provided their informed consent prior to participation. Student involvement was entirely voluntary, and participants retained the right to withdraw from the study at any time. To maintain confidentiality, each participant's identity was coded. Data collection took place during school hours, according to the schedule established by the participating institutions. The questionnaires were administered in the students' regular classroom setting, under the supervision of both researchers and academic tutors to ensure standardized conditions. Ethical approval for the study was granted by the Bioethics Committee of the University of Jaén (Spain), reference: NOV.22/2.PRY. The study design adhered to Spanish legal frameworks on human research (Law 14/2007, of 3 July, on Biomedical Research), as well as the Spanish Data Protection Act (Organic Law 3/2018 of 5 December 2018, on Personal Data Protection and guarantee of digital rights). Furthermore, all procedures complied with the ethical principles outlined in the Declaration of Helsinki (2013, Brazil).

### 2.4. Statistical Analysis

To compare continuous and categorical variables between boys and girls, Student's t-test and the Chi-square ($\chi^2$) test were applied, respectively. The assumptions of normality and homogeneity of variances were assessed using the Kolmogorov–Smirnov test and Levene's test, respectively. To investigate whether adolescents who had never experienced bullying or cyberbullying, either as victims or aggressors, exhibited better study time management and effort self-regulation compared to those who had been involved in such experiences, an analysis of covariance (ANCOVA) was conducted. In this model, study time management and effort self-regulation were treated as dependent variables, while bullying victimization, bullying aggression, cyberbullying victimization, and cyberbullying aggression were included as fixed factors. To facilitate interpretation, bullying and cyberbullying scores were converted into dichotomous categories: participants who had never been victims or aggressors (score = 1) were classified as "Never", whereas those who had experienced victimization or aggression at least once (score > 1) were labeled as "At least once". This dichotomization was based not only on statistical considerations, but also on theoretical and practical grounds, as research indicates that even a single instance of bullying or cyberbullying can have significant psychological and academic consequences, particularly in adolescence (Przybylski & Bowes, 2017). Given the presence of unequal sample sizes in several comparison groups, Hedges' g was used to compute effect sizes, with interpretation thresholds set as follows: 0.2 = small effect, 0.5 = medium effect, and 0.8 = large effect (Martínez-López et al., 2018). Additionally, the percentage o difference between the groups was calculated using the following formula: [(Large-measurement − small-measurement)/small-measurement] × 100. To determine the risk associated with bullying and cyberbullying victimization/aggression in relation to lower scores in resource management learning strategies, a binary logistic regression analysis was performed. For this purpose, the dependent variables were dichotomized using the median as the reference threshold (Kwon et al., 2020; Lepinet et al., 2023). Each strategy was categorized as follows: high (≥median, reference group) vs. low (<median, risk group). Additionally, age, maternal education level, BMI, and weekly physical activity were incorporated as covariates in all analyses. Finally, gender was treated as a moderating variable, based on theoretical evidence and previous findings suggesting that the relationship among bullying,

cyberbullying, and academic self-regulation may differ significantly between boys and girls (Obregón-Cuesta et al., 2022; Ogden et al., 2023). Accordingly, all statistical analyses were conducted separately for each gender to accurately capture these potential differences. A 95% confidence level ($p < 0.05$) was applied to all statistical analyses, which were performed using SPSS, version 25.0 for Windows (SPSS Inc., Chicago, IL, USA).

## 3. Results

### *3.1. Analysis of Covariance for Bullying and Cyberbullying Victimization in Relation to Resource Management Learning Strategies*

Girls who were victims of bullying had 5.9% lower study time management ability compared to those who reported never being victims (5.38 ± 0.96 vs. 5.70 ± 0.96 u.a.), $F(1,643) = 21.979$, $p = 0.001$, $\breve{g} = 0.339$, $1 - \beta = 0.933$ (Figure 1a), and 7.7% lower effort self-regulation (5.31 ± 1.20 vs. 5.72 ± 1.06 u.a.), $F(1,643) = 22.600$, $p < 0.001$, $\breve{g} = 0.349$, $1 - \beta = 0.943$ (Figure 1b). Similar results were found for girls who were victims of cyberbullying. Cyber-victim girls scored 6.2% lower in study time management (5.29 ± 0.99 vs. 5.62 ± 0.95 u.a.), $F(1,643) = 19.432$, $p = 0.025$, $\breve{g} = 0.344$, $1 - \beta = 0.916$ (Figure 1c), and 8.3% lower in effort self-regulation (5.19 ± 1.23 vs. 5.62 ± 1.08 u.a.), $F(1,643) = 25.599$, $p = 0.002$, $\breve{g} = 0.372$, $1 - \beta = 0.985$ (Figure 1d). In contrast, boys showed no significant differences between victims and non-victims of bullying or cyberbullying regarding resource management learning strategies (all $p > 0.05$).

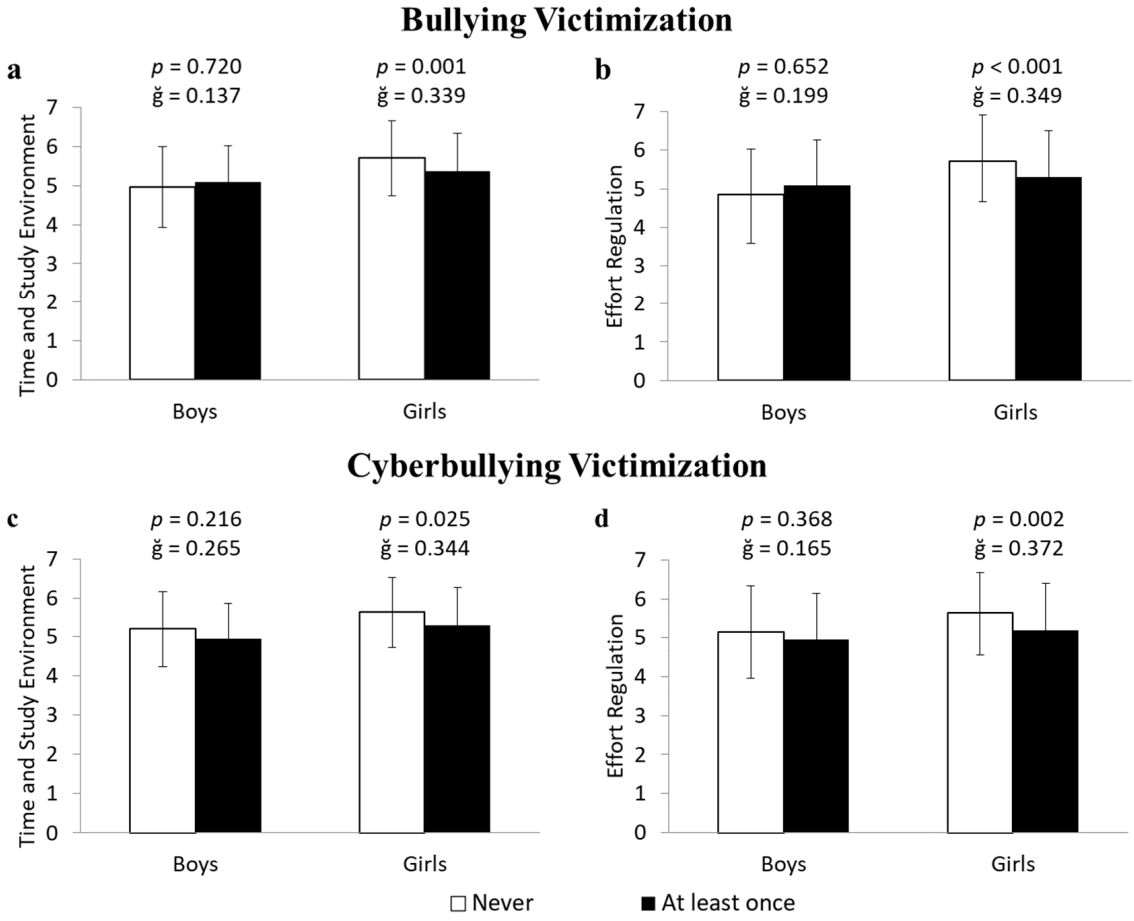



**Figure 1.** Means and standard deviations by gender for time and study environment management and effort regulation. (**a**,**b**) Victims of traditional bullying compared to non-victimized peers, and (**c**,**d**) victims of cyberbullying compared to non-cybervictimized peers.

### *3.2. Analysis of Covariance for Bullying and Cyberbullying Aggression in Relation to Resource Management Learning Strategies*

Boys who engaged in bullying aggression had 5.8% lower study time management ability compared to non-aggressors (5.00 ± 0.96 vs. 5.29 ± 0.88 u.a.), $F(1,596) = 18.885$, $p = 0.012$, $\breve{g} = 0.309$, $1 - \beta = 0.978$ (Figure 2a). In the case of cyberbullying, boys who were aggressors demonstrated 9.6% poorer study time management (4.81 ± 0.85 vs. 5.27 ± 0.97 u.a.), $F(1,596) = 34.513$, $p < 0.001$, $\breve{g} = 0.504$, $1 - \beta = 0.999$ (Figure 2c), as well as 8.2% lower effort self-regulation (4.77 ± 1.16 vs. 5.16 ± 1.19 u.a.), $F(1,596) = 21.416$, $p < 0.001$, $\breve{g} = 0.415$, $1 - \beta = 0.996$ (Figure 2d). Meanwhile, girls who engaged in bullying aggression scored significantly lower in study time management (−8.7%; 5.28 ± 0.96 vs. 5.74 ± 0.92 u.a.), $F(1,643) = 27.345$, $p < 0.001$, $\breve{g} = 0.487$, $1 - \beta = 0.991$, and in effort self-regulation (−10.2%; 5.20 ± 1.19 vs. 5.73 ± 1.10 u.a.), $F(1,643) = 33.345$, $p < 0.001$, $\breve{g} = 0.453$, $1 - \beta = 0.987$ (Figure 2a,b, respectively). Finally, regarding cyberbullying, girls who were aggressors exhibited 8.6% lower effort self-regulation (5.11 ± 1.26 vs. 5.55 ± 1.09 u.a.), $F(1,643) = 20.449$, $p = 0.007$, $\breve{g} = 0.382$, $1 - \beta = 0.995$ (Figure 2d).

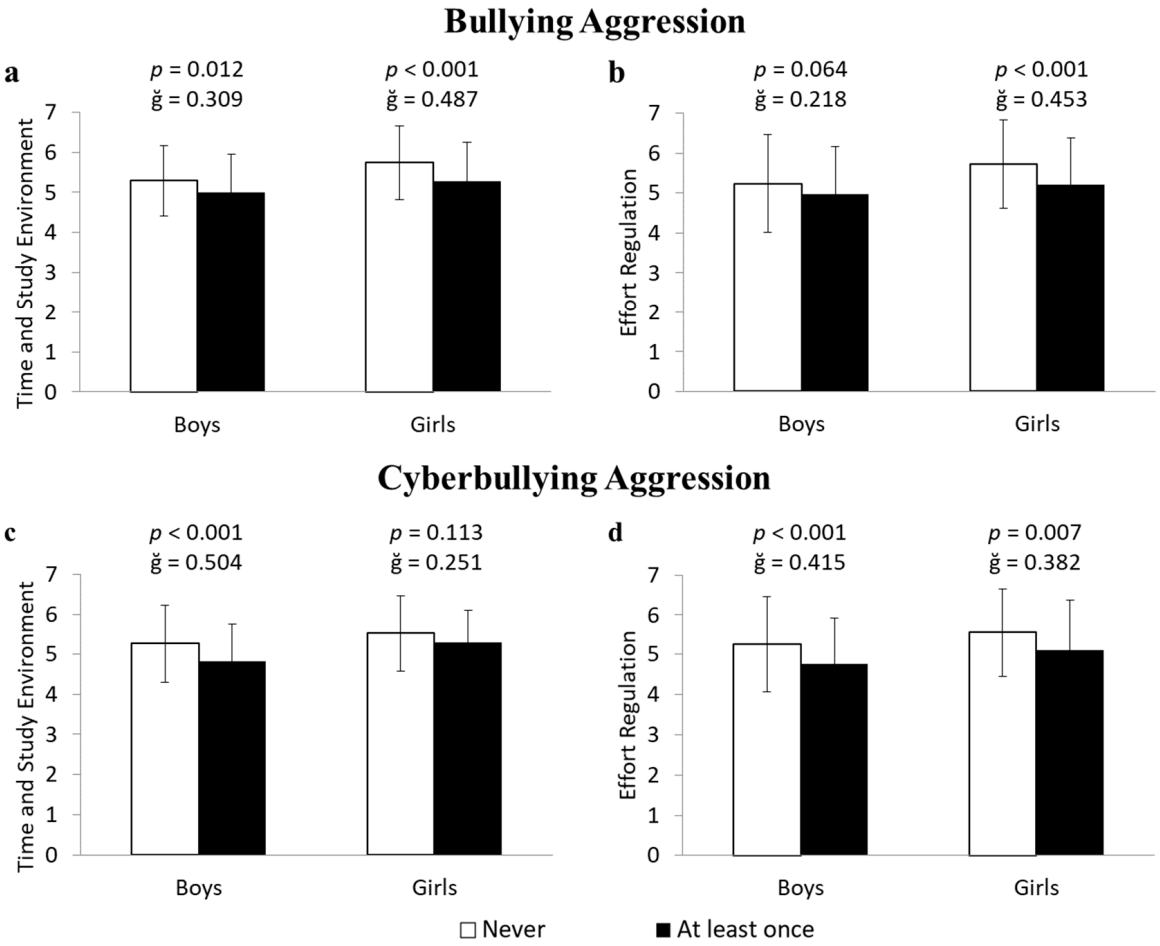



**Figure 2.** Means and standard deviations by gender for time and study environment management and effort regulation. (**a**,**b**) Traditional bullying aggressors compared to non-aggressor peers, and (**c**,**d**) cyberbullying aggressors compared to non-cyberbullying aggressor peers.

### *3.3. Binary Logistic Regression Analyses of Bullying and Cyberbullying in Relation to Study Time Management and Effort Regulation*

The data indicating the risk of exposure to bullying and cyberbullying victimization and aggression in relation to resource management learning strategies are presented in Tables 2 and 3, respectively. Boys who were victims of bullying were 1.44 times more likely

to exhibit poor effort self-regulation in studying (OR = 1.440; $p = 0.043$). Among girls, both bullying and cyberbullying victimization were associated with a significantly higher risk of inappropriate study time management (OR = 3.12 and OR = 2.25, respectively, both $p < 0.001$), as well as weaker effort self-regulation (OR = 4.202 and OR = 3.216, respectively, both $p < 0.001$).

**Table 2.** Binary logistic regression for bullying and cyberbullying victimization (1 = never, 5 = more than once/week) according to categorized indicators (high vs. low) of time and study environment management and effort regulation in adolescent boys and girls. OR: odds ratio; CI: confidence interval. OR was adjusted for age, BMI (body mass index), mother's education, and weekly physical activity level.

| | | Boys (602) | | | | Girls (649) | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Bullying Victimization** | | **N** | ***p*** | **OR** | **95%CI** | **N** | ***p*** | **OR** | **95%CI** |
| Time and Study Environment | High | 242 | | 1 | Referent | 378 | | 1 | Referent |
| | Low | 360 | 0.332 | 1.152 | 0.710–1.553 | 271 | <0.001 | 3.119 | 1.983–6.425 |
| Effort Regulation | High | 243 | | 1 | Referent | 366 | | 1 | Referent |
| | Low | 359 | 0.043 | 1.440 | 1.044–1.811 | 283 | <0.001 | 4.202 | 2.025–7.488 |
| **Cyberbullying Victimization** | | | | | | | | | |
| Time and Study Environment | High | 242 | | 1 | Referent | 378 | | 1 | Referent |
| | Low | 360 | 0.225 | 1.229 | 0.923–1.499 | 271 | <0.001 | 2.254 | 1.476–3.442 |
| Effort Regulation | High | 243 | | 1 | Referent | 366 | | 1 | Referent |
| | Low | 359 | 0.119 | 1.322 | 0.802–2.036 | 283 | <0.001 | 3.216 | 2.039–5.071 |

**Table 3.** Binary logistic regression for bullying and cyberbullying aggression (1 = never, 5 = more than once/week) according to categorized indicators (high vs. low) of time and study environment management and effort regulation in adolescent boys and girls. OR: odds ratio; CI: confidence interval. OR was adjusted for age, BMI (body mass index), mother's education, and weekly physical activity level.

| | | Boys (602) | | | | Girls (649) | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Bullying Aggression** | | **N** | ***p*** | **OR** | **95%CI** | **N** | ***p*** | **OR** | **95%CI** |
| Time and Study Environment | High | 242 | | 1 | Referent | 378 | | 1 | Referent |
| | Low | 360 | 0.106 | 1.166 | 1.253–2.806 | 271 | <0.001 | 2.765 | 1.823–3.411 |
| Effort Regulation | High | 243 | | 1 | Referent | 366 | | 1 | Referent |
| | Low | 359 | 0.045 | 1.963 | 1.416–2.722 | 283 | <0.001 | 2.342 | 1.698–3.230 |
| **Cyberbullying Aggression** | | | | | | | | | |
| Time and Study Environment | High | 242 | | 1 | Referent | 378 | | 1 | Referent |
| | Low | 360 | <0.001 | 6.219 | 2.927–11.752 | 271 | 0.115 | 1.333 | 0.954–2.139 |
| Effort Regulation | High | 243 | | 1 | Referent | 366 | | 1 | Referent |
| | Low | 359 | <0.001 | 4.362 | 2.616–9.555 | 283 | 0.005 | 3.311 | 1.533–6.836 |

Meanwhile, boys who engaged in bullying aggression were 1.96 times more likely to exhibit poor effort self-regulation compared to their non-aggressive peers (OR = 1.963; $p = 0.045$). For boys who engaged in cyberbullying aggression, the risk of poor effort self-regulation increased 4.36 times ($p < 0.001$), while the likelihood of mismanaging study time increased 6.22 times ($p < 0.001$). Girls who engaged in bullying aggression were 2.77 times more likely to mismanage their study time (OR = 2.765; $p < 0.001$) and 2.34 times more likely

to exhibit poor effort self-regulation ($p < 0.001$). In the case of cyberbullying aggression, girls also demonstrated an increased probability of inadequate effort self-regulation (OR = 3.311; $p = 0.005$); however, no significant risk was observed in their study time management ($p > 0.05$).

## 4. Discussion

The primary objective of this study was to analyze the association among bullying and cyberbullying victimization/aggression and resource management learning strategies in children and adolescents aged 10 to 16 years. The findings revealed that both victims and aggressors of bullying and/or cyberbullying exhibited negative associations with study time management and effort self-regulation, with these effects being particularly pronounced in girls. Additionally, a higher risk of ineffective study time and effort management was identified among these students. The results also showed that, in some cases, aggressors exhibited stronger negative associations with self-regulation and organizational skills than victims, although this pattern varied depending on gender, role, and the specific strategy assessed. Furthermore, the risks were significantly greater in cyberbullying cases compared to traditional bullying. This indicates that cyberbullying's pervasive nature, anonymity, and continuous exposure beyond the school environment may intensify its detrimental effects on academic self-regulation and study management. Table 4 summarizes the findings on study time management and effort regulation among both victims and aggressors in bullying and cyberbullying scenarios.

**Table 4.** Extracted results of bullying and cyberbullying in youth aged 10 to 16 years. Data differentiated by role (victim/aggressor) and gender.

| | | Boys | | Girls | |
|---|---|---|---|---|---|
| | | **Mean Differences** | **Risk** | **Mean Differences** | **Risk** |
| **Victims** | **Bullying** | N/A | ×1.4 Effort regulation | −5.9% Time and study environment management<br>−7.7% Effort regulation | ×3.1 Time and study environment management<br>×4.2 Effort regulation |
| | **Cyberbullying** | N/A | N/A | −6.2% Time and study environment management<br>−8.3% Effort regulation | ×2.3 Time and study environment management<br>×3.2 Effort regulation |
| **Aggressors** | **Bullying** | −5.8% Time and study environment management | ×2.0 Effort regulation | −8.7% Time and study environment management<br>−10.2% Effort regulation | ×1.8 Time and study environment management<br>×2.3 Effort regulation |
| | **Cyberbullying** | −9.6% Time and study environment management<br>−8.2% Effort regulation | ×6.2 Time and study environment management<br>×4.4 Effort regulation | −8.6% Effort regulation | ×3.3 Effort regulation |

Note: N/A = not applicable.

### 4.1. Associations and Risk of Being a Victim of Bullying and Cyberbullying

Our data indicate that girls who were victims of bullying had 5.9% lower study time management ability and 7.7% lower effort self-regulation. These findings confirm that constant harassment not only affects adolescents' mental health and emotional well-being but also reduces their ability to effectively manage time and effort, negatively impacting their academic performance (Le Menestrel, 2020; Menken et al., 2022). In the case of cyberbullying, we observed that victimized girls scored 6.2% lower in study time management and 8.3% lower in effort self-regulation. According to some authors, cyberbullying induces continuous stress that invades victims' personal and social spaces, making it difficult for them to disconnect and recover (Ali & Shahbuddin, 2022; Aparisi et al., 2021). This stress affects motivation and concentration, ultimately interfering with the ability to apply resource management strategies essential for learning (McLoughlin et al., 2022).

Our data confirm that girls who are victims of bullying and cyberbullying exhibit more severe negative associations with resource management learning strategies than boys. This difference may be attributed to well-documented gender-based variations in emotional processing and coping mechanisms (Eyuboglu et al., 2021; Hellström & Beckman, 2020). Girls tend to internalize emotional distress more intensely, which may exacerbate anxiety and undermine their ability to concentrate, organize study time, and sustain academic effort (Chai et al., 2020). In contrast, boys often adopt externalizing strategies, such as avoidance or denial, which may temporarily buffer the impact of victimization on academic behaviors, though at the cost of long-term emotional awareness and help-seeking (Eyuboglu et al., 2021; Xia et al., 2023). It appears that girls involved in intimidation contexts also report higher levels of psychological distress and difficulties within the family environment, which further impair their academic self-regulation (Nuñez-Fadda et al., 2022). Furthermore, we found that victims of bullying and cyberbullying face a significantly higher risk of poor study time management and effort self-regulation, with risks up to four times higher compared to those who have not been victimized. This finding aligns with evidence suggesting that psychological harassment in girls intensifies feelings of insecurity and distrust toward their environment, exacerbating the emotional consequences of bullying (Rodríguez-Hernández et al., 2020). In contrast, the impact observed in boys was primarily reflected in a 140% increase in the likelihood of exhibiting poor effort self-regulation. However, this effect appears less severe compared to girls, possibly due to the more frequent use of active or confrontation-oriented coping strategies among boys, which may promote faster emotional and cognitive recovery (Eyuboglu et al., 2021; Obregón-Cuesta et al., 2022).

### 4.2. Associations and Risk of Being a Bullying and Cyberbullying Aggressor

The present study confirmed that both boys and girls who engage in bullying and cyberbullying exhibit significantly lower scores in study time management and effort self-regulation. Boys who were bullying aggressors showed a 5.8% lower ability to manage their time, whereas girls who engaged in bullying aggression demonstrated 8.7% lower study time management ability and 10.2% lower effort self-regulation. In line with previous studies, such as that of Bansal et al. (2024), our data suggest that bullying behaviors not only negatively affect victims but also impact aggressors, who tend to display disorganization and a lack of motivation toward learning (Guo et al., 2021). This lack of self-regulation is associated with lower academic engagement and higher impulsivity, which leads to self-control issues and low self-esteem (Bansal et al., 2024; Gomes et al., 2020). Additionally, we observed that both boys and girls who were bullying and cyberbullying aggressors had up to six times higher risk of poor performance in these resource management strategies compared to non-aggressor students. These findings support previous studies that

concluded being an aggressor is linked to self-control difficulties and a tendency toward disruptive behaviors (Aparisi et al., 2021; Leiner et al., 2014). Furthermore, aggressors often experience high levels of stress and social adaptation problems, which compromise their ability to effectively manage learning resources, such as planning and effort regulation (Gomes et al., 2020).

On the other hand, cyber aggressors exhibited significantly lower study time management (−9.6%) and effort self-regulation (−8.2%) compared to traditional bullying aggressors. This phenomenon could be explained by the persistent and expansive nature of cyberbullying, which is not confined by spatial or temporal limitations, thereby intensifying its negative effects (Paciello et al., 2023). Research has shown that interactions in an anonymous digital environment, without direct supervision, reduce empathy and foster hostile behaviors, leading to greater difficulties in the emotional and social development of cyber aggressors (Kowalski & Limber, 2013). The lack of supervision in cyberbullying contexts weakens self-regulation and promotes antisocial behaviors in other areas, such as academics or family life (Xia et al., 2023). In this regard, our findings indicate a comparatively lower negative impact among traditional bullying aggressors. This evidence supports the theory that constant adult supervision in the school environment reduces both the frequency and severity of aggressive behaviors in these contexts (Evans et al., 2019; Paciello et al., 2023).

Finally, it is essential to highlight the significant behavioral differences found among aggressors based on gender. For instance, male cyber aggressors were 6.2 times more likely to adopt ineffective study time management strategies and 4.4 times more likely to exhibit poor effort self-regulation, surpassing female aggressors, whose risk for poor effort self-regulation was 3.3 times higher. These variations may be associated with gender roles and social expectations that shape the behaviors of male and female aggressors. While female aggressors tend to experience social pressure toward self-sufficiency and emotional control, male aggressors often face expectations of toughness and self-confidence, which may encourage impulsive behaviors and resistance to self-reflection (Eyuboglu et al., 2021). This impulsivity leads boys to adopt avoidance strategies and deprioritize sustained effort in academic tasks (Paciello et al., 2023), perpetuating a cycle of disorganization and academic failure, which is less frequent among female aggressors, as they are more likely to seek resilience strategies through support mechanisms (Brewer & Kerslake, 2015).

### *4.3. Recommendations for Combating Bullying and Cyberbullying and Strengthening Resource Management Strategies for Learning*

Based on the findings of this study, Table 5 presents specific recommendations aimed at strengthening resource management strategies for learning among victims and aggressors of bullying and cyberbullying. For classification purposes, both the type of aggression and the role involved (victim or aggressor) were considered, establishing differentiated guidelines for students, teachers, and families. No gender distinctions were made, as the proposed intervention strategies were found to be similar for both boys and girls. However, special attention should be given to male cyber aggressors, female victims of both types of bullying, and female bullying aggressors, as these groups exhibited the most significant negative effects. It is also important to emphasize that these recommendations do not replace the priority of prevention, which aims to eliminate the occurrence of such behaviors. To protect the physical and mental well-being of victims, it is crucial to implement preventive strategies and promote awareness programs targeting aggressors, in order to deter them from engaging in bullying behaviors.

**Table 5.** Evidence-based recommendations, differentiated by gender, type of aggression (bullying or cyberbullying), and role (victim or aggressor) to maximize impact of interventions.

| | | Interventions to Strengthen Learning Resource Management for Victims | Interventions to Strengthen Learning Resource Management for Aggressors |
|---|---|---|---|
| Students | Bullying | Set achievable daily academic goals to foster self-esteem through small academic victories.<br>Design a classroom program to teach students how to organize their personal study space, emphasizing the importance of maintaining a clean, orderly, and distraction-free environment.<br>Implement mentorship programs with older students or adults to develop perseverance skills. | Guide students to set goals that include commitments to avoid bullying behaviors and replace them with helpful or supportive actions toward others.<br>Design classroom activities aimed at developing empathy and organizing personal space.<br>Introduce a recognition system that values respect for others and academic effort. |
| | Cyberbullying | Establish specific digital use schedules that are separate from study times.<br>Teach the use of tools to block harmful content.<br>Create a system that recognizes and rewards their academic efforts, regardless of the final outcome. | Develop workshops to reflect on the impact of their digital interactions, where students analyze how they spend their time online and the effects of their actions on others.<br>Promote self-regulation tools such as blocking extensions to prevent digital distractions.<br>Implement a recognition system that rewards not only academic achievement but also efforts to interact respectfully with others. |
| Educators | Bullying | Train in time regulation so that teachers can teach students to plan and prioritize tasks, improving organization and helping to reduce the emotional impact of bullying on academic performance.<br>Create a safe study environment through inclusive and supportive classroom strategies that foster a space where victims feel valued and protected.<br>Provide training in positive motivation techniques to reinforce victims' efforts, even when they face emotional challenges. | Train in techniques of self-control and regulation of effort, providing teachers with strategies to guide students in managing impulses and committing to their studies, promoting behavioral changes.<br>Assign positive roles to aggressors, promoting leadership in collaborative activities.<br>Train teachers in the use of behavioral reinforcement methods to teach aggressors how to maintain consistent academic effort. |
| | Cyberbullying | Train teachers in digital time management so they can guide students in organizing their online time, minimizing distractions and exposure to cyberbullying.<br>Train in creating safe digital study environments using content control tools and strategies, creating a protected space that supports concentration and reduces anxiety in victims.<br>Train teachers in socio-emotional learning techniques, such as self-affirmation activities and group exercises that enhance student confidence. | Train teachers in self-reflection techniques on digital time and behavior, enabling them to foster responsible social media use and critical reflection on online interactions among aggressors.<br>Train teachers in respectful digital learning environments, equipping them with tools to teach about respect for others and self-control in digital use.<br>Train educators in behavioral reinforcement methods to teach aggressors how to sustain academic effort. |

**Table 5.** *Cont.*

| | | Interventions to Strengthen Learning Resource Management for Victims | Interventions to Strengthen Learning Resource Management for Aggressors |
|---|---|---|---|
| Family | Bullying | Train parents, guardians, and caregivers in time management so they can help their children structure their home study time by establishing schedules that foster a supportive and organized environment.<br>Train families in creating safe and organized study environments.<br>Teach families techniques to identify signs of demotivation in their children and provide tools to help regulate effort, such as home-based reward systems for academic achievements. | Train in techniques of self-control and recognition of effort for behavioral change, teaching families to guide the setting of goals and self-regulation in studies.<br>Create a home environment of respect and reflection where children can reflect on their behaviors and their impact on others, promoting empathy and self-awareness.<br>Train parents and guardians in self-regulation techniques and recognition of effort to guide their children toward behavior change. |
| | Cyberbullying | Teach families to guide the ethical and responsible use of technology, training them to establish device usage schedules and monitor online content.<br>Train families to create a safe digital environment at home through the use of parental control tools and encourage healthy digital device use.<br>Train families to help victims rebuild their confidence and academic effort through the use of achievable goals and consistent support at home. | Train in self-regulation of network use and digital supervision so families can guide the ethical use of technology, promoting self-control and reducing negative online behaviors.<br>Train in fostering a respectful digital environment, teaching parents to conduct reflective exercises on the impact of online interactions, promoting empathy and responsibility.<br>Conduct joint reflection exercises on how irresponsible social media use affects academic and emotional performance. |

### *4.4. Limitations and Strengths*

This study has several methodological limitations that should be acknowledged. First, its cross-sectional design does not allow for establishing causal relationships. Additionally, the use of self-reported measures may have introduced response biases. Furthermore, the use of a convenience sample limits the representativeness of the findings. However, the strengths of this study lie in several key methodological practices. Confidentiality was ensured through data coding techniques. Highly reliable and internally validated measurement tools were used, and important covariates such as age, body mass index, maternal education level, and weekly physical activity were included in the analysis. These methodological considerations enabled the identification of specific results and risk levels, previously unexplored, which could contribute to significant advancements in the field of education.

## 5. Conclusions

This study concludes that both victims and aggressors of school bullying exhibit negative associations with study time management and effort self-regulation in young people, with these associations being stronger in cyberbullying contexts. Girls who are victims of traditional bullying and cyberbullying are up to four times more likely to exhibit poor effort self-regulation and up to three times more likely to manage their study time inadequately. Among boys who are victims of bullying, the risk probability is only 1.4 times higher, and it exclusively affects effort self-regulation in learning. On the other hand, girls who engage in bullying and cyberbullying aggression may experience up to a 10.2% decline in their ability to regulate their effort for academic tasks. In the case of male

cyber aggressors, study time management may be negatively affected by up to 9.6%, and they are 4.4 times more likely to exhibit inadequate effort self-regulation.

It is suggested that specific and cooperative actions be implemented among students, teachers, and families to strengthen the proper use of resource management strategies for learning among both victims and aggressors, with particular attention to girls, in general, and male cyber aggressors. These self-regulatory difficulties in aggressors should be interpreted as unintended consequences of engaging in bullying behaviors, reinforcing the importance of prevention rather than suggesting a prioritization of support toward aggressors. These findings highlight the urgent need for educational institutions to implement early and targeted interventions that foster resilience, emotional regulation, and self-management skills among students exposed to bullying and cyberbullying. It is essential that such interventions prioritize comprehensive support for victims, while also addressing the emotional and behavioral challenges observed in aggressors as part of broader preventive frameworks. Additionally, the implementation of clear prevention policies and the establishment of firm consequences for aggressors are recommended to ensure student well-being and promote an environment that facilitates effective learning.

**Author Contributions:** Conceptualization, J.L.S.-M. and A.R.-A.; methodology and formal analysis, R.G.-J. and A.R.-A.; data curation, R.G.-J. and A.R.-M.; writing—original draft preparation, J.L.S.-M. and A.R.-M. writing—review and editing, R.G.-J. and A.R.-A.; supervision, A.R.-A.; funding acquisition, A.R.-A. All authors have read and agreed to the published version of the manuscript.

**Funding:** The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article. This research and associated research stays was supported by funding from the Ministry of Science and Innovation of Spain (grant number PID2022-137432OB-I00).

**Institutional Review Board Statement:** The study was conducted in accordance with the Declaration of Helsinki (2013, Brazil) and approved by the Bioethics Committee of the University of Jaén (Spain) (protocol code NOV.22/2.PRY, approved in November 2022).

**Informed Consent Statement:** Informed consent was obtained from all participants involved in the study, including parental or legal guardian consent for underage participants.

**Data Availability Statement:** The data supporting the findings of this study are not publicly available due to privacy and ethical restrictions. This research is part of a larger investigation involving multiple researchers, and data confidentiality was a key requirement for participant involvement. To ensure compliance with ethical guidelines and to protect the privacy of all participants, the data cannot be shared.

**Conflicts of Interest:** The authors declare no conflicts of interest.

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