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Research Article

Cyberbullying Aggression in Adolescence: The Contributions of Personality and Psychological Maturity

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ABSTRACT

Cyberbullying during adolescence is a growing concern and is exacerbated by the widespread use of information and communication technologies (ICTs). This study explores the relationship between cyberbullying aggression, personality traits, and psychological maturity in a sample of Spanish adolescents from the city of Tarragona, Spain (N = 276, age range = 14–18 years, *M* = 16.2 years). Our sample consisted of 43% male, 56% female, and 1.1% non-binary students. Participants completed the European Cyberbullying Intervention Project Questionnaire (ECIP-Q), the Overall Personality Assessment Scale (OPERAS), and the Psychological Maturity Assessment Scale (PSYMAS). Descriptive analyses, correlational tests, independent-samples *t* tests, and hierarchical multiple regression analyses showed that boys scored significantly higher than girls in cyberbullying aggression (one-tailed), and also showed higher emotional stability, whereas girls scored higher in openness to experience. In the final regression model, higher extraversion, lower agreeableness, and lower work orientation significantly predicted cyberbullying aggression, while autonomy exhibited an insignificant effect. None of the gender interaction terms were significant, indicating that these associations did not differ between boys and girls. Overall, the findings highlight the central role of sociability, empathy, and responsibility in explaining adolescents' involvement in cyberbullying. From an applied perspective, interventions aimed at fostering empathy, perspective-taking, self-regulation, and impulse control, particularly in highly extraverted adolescents, may help reduce aggressive online behaviours.

Keywords: cyberbullying, adolescents, personality traits, psychological maturity, online aggression

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Introduction

The introduction and development of information and communication technologies (ICTs) have transformed social relations in recent decades. Human communication has evolved alongside advances in these technologies, resulting in new forms of communication and social interaction (Koch, et al., 2025; Gebremariam et al., 2024). The ease and speed of communication means that socialising is no longer bound to a specific time or place and can now occur anytime, anywhere.

The use of social networks (e.g., Facebook, Instagram, Telegram, Twitter) and contact apps (e.g., Grindr, Tinder) in adolescence has skyrocketed. This has led to a shift from purely analogue interactions to fully or partially digital ones. According to the latest national survey on ICT usage in Spain, 95% of adolescents in the families surveyed had mobile phones and accessed the internet daily. In addition, 90% of young people aged 16 to 24 reported having used at least three social networks in the previous few months (INE, 2021). These shifts in social interaction have also brought about changes in certain forms of aggression, including cyberbullying.

Cyberbullying is defined as an aggressive, intentional, repetitive, and persistent act carried out through ICTs by an individual or group against victims who are unable to defend themselves easily (Smith et al., 2008). Various forms of cyberbullying, including happy slapping, sexting, exclusion from chat groups, impersonation, and the spreading of rumours and photomontages, can exacerbate victimisation (Garaigordobil, 2011).

Previous studies have documented gender differences in cyberbullying aggression, though, overall, gender-related results have been inconclusive. Some studies have suggested that rates of cyberbullying aggression are higher in girls than in boys (Chan et al., 2019; Wyckoff et al., 2019), while others report a higher prevalence in boys (Sourander et al., 2010; Wachs & Wright, 2019; Zhou et al., 2018). Still others have found no significant gender differences (Kowalski & Limber, 2013; Navarro, Ruiz-Oliva et al., 2015).

Cyberbullying aggression has also been linked to various personality traits, including the Big Five (Çelik et al., 2012; Van Geel et al., 2017). Several studies, for example, report a negative relationship between agreeableness

and bullying/cyberbullying (Çelik et al., 2012; Festl & Quandt, 2013; Van Geel et al., 2017). These findings are consistent with expectations, as individuals who score highly in agreeableness tend to exhibit altruistic attitudes (Mitsopoulou & Giovazolias, 2015). Indeed, one study conducted with adolescents found that students with high altruistic motivation were less likely to engage in bullying behaviours (Thornberg & Wänström, 2018).

The relationship between extraversion and cyberbullying has also been analysed. Adolescents with high levels of extraversion tend to be more sociable and dominant, which may increase their likelihood of engaging in cyberbullying behaviours. Their impulsive nature and tendency to seek stimulation may lead them to act without considering the consequences, thereby increasing their probability of engaging in aggressive online behaviour (Escortell et al., 2020). Vikhman's 2023 study, for instance, suggests that extraversion could be a determining factor in the likelihood of perpetrating cyberbullying. On the other hand, openness has been shown to act as a protective factor against cyberbullying. A study of Spanish adolescents concluded that openness is negatively associated with cyberbullying and potentially reduces the likelihood of an adolescent engaging in online aggression (Escortell et al., 2020). Individuals with high scores in openness tend to be more receptive to new experiences and to have an open-minded attitude, thus making them less likely to participate in cyberbullying (Van Geel et al., 2017).

While emotional stability has not been widely associated with cyberbullying aggressors, it has been linked to cyberbullying victims (Alonso & Romero, 2017; Eweida et al., 2021). Conversely, low levels of conscientiousness have been associated with a higher likelihood of engaging in cyberbullying behaviours either as a victim or aggressor (Semerci, 2017; Vikhman, 2023). Beyond personality traits, another relevant construct for understanding adolescent behaviour is psychological maturity. This concept refers to the capacity to assume obligations, make responsible decisions while considering one's own characteristics and needs, and accept the consequences of one's actions. Psychological maturity comprises three dimensions: work orientation reflects the tendency to fulfil one's duties and obligations appropriately, autonomy denotes the predisposition to take initiative and make independent decisions without being overly controlled by

others, and identity refers to having a clear and stable sense of oneself. Together, these dimensions capture the extent to which adolescents are capable of acting responsibly, autonomously, and consistently in their personal and social lives. How psychological maturity and its three factors (work orientation, identity, and autonomy) may be related to cyberbullying aggression has scarcely been addressed in the literature. However, some indirect studies link these variables. For instance, research on moral maturity has indicated that personality traits and experiences of psychological abuse influence attitudes toward cyberbullying perpetration. In the context of social maturity, cyberbullies have been found to have high levels of social support and popularity goals, which suggests that these behaviours may be influenced by peer group dynamics and the desire for social acceptance (Romera et al., 2016). From a socioecological perspective, factors such as social self-efficacy and social reputation have been shown to influence one's likelihood of becoming a cyberbully. Adolescents with low emotional self-efficacy aiming to improve their social reputation are more prone to cyberbullying (Navarro, Yubero, & Larrañaga, 2015).

Despite extensive research on cyberbullying, how personality traits and psychological maturity interact to influence cyberaggression among Spanish adolescents remains poorly understood. This study is based on the General Aggression Model (GAM) (Anderson & Bushman, 2002), which proposes that personal and situational factors interact to influence aggressive behaviour. Applying this model to the context of cyberbullying, we hypothesise that certain personality traits and levels of psychological maturity may predispose adolescents to online aggression, with potential gender-specific patterns in these associations.

The aim of this study is to examine the relationship between aggression in cyberbullying and both personality traits and psychological maturity in a group of Spanish adolescents. Previous research suggests that adolescents with high levels of extraversion may be more likely to engage in aggressive behaviours in digital environments. This can be explained by their inclination toward sociability and desire for dominance, which may lead to a lack of reflection on the consequences of their online actions (Escortell et al., 2020; Vikhman, 2023). Conversely, individuals with low levels of openness may be at greater risk of involvement in cyberbullying, while those who are

more open to new ideas and experiences may eschew such behaviours due to their reflective and receptive nature (Escortell et al., 2020). Similarly, adolescents with low levels of agreeableness, characterised by reduced empathy and lower altruism, are also expected to be more likely to engage in cyberbullying (Van Geel et al., 2017; Mitsopoulou & Giovazolias, 2015).

Finally, although the literature on psychological maturity and cyberbullying is limited, we hypothesise that adolescents with low levels of work orientation and autonomy may show a greater tendency towards online aggression. A limited capacity for responsibility and autonomous decision-making may increase susceptibility to impulsive or aggressive online behaviours (Romera et al., 2016; Navarro, Yubero, & Larrañaga, 2015). Given the conflicting evidence, with some studies reporting a higher prevalence of cyberbullying among boys (WHO Europe, 2024; Sourander et al., 2010) and others suggesting no differences based on gender (Kowalski & Limber, 2013; Navarro, Ruiz-Oliva, et al., 2015), we explored potential gender differences in cyberbullying as well. Based on the most consistent pattern of findings, we expected boys to score higher than girls in cyberbullying aggression and therefore tested this prediction using one-tailed hypotheses. Previous research into gender differences in personality traits and psychological maturity has yielded mixed results when comparing boys and girls directly. For example, girls often score higher in agreeableness or openness, whereas other studies report no clear or consistent gender differences (Van Geel et al., 2017; Mitsopoulou & Giovazolias, 2015; Romera et al., 2016). Therefore, we did not advance specific predictions about gender differences in these variables.

Method

Participants

Our sample comprised 276 students (56% female, 43% male, and 1.1% non-binary students) from three public high schools in the province of Tarragona (Spain). The students were aged between 14 and 18 years old with an average age of 16.2 (*SD* = 1.08). Gender was operationalised using a binary variable (male/female) for regression analyses. Participants identifying as

non-binary (*n* = 3) were excluded from these analyses due to the small sample size.

Instruments

Cyberbullying Intervention Project Questionnaire (ECIP-Q; Brighi et al., 2012)

We used the ECIP-Q, which was originally developed in English and subsequently adapted into Spanish by Ortega-Ruiz et al. (2016). This instrument contains 22 Likert-style items with scores ranging from 0 to 4, where 0 means "*No*" and 4 means "*Yes, more than once a week*" in reference to the previous two months. The questionnaire comprises two scales: a) Cyberbullying victimisation, to identify those who have suffered some form of harassment through their mobile phone or other device with internet access, and b) Cyberbullying aggression, to evaluate harassment behaviours through the use of internet tools (e.g., digital identity impersonation, online social exclusion, rumour dissemination, etc.). For the present study, we only used the cyberbullying aggression scale (11 items). In our sample, the reliability of this scale was adequate (Cronbach's α = .78).

The Overall Personality Assessment Scale (OPERAS; Vigil-Colet et al., 2013)

The OPERAS is based on a model of the five major personality traits. Specifically, it evaluates the following factors: extraversion, agreeableness, conscientiousness, emotional stability, and openness. It comprises 40 Likert-scale items with five possible responses ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The test has adequate psychometric properties, and the reliability coefficients (Cronbach's alpha) of the factor scores for each scale are .86 (extraversion), .71 (agreeableness), .77 (conscientiousness), .86 (emotional stability), and .81 (openness). The instrument also includes four control items to detect response bias (social desirability and acquiescence). In our study, the Big Five trait scores were computed following the standard scoring procedure. The social desirability subscale was not included as a predictor in the analyses, but the control items were used to adjust the factor scores, thereby minimising the impact of response bias.

The Psychological Maturity Assessment Scale (PSYMAS, Morales-Vives et al., 2013)

The PSYMAS comprises 26 Likert-scale items with five possible responses ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Specifically, this questionnaire assesses psychological maturity, which it defines as the capacity to assume obligations and take responsible decisions while taking into account personal characteristics and needs and assuming the consequences of the acts themselves. Specifically, the questionnaire consists of three scales: work-orientation, autonomy, and identity. Work-orientation is defined as the tendency to meet one's own obligations; autonomy is defined as the predisposition to take initiative without allowing others to exert excessive control over oneself; identity is defined as one's knowledge of oneself. The PSYMAS has an adequate factor structure and the Cronbach's alpha coefficients were .71 (work-orientation), .78 (autonomy), and .77 (identity). The reliability of the total scale is .82.

Procedure

The questionnaires were administered collectively during class hours. Students were informed about the voluntary nature of their participation and the guarantee of anonymity and confidentiality. They were free to decline participation or withdraw at any point. Instructions on how to respond to the items were provided before administration. Formal ethical approval was obtained from the Ethics Committee of Rovira i Virgili University prior to the data collection. In addition, authorisation to conduct the study was obtained from the management teams of the participating schools. Written informed consent was obtained from all participants.

Descriptive analyses, Pearson correlations, and independent sample t-tests were conducted using SPSS 29.0. Gender comparisons for cyberbullying aggression used one-tailed tests (a priori directional hypothesis: boys > girls); all other tests were two-tailed. Gender was included as a dummy variable (female = 1, male = 0), and participants identifying as non-binary (n = 3) were excluded from these analyses due to the small sample size. Based on the correlation analyses, only those variables from the Big Five traits and psychological maturity dimensions that showed significant associations with cyberbullying aggression were included

in the regression analyses. Hierarchical multiple regression was conducted in three steps. Step 1: We entered the Big Five traits that showed significant bivariate correlations with cyberbullying aggression. Step 2: We added the PSYMAS dimensions that were significantly correlated with cyberbullying. Step 3: To test moderation, we included the interaction terms between gender and each predictor from seps 1 and 2. All continuous predictors were mean-centred prior to computing interactions. Incremental fit was evaluated via ΔR^2, and tolerance/VIF were inspected to assess multicollinearity.

Results

Gender differences were analysed using independent samples t-tests. Non-binary participants were excluded from these analyses due to their small representation in the sample. The results showed statistically significant gender differences in cyberbullying aggression (t (271) = 1.78, p = .039 [one-tailed]); as expected, boys reported higher mean scores (M = 17.5, SD = 6.7) compared to girls (M = 16.2, SD = 5.2). Significant gender differences were also found in emotional stability, with boys (M = 50.8, SD = 13.7) scoring higher than girls (M = 45.1, SD = 12.0), t (271) = 3.67, p < .001 (two-tailed). Additionally, girls showed significantly higher levels of openness to experience (M = 50.4, SD = 11.2) compared to boys (M = 44.1, SD = 11.4), t (271) = -4.54, p < .001 (two-tailed). No differences were found in relation to the other variables.

Table 1 presents the correlation matrix between cyberbullying aggression and the other study variables. Extraversion was positively and significantly correlated with cyberbullying aggression. In contrast, agreeableness and openness to experience showed significant negative correlations with cyberbullying aggression. Regarding psychological maturity, both work orientation and autonomy were negatively and significantly correlated with cyberbullying aggression. No significant associations were found between cyberbullying aggression and either emotional stability or conscientiousness.

Table 1

Correlations Between Cyberbullying Aggression and the Other Study Variables

Variable	
Extraversion	.13*
Emotional stability	.05
Conscientiousness	-.07
Agreeableness	-.22**
Openness	-.22**
Work orientation	-.14*
Autonomy	-.17**
Identity	-.11

*$p < 0.05$. **$p < 0.01$.

Collinearity diagnostics were conducted to ensure the absence of multicollinearity among predictors. All tolerance values were above .20, and all variance inflation factor (VIF) values were below the commonly accepted threshold of 5, indicating no concerns regarding multicollinearity in the regression models. To examine predictors of cyberbullying aggression, we conducted hierarchical multiple regression analyses. In Step 1, personality traits (Big Five) were entered into the model. This step explained 10.4% of the variance in cyberbullying aggression, $\Delta R^2 = .104$. Even at this first stage, higher extraversion and lower agreeableness emerged as significant predictors, indicating that adolescents who were more extroverted and less agreeable were more prone to engaging in cyberaggression.

In Step 2, psychological maturity variables were added. The inclusion of these variables accounted for an additional 2.6% of the variance, $\Delta R^2 = .026$. With these variables in the model, lower work orientation emerged as a significant predictor, suggesting that self-discipline and responsibility played a protective role against involvement in aggressive online behaviours. Autonomy was also found to have an insignificant effect in this step, pointing to a possible—but weaker—protective contribution of this dimension.

In Step 3, interaction terms between gender and each predictor were introduced to test whether the associations varied between boys and girls. This step did not account for additional variance, $\Delta R^2 = .018$, indicating that

the strength of the relationships between personality, psychological maturity, and cyberbullying aggression did not differ significantly by gender.

The final model (i.e., Model 3) was significant ($F(10, 262) = 4.61$, $p < .001$), explaining 14.8% of the variance ($R^2 = .148$; adjusted $R^2 = .116$). In this model, significant predictors were extraversion (positive direction), agreeableness (negative direction), and work orientation (negative direction). An insignificant effect was found for autonomy. Taken together, these findings indicate that individual characteristics related to sociability, empathy, and responsibility are central to explaining cyberbullying aggression, above and beyond gender differences (for detailed results of the hierarchical regression, see Table 2).

Table 2

Hierarchical Regression Model: Predicting Cyberbullying Aggression

Predictor	B	β	*t*	*p*
Model 1				
Extraversion	.076	.140	2.44	.015
Openness	–.103	–.191	–3.30	.001
Agreeableness	–.119	–.200	–3.46	< .001
$R^2 = .104$				
Model 2				
Extraversion	.081	.149	2.61	.009
Openness	–.089	–.164	–2.83	.005
Agreeableness	–.111	–.186	–3.22	.001
Work orientation	–.066	–.109	–1.89	.060
Autonomy	–.055	–.103	–1.74	.083
$R^2 = .130$				
Model 3				
Extraversion	.095	.175	2.07	.039
Openness	–.039	–.073	–0.83	.406
Agreeableness	–.092	–.155	–1.97	.049
Work orientation	–.134	–.222	–2.38	.018
Autonomy	–.059	–.109	–1.33	.185
Extraversion × Gender	–.023	–.095	–0.41	.681
Agreeableness × Gender	–.043	–.173	–0.68	.496
Openness × Gender	–.072	–.300	–1.16	.247
Work orientation × Gender	.102	.411	1.53	.127
Autonomy × Gender	.012	.050	0.19	.850
$R^2 = .148$				

Discussion

This study examined how personality traits and psychological maturity jointly predict cyberbullying aggression among Spanish adolescents, offering evidence that advances our current understanding of the individual factors associated with online aggressive behaviour. By applying the General Aggression Model (Anderson & Bushman, 2002), our findings support the idea that both stable personality dispositions and specific dimensions of psychological maturity, particularly work orientation, contribute to the likelihood of engaging in cyberaggression. Although openness initially showed a negative bivariate association with cyberaggression, it did not remain in the final model once maturity variables and gender interactions were considered, suggesting overlap with other traits.

Consistent with our hypotheses and with previous large-scale reports (WHO Europe, 2024; Sourander et al., 2010), the boys in our sample reported higher levels of cyberbullying aggression than girls. However, regression analyses revealed that these mean-level gender differences do not fully explain variability in online aggression. Rather, specific personality traits and dimensions of psychological maturity emerged as stronger predictors. In particular, higher extraversion, lower agreeableness, and lower work orientation were significantly associated with cyberbullying aggression. This pattern suggests that adolescents' propensity to engage in such behaviours depends more on their social, emotional, and regulatory characteristics than on gender itself. The absence of significant gender interactions further reinforces this interpretation, indicating that these mechanisms operate similarly for both boys and girls.

These results should also be interpreted within the broader cultural and technological context of Spanish adolescents. Spain is characterised by one of the highest rates of ICT penetration in Europe, with over 95% of young people reporting daily access to smartphones and social media platforms (INE, 2021). This level of digital connectivity expands opportunities for online socialising but also increases exposure to potentially harmful interactions. In school settings, peer reputation, group belonging, and the pursuit of social status often play central roles (Romera et al., 2016), which can foster the normalisation of aggressive online practices. Moreover, evolving patterns of

gender socialisation in Spain—marked by greater equality and changing expectations of adolescent behaviour—may help explain why studies report inconsistent gender differences in cyberbullying (e.g., Chan et al., 2019; Navarro, Ruiz-Oliva, et al., 2015; Wyckoff et al., 2019).

From a psychological perspective, our results converge with previous research that emphasises the predictive value of personality traits. Low agreeableness consistently emerged as a risk factor for cyberaggression. Adolescents with reduced agreeableness often struggle with empathy, compassion, and altruism, characteristics that normally inhibit aggressive behaviours (Van Geel et al., 2017; Mitsopoulou & Giovazolias, 2015). Extraversion was also positively correlated with cyberbullying, in line with prior findings (Escortell et al., 2020; Vikhman, 2023). Adolescents high in extraversion are typically sociable, dominant, and stimulation-seeking. While these characteristics can facilitate positive peer interactions, they may also predispose individuals to impulsive behaviours and reduced reflection on the potential consequences of their actions, thereby increasing the risk of aggression in digital contexts. When these two traits intersect—high extraversion combined with low agreeableness—adolescents may be particularly vulnerable to engaging in online aggression, as sociability and dominance are not tempered by empathy and perspective-taking.

Beyond personality traits, this study highlights the relevance of psychological maturity, a construct less frequently addressed in cyberbullying research. Among its three dimensions, work orientation emerged as a significant negative predictor of cyberbullying aggression. Adolescents with higher levels of work orientation tend to show greater responsibility, perseverance, and capacity for self-regulation, all of which act as protective factors against impulsive or harmful online behaviours. Conversely, those with low work orientation may find it more difficult to regulate impulses, adhere to obligations, or anticipate the consequences of their actions, which increases their vulnerability to engaging in cyberaggression. Together, these findings underscore the importance of considering developmental variables such as maturity alongside personality traits when examining aggressive behaviours in adolescence.

The practical implications of these results are noteworthy. First, the consistent role of agreeableness points to the value of interventions aimed at

promoting empathy, altruism, and perspective-taking skills, which may serve as protective mechanisms against cyberaggression. Second, strengthening work orientation (responsibility, perseverance, self-regulation) through educational initiatives may reduce involvement in online aggression. These skills can be integrated into broader socio-emotional learning programmes within schools. Finally, given that extraversion was identified as a risk factor, intervention strategies should also focus on helping highly extraverted adolescents manage impulsivity and develop reflective decision-making skills, encouraging these tendencies to manifest in ways that promote more adaptive and prosocial interactions.

In summary, the present findings highlight the interplay between personality traits and psychological maturity in explaining cyberbullying aggression. While gender differences exist at a descriptive level, the mechanisms underlying cyberaggression appear to be universal across boys and girls. The study contributes to the literature by underscoring the importance of psychological maturity—particularly work orientation—as a protective factor that complements well-established personality predictors. By addressing these dimensions through educational and psychosocial interventions, it may be possible to reduce the prevalence and harmful impact of cyberbullying among adolescents, fostering healthier and more responsible patterns of digital interaction.

Conflict of interest

We have no conflicts of interest to disclose.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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