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Gender differences in cyberbullying perpetration on Facebook: the role of empathy, callous unemotional traits, and moral disengagement

Eleftherios Baltzidis

University of Kent, Canterbury (United Kingdom)

Keywords

General Aggression Model
Social Networking Sites
Personality factors
Online behaviour

Abstract

Despite extensive research on cyberbullying, the interplay between gender, personality factors, and cyberbullying perpetration behaviours on social networking sites remains underexplored, particularly among young adults. This study aims to examine gender differences in cyberbullying perpetration on Facebook and, guided by the General Aggression Model as the theoretical framework, to explain how individual factors such as empathy, callous-unemotional traits, and moral disengagement, as moderated by the number of Facebook friends, contribute to cyberbullying perpetration on Facebook. This study investigates this complex association among a community sample of 171 participants aged 18 to 35 years (57.9% female), selected through convenience sampling and the snowball recruitment method. The findings revealed no significant interaction effects of the number of Facebook friends in the association between personality factors and cyberbullying perpetration on Facebook. More, results showed no significant gender differences in the frequency of cyberbullying perpetration. However, distinct gender patterns emerged in the association between personality traits and cyberbullying perpetration on Facebook. Males demonstrated stronger associations between moral disengagement, cognitive empathy, and cyberbullying perpetration on Facebook, while females exhibited significant associations between cognitive and affective empathy and cyberbullying perpetration on Facebook. The implications of these findings are thoroughly discussed in relation to existing literature.

Diferencias de género en la perpetración de ciberacoso en Facebook: el papel de la empatía, los rasgos de insensibilidad emocional y la desconexión moral

Palabras clave

Modelo General de Agresión
Redes sociales
Factores de personalidad
Comportamiento en línea

Resumen

A pesar de la amplia investigación sobre el ciberacoso, la interacción entre el género, los factores de personalidad y las conductas de perpetración de ciberacoso en las redes sociales sigue estando poco explorada, en particular entre los adultos jóvenes. Este estudio pretende examinar las diferencias de género en la perpetración de ciberacoso en Facebook y, guiado por el Modelo de Agresión General como marco teórico, explicar cómo los factores individuales como la empatía, los rasgos insensibles y poco emocionales y la desconexión moral, moderados por el número de amigos de Facebook, contribuyen a la perpetración del ciberacoso. Se investiga esta asociación con una muestra comunitaria de 171 participantes de 18 a 35 años (57.9% mujeres), seleccionados a través de un muestreo de conveniencia y el método de reclutamiento de bola de nieve. Los hallazgos no revelaron efectos de interacción significativos del número de amigos de Facebook en la asociación entre los factores de personalidad y la perpetración de ciberacoso. Además, los resultados no mostraron diferencias de género significativas en la frecuencia de la perpetración de ciberacoso. Sin embargo, surgieron patrones de género distintos en la asociación entre los rasgos de personalidad y la perpetración de ciberacoso en Facebook. Los hombres demostraron asociaciones más fuertes entre la desconexión moral, la empatía cognitiva y la perpetración de ciberacoso, mientras que las mujeres exhibieron asociaciones significativas entre la empatía cognitiva y afectiva y la perpetración de ciberacoso. Las implicaciones de estos hallazgos se discuten en profundidad en relación con la literatura existente

* *Corresponding author:* Eleftherios Baltzidis. Independent Consultant. lefmpal@gmail.com
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Cyberbullying on Social Networking Sites (henceforth SNSs), particularly Facebook, has emerged as a critical global concern (Chan et al., 2021). Cyberbullying is commonly defined as repeated, intentional behaviour aimed at harassing, threatening, or embarrassing others through digital means (Tokunaga, 2010). Facebook's wide reach and semi-public nature have created an environment where ease of access and sharing of personal information could intensify perpetration. This includes behaviours of direct threats through chat messages or comments and the dissemination of harmful content among others (Dredge et al., 2014). Even though young adults represent one of the largest user groups on Facebook (Kemp, 2019; Saiphoo et al., 2020), there is a notable gap in the literature regarding the personal factors associated with engagement in cyberbullying perpetration on Facebook (henceforth CPF) for this group. Drawing from the General Aggression Model (GAM; Anderson & Bushman, 2002), aggressive behaviour emerges from the interaction between personal and situational factors, which shape an individual's internal state, including thoughts, emotions, and arousal, affecting decision-making. The current research has two objectives: first, guided by the GAM, to explore whether the association between personality traits –concretely, cognitive and affective empathy, callous unemotional (henceforth CU) traits, and moral disengagement (henceforth MD)– and CPF is moderated by the number of Facebook friends a Facebook user has; and, second, to examine whether are there unique gender patterns in the association between individual factors and the CPF.

Cognitive and affective empathy

Empathy, commonly understood as a stable personality trait, consists of two components, cognitive and affective empathy (Jolliffe & Farrington, 2004). Cognitive empathy allows individuals to recognise and understand others' emotions, while affective empathy involves the ability to share and experience those emotions, leading to compassion and concern. Some studies have demonstrated the negative correlation between empathy and general aggression (e. g., Vachon et al., 2014). However, there are inconsistencies in the association between empathy and cyberbullying perpetration in the online context. For instance, while a few studies (e. g., Chen et al., 2020; Zych et al., 2019) found a negative association between cognitive and affective empathy with cyberbullying perpetration, other studies reported that only affective (e. g., Ang et al., 2017; Schultze-Krumbholz & Scheithauer, 2013; Zych & Llorent, 2018) or only cognitive (e. g., Šincek et al., 2020) empathy is associated with cyberbullying perpetration. These findings suggest that the role of empathy in relation to cyberbullying may not be uniform across different online contexts and populations. Moreover, the inconsistencies observed across studies could stem from differences in the age of the participants, as adolescents may interact with digital platforms differently compared to young adults. This highlights the necessity of further investigation to clarify the complex association between empathy and cyberbullying perpetration.

Callous unemotional traits

Callous unemotional (CU) traits are closely linked to the affective dimension of psychopathy (White & Frick, 2010). Individuals with elevated levels of these traits often depreciate moral emotions of guilt and remorse, appearing emotionally cold, and unable to empathise with others' feelings, show compassion or affection (Frick & White, 2008). Moreover, they typically exhibit emotional unresponsiveness, apathy, and a self-centred and deceitful interpersonal style marked by narcissistic tendencies, manipulation, impulsive and irresponsible behaviour, and a tendency to become easily bored. Despite that there is some research on the association between CU traits and aggression (e.g., Fang et al., 2020; Li et al., 2023), the specific connection of these traits to cyberbullying perpetration on SNSs remains underexplored. Facebook might offer a platform where individuals with high CU traits can find a community or environment that reinforces their behaviours.

Moral disengagement

Moral disengagement (MD) refers to the cognitive process through which individuals rationalise harmful behaviour and enables them to temporarily suspend self-sanctions by justifying their actions, diffusing responsibility, minimising the harm caused, or dehumanising the victims, among other strategies (Bandura, 1999). Individuals with increased levels of MD tend to be more inclined to distance themselves from their moral principles without experiencing moral emotions such as feelings of guilt and remorse (e. g., Kowalski et al., 2014). While some prior research has established a link between MD and cyber perpetration in online contexts (e. g., Gini et al., 2014; Lee & Jang, 2023), there remains limited research exploring the association between MD and cyberbullying perpetration on SNSs. This scarcity highlights the need for further investigation in this area.

Number of Facebook friends

A larger Facebook network can facilitate prosocial behaviour by providing a platform for users to connect with a diverse community, thereby enhancing access to support and resources. Prosociality on Facebook might manifest in several ways, such as offering advice, sharing resources, expressing compassion, or organising group events (e. g., Marshall et al., 2023). While these positive interactions offer many benefits, they may also have the potential to increase risky behaviour. As Chan et al. (2021) highlight in their review, essential features of SNSs such as digital profiles, interpersonal connections, search functionalities, privacy settings, and social visibility create opportunities for cyberbullying. The increased visibility and connectivity associated with larger networks could possibly influence online behaviour. In more details, the number of Facebook friends could act as a moderating variable, potentially influencing how personality traits associate to CPF. While there is limited research directly linking Facebook network

size to CPF, Lee (2017) found that cyberbullying perpetration was marginally negatively associated with the number of Facebook friends. This finding suggests that individuals with fewer Facebook friends were more likely to engage in cyberbullying perpetration. Moreover, cyber perpetrators with smaller networks may also exhibit higher levels of CU traits and MD, along with lower levels of cognitive and affective empathy (Chan et al., 2019; Decety & Jackson, 2004; Fang et al., 2020). This lack of empathy and moral flexibility could allow them to inflict harm with limited emotional inhibition, while without a larger network to reinforce social norms, these individuals may feel less constrained by positive behavioural expectations or social accountability on SNSs (e. g., Neben et al., 2015). In other words, individuals with fewer connections might lack this regulatory social structure, leading to lower accountability and a potentially higher likelihood of CPF. Hence, the number of Facebook friends can serve as a moderating variable that potentially amplifies or mitigates the association between personality traits and CPF. These findings emphasise the need to clarify the role of the number of Facebook friends and its association with cyberbullying perpetration, particularly its moderating effect on the association between personality traits and CPF.

Gender

The literature presents conflicting evidence on gender differences in cyberbullying perpetration on SNSs. While some studies report no significant gender differences (Chan et al., 2019; Hood & Duffy, 2018; Kwan & Skoric, 2013), others suggest that males are more involved (Chan et al., 2021; Kokkinos et al., 2016; Lowry et al., 2016). These inconsistencies may arise from variations in demographics, cultural contexts, and methodologies, as well as the evolving nature of digital interaction (e. g., Bayraktar, 2015). While there might be inconsistencies in the expression of cyberbullying perpetration across genders, early studies suggest that both cognitive and affective empathy tend to be higher in females due to socialisation processes that encourage emotional attunement, caregiving, and relationship-building from an early age (Baron-Cohen, 2004). Individuals who are more empathetic and emotional, demonstrating greater emotional contagion, sensitivity to distress, and prosocial behaviours tend to be less likely to engage in actions that hurt others (e. g., Chen et al., 2014; Christov-Moore et al., 2014). Gender differences are also evident in CU traits, with males being more likely to exhibit low emotional arousal (Awada et al., 2022). Males with high CU traits tend to report positive emotions when imagining unethical behaviours. Similarly, men demonstrate a higher level of MD compared to women. This difference can be attributed to several factors, including societal expectations (e. g., Polanco-Levican & Salvo-Garrido 2023). Traditionally, men are encouraged to be more dominant and competitive, leading to a greater acceptance of aggression in their attitude. Specifically, in the context of cyberbullying, men tend to exhibit higher levels of MD comparing to women (e. g., Ding et al., 2023). It has been reported that men tend to downplay the severity of their actions and tend to blame or dehumanise the victim for provoking the cyberbullying (e. g., Jeong et al., 2024). Given these gender differences, this study also aims to investigate how personality traits differently associate to CPF for males and females, shedding light on distinct gender patterns.

The present study

The study has two objectives. The first one is to examine whether the association between personality traits (cognitive and affective empathy, CU traits, and MD) and CPF is moderated by the number of Facebook friends a user has. The second objective is to explore potential gender-specific patterns in how these individual factors associate to CPF. In light of previous findings, cognitive and affective empathy are expected to have a negative relationship with CPF, while CU traits and MD are anticipated to show positive associations (H1). Furthermore, it is hypothesised that the relationship between personality traits and CPF will vary depending on the number of Facebook friends (H2). More, it is hypothesised that males will exhibit higher involvement in CPF compared to females (H3). Lastly, it is hypothesised that distinct gender-specific associations between personality traits and CPF will emerge (H4).

Method

Participants

A total of 171 Facebook users, recruited through convenience sampling, participated in this study. Of the sample, 57.9% identified as female, with ages ranging from 18 to 35 years ($M = 25$, $SD = 3.56$). Last, the majority of participants identified as Greek (27.3%), followed by British (16.9%).

Instruments

Sociodemographic data. Participant characteristics including gender, age, nationality, and the amount of time they spent on Facebook provided by each participant.

Facebook Bullying Scale. This scale focuses on cyberbullying perpetration incidents specifically occurring on Facebook and was adapted from the work of Kwan and Skoric in 2013. It consists of 18 items (e. g., "Sending threatening messages on Facebook"), with participants rating their engagement in these actions over the past six months from the survey date. Responses are recorded on a 6-point Likert scale, ranging from 1 to 6 (1 = *Never*, 2 = *Once*, 3 = *2-4 times*, 4 = *5-7 times*, 5 = *8-10 times*, 6 = *More than 10 times*). Prior research has established the construct validity of this scale, as demonstrated by Kokkinos et al. in 2016. The mean scores are calculated for the computation of the variable ($\alpha = .70$).

Basic Empathy Scale. The *Basic Empathy Scale* (BES) is designed to assess both cognitive and affective empathy, as established by Jolliffe and Farrington in 2006. It comprises 20 items, with 11 items measuring affective empathy and nine items measuring cognitive empathy. Participants rate these

questions on a 5-point Likert scale (1 = *Strongly disagree* to 5 = *Strongly agree*). Previous research has affirmed the scale's construct validity among young adults (Carre et al., 2013). The sum scores are calculated for the computation of the variables (α = .73 for cognitive empathy and α = .81 for affective empathy).

Moral Disengagement Scale. The scale used in this study is an adapted version designed specifically for adults (Detert et al., 2008). This scale consists of 32 items and include statements like "It is alright to fight to protect your friends" and "Teasing someone does not really hurt them". The items were assessed on a 5-point Likert scale ranging from 1 to 5, where 1 = *Strongly disagree* and 5 = *Strongly agree*. The mean scores are calculated for the computation of the variable (α = .87).

Inventory of Callous unemotional traits. The *Inventory of Callous unemotional traits* (ICU), used in this study, assesses the affective dimension of psychopathy, and was developed by Frick in 2004. This scale has been previously employed with young adults, across multicultural samples (Kimonis et al., 2013) and has been validated in both adjudicated and community samples (Frick & White, 2008). The ICU comprises 24 items and responses are rated on a four-point Likert scale (ranging from 0 = *Not at all true* to 3 = *Definitely true*). The sum scores are calculated for the computation of the variable (α = .65).

Number of Facebook friends. It was measured through a single question by asking participants to provide an estimate of the total number of friends they have on Facebook. Participants reported this figure through an open-ended response.

Procedure

Data for the study were collected through online self-report questionnaires. A convenience sampling method was employed with the snowball sampling technique. This approach involved word-of-mouth referrals, where initial participants were encouraged to refer the study to their friends, who then referred it to their own networks, resulting in a chain-referral process to expand the sample. The inclusion criteria required participants to be 18 years or older. The questionnaire was hosted on Qualtrics and embedded into Facebook through a link for easy access and enhanced participant engagement. To minimise order effects, the sections and items were randomised. The questionnaire took approximately 35 minutes to complete. Anonymity was ensured by not collecting any personally identifying information, such as usernames or email addresses. To maintain data quality, attention check questions (e. g., "Please select 'Strongly Agree' for this item") were used to verify participant engagement.

Ethical considerations

Ethical approval was obtained from the University of Kent's Ethics Committee, and the study was conducted in accordance with the British Psychological Society's ethical guidelines. Prior to participation, all individuals provided informed consent and were thoroughly briefed on the study's objectives. Participants generated unique codes to preserve anonymity, and their responses were kept confidential. To support participants' well-being, contact information for both the researcher and cyberbullying support services was provided in case any distress arose during the completion of the questionnaire. As an additional safeguard, participants had the option to withdraw at any point without consequence. To incentivise participation, individuals were given the opportunity to enter a £25 cash prize draw upon completion of the survey.

Data analysis

The present study utilised IBM SPSS 29.0 and PROCESS macro 3.5 to analyse data. Reliability test for the scales was performed using Cronbach's alpha coefficient. Descriptive statistical analysis was performed to examine the sociodemographic data and involvement in cyberbullying perpetration. Responses of "never" and "at least once" indicate non-involvement, while participants reporting perpetration more than once in any item of the Facebook bullying scale classified as perpetrators, adhering to the criterion of repetition (Tokunaga, 2010). To evaluate gender differences, independent samples *t*-tests were conducted. Pearson correlation analysis was also performed. Multiple linear regression analysis was carried out to assess the influence of independent variables, including cognitive and affective empathy, CU traits, MD, and number of Facebook friends on CPF. Moderation analysis was generated to test the GAM, focusing on whether the number of Facebook friends moderates the association between personality traits and CPF. Gender included as a covariate in the moderation models to identify possible unique contributions. Using Hayes's (2018) PROCESS macro model one, moderation effects considered significant if the 95% confidence intervals for the interaction term do not include zero. Independent samples *t*-tests were further performed for the group of perpetrators, assessing any significant gender differences in CPF. More, Pearson correlations and regression analyses stratified by gender further conducted to identify potential distinct patterns between males and females. In each model, the assumptions were tested in line with established guidelines (Cohen et al., 2002). Significance was determined for *p*-values below .05, while values between .05 and .1 were regarded as marginally significant or approaching significance (Olsson-Collentine et al., 2019).

Results

Descriptive results

On average, participants reported having 600.68 Facebook friends (*SD* = 483.37). In terms of daily usage, 21.6% of participants indicated they spent up to one hour on Facebook, while 21.1% reported spending over two hours on the platform. Last, the analysis revealed that 53.2% of the participants reported engagement as perpetrators in CPF.

Gender differences

The *t*-test analysis revealed that there were no significant differences between males ($M = 1.21$, $SD = 0.23$) and females ($M = 1.19$, $SD = 0.26$) in CPF [t (169) = 0.51, $p = .61$]. However, gender differences emerged for cognitive empathy [t (169) = -1.95, $p = .05$], with males ($M = 36.13$, $SD = 4.49$) exhibiting lower levels than females ($M = 37.42$, $SD = 4.17$); affective empathy [t (169) = -4.87, $p < .001$], with males ($M = 37.75$, $SD = 6.55$) exhibiting lower mean than females ($M = 42.46$, $SD = 6.02$); CU traits [t (169) = 2.21, $p = .03$], with males ($M = 45.63$, $SD = 5.98$) exhibiting higher mean than females ($M = 43.39$, $SD = 6.89$); and marginally significant differences for MD [t (169) = 1.74, $p = .08$], with males ($M = 2.3$, $SD = 0.49$) exhibiting higher mean than females ($M = 2.17$, $SD = 0.5$). Last, further *t*-test analysis for the perpetrators group revealed no significant gender differences in CPF, [t(89) = -.51, $p = .61$], indicating that males ($M = 13.59$, $SD = 0.23$) and females ($M = 13.29$, $SD = 0.31$) perpetrators did not significantly differ in their CPF scores.

Pearson correlation analysis

In the Pearson correlation analysis involving all participants, several significant associations were identified. CPF was positively correlated with CU traits ($r = .29$, $p = .05$), and MD ($r = .37$, $p < .001$). In contrast, CPF was negatively correlated with cognitive empathy ($r = -.33$, $p = .01$), and affective empathy ($r = -.23$, $p < .001$). All results are detailed in Table 1.

In gender-specific Pearson correlation analysis, a significant positive correlation was found for males between CPF and MD ($r = .42$, $p < .001$) and CU traits ($r = .23$, $p = .05$), while a marginally significant association between CPF and number of Facebook friends ($r = .20$, $p = .09$). Additionally, a significant negative correlation was found between CPF and cognitive empathy ($r = -.29$, $p = .01$). For females, CPF was significantly negatively correlated with both cognitive empathy ($r = -.36$, $p < .001$) and affective empathy ($r = -.36$, $p < .001$), whereas positively with CU traits ($r = -.32$, $p < .001$) and MD ($r = -.33$, $p < .001$). Results are presented in Table 2.

Multiple linear regression analysis

The comprehensive model was significant and accounted 23% of the variance in CPF [F (5, 165) = 9.705, $p < .001$, $R^2 = .23$]. MD ($\beta = .27$, $p < .001$) and cognitive empathy ($\beta = -.20$, $p < .001$), made significant contributions –number of Facebook friends was marginally significant ($\beta = .13$, $p = .07$)–. Results are presented in table 3.

Table 1

Ranges, means, standard deviations, and correlations among CPF, number of Facebook friends, cognitive empathy, affective empathy, CU traits, and MD

	Range	Mean (*SD*)	CPF	Number of Facebook friends	Cognitive empathy	Affective empathy	CU traits
CPF	1-6	1.2 (0.25)	-				
Number of Facebook friends	0-3,000	600.68 (483.37)	.13				
Cognitive empathy	9-45	36.88 (4.34)	-.33***	-.1			
Affective empathy	11-55	40.48 (6.65)	-.23**	.03	.23**		
CU traits	0-72	44.33 (6.6)	.29***	-.06	-.37***	-.46***	
MD	1-5	2.22 (0.5)	.37***	-.05	-.25***	-.21**	.36***

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

Table 2

Gendered correlations among CPF, number of Facebook friends, cognitive empathy, affective empathy, CU traits, and MD for males and females

	CPF	Number of Facebook friends	Cognitive empathy	Affective empathy	CU traits	MD
CPF	-	.08	-.36***	-.36***	.32***	.33***
Number of Facebook friends	.2	-	-.06	-.02	-.1	-.05
Cognitive empathy	-.29**	-.16	-	.27**	-.51***	-.37***
Affective empathy	-.04	.09	.11	-	-.46***	-.41***
CU traits	.23*	0	-.13	-.4***	-	.49***
MD	.42***	-.04	-.06	.12	.12	-

Note. Correlations for males are presented below the diagonal ($n = 72$) and for females above the diagonal ($n = 99$).
*$p < .05$; **$p < .01$; ***$p < .001$.

In gender-specific multiple linear regression analysis, the model for females was significant, accounting for 23% of the variance in CPF [F (5, 93) = 5.436, p <.001). Cognitive empathy (β = -.22, p = .05) and affective empathy (β = -.22, p = .05) emerged as significant predictors. For males, the model was significant, explaining 30% of the variance in CPF (F (5, 66) = 5.633, p < .001). MD (β = .4, p < .001) and cognitive empathy (β = -.22, p = .04) were significant contributors –with number of Facebook friends marginally significantly contributing to the model (β = .18, p = .09)–. Results are presented in Table 4.

Table 3

Multiple regression analysis with number of Facebook friends, cognitive empathy, affective empathy, CU Traits, and MD predicting CPF

	β	SE	CI (95%)	t	*p*
Cognitive empathy	-.2	.004406	-.020371, -.002973	-2.649	.01
Affective empathy	-.09	.002956	-.009081, .002592	-1.097	.27
CU Traits	.09	.003239	-.002906, .009886	1.077	.28
MD	.27	.037963	.063936, .213847	3.659	< .001
Number of Facebook friends	.13	.000036	-.000006, .000138	1.814	.07

Note. CI = Confidence Interval.

Table 4

Multiple regression analysis with number of Facebook friends, cognitive empathy, affective empathy, CU Traits, and MD predicting CPF for males and females

	Females			Males		
	β	SE	*p*	β	SE	*p*
Cognitive empathy	-.22	.006997	*.05*	-.22	.005497	.04
Affective empathy	-.22	.004762	*.05*	-.02	.004106	.84
CU Traits	.05	.004751	*.67*	.14	.004474	.21
MD	.14	.059245	*.19*	.4	.050376	< .001
Number of Facebook friends	.08	.000051	*.41*	.18	.000052	.09

Table 5

Moderation analyses examining the impact of empathy, CU traits, and MD on CPF, moderated by number of Facebook friends

Independent Variable (X)	R	R^2	MSE	*F*(df1, df2)	β	SE	t	Conditional Effects	β	SE	t	CI (95%)
Cognitive empathy	.35	.12***	.06	7.58 (3, 167)	-.02***	.0069	-2.49	117.32	-.02***	.0061	-2.89	-.0295, -.0055
								600.68	-.02***	.0043	-4.44	-.0274, -.0106
								1084.05	-.02***	.0063	-3.22	-.0330, -.0079
Affective empathy	.28	.08***	.06	4.67 (3, 167)	-.01***	.0047	-2.88	117.32	-.01***	.0041	-3.05	-.0206, -.0044
								600.68	-.01***	.0028	-3.03	-.0143, -.0030
								1084.05	-.01	.0043	-1.11	-.0132, .0037
CU traits	.33	.11***	.06	6.71 (3, 167)	.01***	.0043	2.51	117.32	-.01***	.0038	2.86	.0034, .0185
								600.68	-.02***	.0028	4.14	.0061, .0173
								1084.05	-.01***	.0040	3.13	.0046, .0204
MD	.40	.15***	.06	10.15 (3, 167)	.19***	.0587	3.28	117.32	.19***	.0515	3.73	.0907, .2941
								600.68	.19***	.0366	5.20	.1181, .2626
								1084.05	.19***	.0565	3.33	.0768, .2997

Notes. For each analysis, model summary statistics are reported (R, R^2, MSE, and F). Moderator (W) is the variable number of Facebook Friends and Outcome (Y) is CPF. The conditional effects of the independent variables on the outcome are shown at three levels of the moderator: one standard deviation below the mean (117.32 Facebook Friends), the mean (600.68 Facebook Friends), and one standard deviation above the mean (1084.05 Facebook Friends). Additionally, gender was included as a covariate in all analyses but was not statistically significant in any case.
*p < .05; **p < .01; ***p < .001.

Moderation analysis

The interaction analyses between personality traits and the moderator were not significant to the association with CPF. As for the conditional effects, significant associations between the personality traits and CPF were observed across various levels of the moderator. Results are presented in Table 5.

Discussion

Two key objectives guided the current study: 1) to clarify whether the association between personality traits and CPF is moderated by the number of Facebook friends, and 2) to explore whether gender-specific patterns exist in the relationship between personality traits and CPF.

The study revealed significant associations between CPF and CU traits, MD, and empathy, ratifying thus the hypothesis 1 of the study. CPF was positively correlated with CU traits and MD, while negatively with both cognitive and affective empathy, supporting earlier research which highlights their role in facilitating cyber perpetration (e. g., Lee & Jang, 2023; Li et al., 2023; Šincek et al., 2020; Zych et al., 2019). According to Bandura's theory of MD, individuals with elevated levels of CU traits and MD are more likely to rationalise harmful behaviour through cognitive processes such as dehumanising the victim or distorting the consequences of one's actions (e. g., Fang et al., 2020; Li et al., 2023). According to Li et al. (2023), SNSs create a sense of detachment, making it easier for individuals to morally disengage and avoid confronting the consequences of their actions. Moreover, Tan (2024) suggests that the lack of social cues in online communication reduces the emotional visibility of victims, making it harder for perpetrators to understand the impact of their behaviour.

The interaction analyses between personality traits and the number of Facebook friends were not significant to the association with CPF, thus the initial hypothesis 2 was rejected. As for the conditional effects, significant associations between the personality traits and CPF were observed across various levels of the moderator. These findings reflect that social network size is probably less critical than personality factors in activating perpetration and the impact of personality traits on CPF remains stable, regardless of the size of one's Facebook network (e. g., Chan et al., 2019).

The study found no significant gender differences in the overall frequency of CPF, even when analysis was performed only for the group of the perpetrators, thus rejecting the hypothesis 3 of the study. Some research focusing on young adults has also found no gender differences (e. g., Chan et al., 2019). The lack of gender differences in CPF could be attributed to specific characteristics of the sample, such as cultural beliefs, gender norms, or the particular cyberbullying perpetration scale used. Gender differences were observed in personality traits. Males reported lower levels of both cognitive and affective empathy and higher levels of CU traits and MD compared to females. These findings align with existing literature on gender differences in empathy, CU traits, and MD (e. g., Awada et al., 2022; Decety & Yoder, 2016; Eilts & Baker, 2023; Polanco-Levican & Salvo-Garrido 2023). Lower empathy in males may be rooted in both biological factors and evolutionary pressures, such as differences in parental investment and socialisation process during early years (e. g., Decety & Yoder, 2016). Additionally, males' higher CU traits and MD may be linked to a greater tendency towards physical aggression and the suppression of moral emotions (Camara et al., 2025; Ding et al., 2023).

The gender-specific analyses revealed that CPF was significantly correlated with MD, CU traits, and cognitive empathy in males, ratifying thus the hypothesis 4 of the study. This finding mirrors previous research showing that males typically score higher on MD while lower on empathy (Eilts & Baker, 2023; Jeong et al., 2024; Navarro-Rodriguez et al., 2023; Lee & Jang, 2023). Further regression analysis showed that MD and cognitive empathy made significant contributions to the explanation of the statistical variance of CPF with number of Facebook friends contributing marginally significantly to the model and all effect sizes, albeit significant, being small. These findings suggest that the visibility of actions to a wider audience could provide social validation and encourages perpetration while diffusing personal responsibility, as individuals may feel less accountable when others are involved or observing (Bandura, 1999). Males with higher cognitive empathy may use this ability to manipulatively engage in CPF while employing MD strategies to justify their actions (e. g., Frick & Kemp, 2021; Logoz et al., 2023; Ritchie et al., 2022).

In female's group, CPF was significantly negatively correlated with cognitive and affective empathy, as well as positively with CU traits and MD. Further regression analysis showed that cognitive and affective empathy made significant contributions to the explanation of the statistical variance of CPF among females. It may seem counterintuitive that empathy, typically linked to prosocial behaviour (e. g., Ritchie et al., 2022), associates with CPF in females. One explanation is that females with high empathy can exploit victims' vulnerabilities, make their antisocial actions more targeted and harmful, navigate social dynamics, protect their status, or address perceived threats, thus they may make Facebook an effective tool for relational aggression (e. g., Ding et al., 2023; Eilts & Baker, 2023).

Limitations and practical implications

This study presents limitations that should be considered when interpreting its findings. First, the sample size was relatively small, which may restrict the generalisability of the results to larger and more diverse populations. A larger sample would allow for greater statistical power and could yield more robust insights into the relationships between personality traits and cyberbullying perpetration. Additionally, the cross-sectional design of the study captures data at only a single point in time, limiting the ability to establish causal relationships. Longitudinal studies would be advantageous. Another limitation arises from the use of convenience sampling and snowball recruitment methods, which may introduce selection bias and reduce the diversity of the sample. In terms of practical implications, these

limitations highlight the need for future research to employ larger, more diverse samples and longitudinal designs to better understand the complexities of cyberbullying behaviours and their predictors.

Conclusions

The size of an individual's Facebook network did not significantly moderate the association between personality traits and cyberbullying perpetration on Facebook. Also, no significant gender differences were found in the frequency of cyberbullying perpetration on Facebook, suggesting both genders engage in this behaviour at comparable rates. However, distinct gender patterns emerged in the association between personality traits and cyberbullying perpetration on Facebook. Male perpetrators displayed lower levels of cognitive empathy and higher levels of moral disengagement. Female perpetrators were found to have lower cognitive and affective empathy. These findings contribute to the literature of cyberbullying perpetration in emerging adulthood and have possible practical implications for the development of gender-specific policies.

Author contributions

Conceptualisation: E. B.
Investigation: E. B.
Formal analysis: E. B.
Writing – original draft: E. B.
Writing – review & editing: E. B.

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Declaration of interests

The authors declare that there is no conflict of interests.

Data availability statement

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

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