Article

Emotionally Tough, Sexting Rough: Relationship Between Callous Unemotional Traits and Aggravated Sexting in 11 Countries

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ABSTRACT

Background: Sexting is now widely acknowledged as a common sexual behavior among adolescents and young adults. However, the occurrence of abusive interactions, such as non-consensual sexting, warrants attention. Prevalence rates of non-consensual sexting vary between countries, influenced by gender and age. The present study examined the relationship between three facets of callous-unemotional (CU) traits (i.e., callousness, uncaring, and unemotional) and the sharing of non-consensual sexts across different relationship contexts (i.e., acquaintances, strangers, or partners). **Method:** Data were drawn from a cross-countries project encompassing 11 countries: Belgium, China, Czech Republic, Ireland, Italy, Malaysia, Poland, Russia, Turkey, Uganda, and the USA. The sample comprised 6093 young adults (3682 girls; 2401 boys), aged 13 to 30 (M = 20.35; SD = 3.63). **Results:** Results from a logistic mixed-model indicate that CU traits predict non-consensual sexting, with high callousness and uncaring, and low unemotional traits associated with non-consensual sexting involving partners and strangers. Younger individuals and women were more likely to engage in all forms of non-consensual sexting compared to older individuals and men. **Conclusions:** It is important to promote sexual education programs to increase emotional self-awareness and challenge gender stereotypes in order to reduce adverse outcomes associated with sexting.

Dureza Emocional y Sexting Rudo: Relación Entre los Rasgos Insensibles y no Emocionales y el Sexting Agravado en 11 Países

RESUMEN

Palabras clave:

Sexting

No consentido

Insensibilidad

Sin emociones

Adultos jóvenes

Antecedentes: El sexting es un comportamiento sexual común entre adolescentes y adultos jóvenes, pero el sexting no consensuado merece atención debido a sus implicaciones abusivas. La prevalencia de este fenómeno varía según país, género y edad. Este estudio analizó cómo las tres facetas de los rasgos de insensibilidad emocional (insensibilidad, despreocupación y falta de emotividad) se relacionan con el envío de sexting no consensuado en diferentes contextos (conocidos, desconocidos o parejas).**Método:** Participaron 6093 adultos jóvenes (3682 mujeres, 2401 hombres) de 13 a 30 años (*M* = 20.35; *SD* = 3.63) en un estudio multinacional realizado en 11 países: Bélgica, China, República Checa, Irlanda, Italia, Malasia, Polonia, Rusia, Turquía, Uganda y Estados Unidos. **Resultados:** Los rasgos de insensibilidad emocional predicen el sexting no consensuado, especialmente altos niveles de insensibilidad y despreocupación, y bajos niveles de falta de emotividad en interacciones con parejas y desconocidos. Las mujeres y las personas jóvenes mostraron mayor probabilidad de participar en sexting no consensuado en comparación con hombres y personas mayores. **Conclusiones:** Es crucial implementar programas de educación sexual que fomenten la conciencia emocional y cuestionen los estereotipos de género, contribuyendo a reducir las consecuencias negativas del sexting no consensuado.

Introduction

Sexting Behaviors

Sexting, defined as the sharing of sexually suggestive or provocative content via new technologies (Chalfen, 2009), has garnered increasing research attention, particularly concerning adolescents and young adults. This body of research has illuminated both the positive and negative impacts of sexting on sexual development and mental health (Mori et al., 2019; Temple & Lu, 2018).

Sexting is examined through two main perspectives: "experimental" and "aggravated." Experimental sexting is seen as normative and consensual, occurring within romantic relationships and associated with sexual exploration, primarily observed during adolescence and young adulthood (Bianchi et al., 2019; Drouin & Landgraff, 2012). Aggravated sexting involves harmful motives, such as unauthorized sharing of sexts (Morelli et al., 2023a; Walker & Sleath, 2017), and is associated with aggressive behaviors like cyberbullying and revenge, as well as risky sexual behavior and online victimization (e.g., Gámez-Guadix & de Santisteban, 2018).

There is a gap in the literature regarding a cross-cultural perspective on the associations related to sexting. Most studies on sexting, including consensual and non-consensual forms, have been limited to single countries with few cross-country investigations. Efforts have been made to address this gap (Morelli et al., 2020, 2021), and recent research has revealed varying prevalence rates of sexting across different countries, likely influenced by cultural values within specific societies (Morelli et al., 2021). These cultural values can shape online behaviors, including sexting.

Cultural differences can significantly influence both the frequency and the forms of sexting behaviors. According to some interpretations, sexting is more prevalent in cultural contexts where sexual experiences occur at an earlier age and where a sexist culture with rigid binary gender roles is predominant (Gil-Llario et al., 2021). Research suggests that in more traditional societies, where gender differences are heightened, boys are more likely to engage in sexting compared to girls (Baumgartner et al., 2014). Nevertheless, some research, while highlighting variations in sexting practices across different countries, found that women's vulnerability to sexting remains unchanged (Gassó et al., 2021). Additional research emphasizes other characteristics that may impact sexting behaviors, such as gender, age, and personality traits.

With regard to age and gender differences, boys and young adolescents are more frequently implicated in aggravated behaviors, such as non-consensual sexting (i.e., the sharing of sexting images without consent), compared to girls and older individuals (Morelli et al., 2021; Mori et al., 2020). Research highlighted similar age and gender differences in consensual sexting behaviors (Livingstone & Görzig, 2014). More specifically, older adolescents exhibit a higher likelihood of sexting compared to younger counterparts (Gewirtz-Meydan et al., 2018; Madigan et al., 2018a; Mori et al., 2022), and while early research studies found that boys were more likely to sext than girls (Baumgartner et al., 2010), more recent research shows the opposite trend (Gewirtz-Meydan et al., 2018; Mori et al., 2022).

In the early part of the last decade, sexting was on the rise among youth (Madigan et al., 2018a), but recent reviews indicate that sexting rates have stabilized (Mori et al., 2022). Age is an important variable to consider, as younger individuals (e.g., adolescents) may exhibit greater disinhibition and a higher tendency toward risky behaviors, potentially transforming exploratory sexting into problematic behavior. However, increased attention from researchers focused on the associations between sexting and mental health, relationship issues, and negative consequences like worry, regret, and shame (Drouin et al., 2017; Mori et al., 2019). Research continues to explore the adverse effects of sexting on youth and young adults' well-being, with a predominant focus on the victim's perspective. Only a few studies have examined the correlates of aggravated sexting perpetration (Morelli et al., 2021, 2023b).

Recent meta-analyses indicated that young people engaged in non-consensual sexting were about 15% (Mori et al., 2020), and 18% (Madigan et al., 2018b). Morelli et al. (2021) cross-cultural study revealed that over 20% of adolescents and young adults

engaged in non-consensual sexting in the Czech Republic, Ireland, Malaysia, Russia, and Uganda. Lower percentages were observed in China, the USA, Italy, Poland, Belgium, and Turkey.

However, no previous studies have delineated the distinct targets of non-consensual sexting, which differ based on the depicted victim in the forwarded or shared content: acquaintances, stranger, or partner. Thus, it is unknown how personality traits relate to sharing non-consensual sexts across different relationship contexts.

Callous-Unemotional Traits and Sexting

Callous-unemotional (CU) traits consist of personality characteristics reflecting affective deficits, including shallow affect, lack of empathy and remorse, low responsiveness to others' emotional cues, and minimal concern about one's behavior (Frick et al., 2014). These traits manifest through three key components: callousness (ie., lack of empathy, guilt, and remorse, particularly evident in disregard for others during violent or illegal actions); uncaring (i.e., indifference towards one's actions and others' feelings, and disregard for rules and emotional states of others); unemotional (i.e., shallow or deficient affect, and lack of emotional expression) (Kimonis et al., 2008).

The Inventory of Callous-Unemotional Traits (ICU; Frick, 2004) is commonly used to assess callous-unemotional (CU) traits. Research utilizing this inventory has shown varying levels of CU traits, with the unemotional aspect consistently demonstrating weaker associations with antisocial behavior, delinquency, aggression, and psychopathy compared to levels of uncaring or callous features (Waller et al., 2014). These traits play a crucial role in defining the affective core components of psychopathy during adulthood (Hare & Neumann, 2008).

The stability of CU traits throughout life, from childhood to adulthood, is highlighted (Fontaine et al., 2010). These traits are linked to reduced capacity for prosocial emotional responsiveness among youth with CU traits (Waller et al., 2020). Individuals with high CU traits are more likely to engage in antisocial behavior, including aggression and sexual violence (Frick & White, 2008), and to have risky sexual relationships (Carlson et al., 2015). Elevated CU traits in youth lead to reduced emotional responses to distress cues and muted fear responses to risky situations (Pardini et al., 2003), compromising their ability to assess consequences and impairing decision-making abilities (Fanti et al., 2013; Pardini et al., 2003). CU traits are also strong predictors of physical aggression, relational aggression, and bullying (Helfritz & Stanford, 2006; Centifanti et al., 2015; Fanti et al., 2013).

Non-consensual sexting has been associated with both behavioral and emotional issues (Gámez-Guadix & de Santisteban, 2018), as well as low trait emotional intelligence (Morelli et al., 2023b, 2023c). Studies have investigated the relationship between sexting behaviors and personality traits, including using models such as HEXACO and the Dark Triad (Morelli et al., 2020, 2021). Research suggests that low levels of Honesty/Humility and conscientiousness may contribute to aggravated sexting (Morelli et al., 2020). Additionally, involvement in non-consensual sexting has been linked to traits like Machiavellianism, narcissism, and psychopathy (Morelli et al., 2021). As shown in these studies, personality traits are sometimes fundamental in understanding risky behaviors, especially in relational contexts. Empirically investigating their correlations can be crucial for prevention efforts.

Only one cross-sectional study has explored the link between CU traits and non-consensual sexting among preadolescents and adolescents, indicating a significant association with callousness and uncaring traits (Barroso et al., 2021). However, due to scale's reliability issues, data on the unemotional dimension were excluded from the analyses. Additionally, the study relied solely on a single-item measure to assess non-consensual sexting. No previous studies have examined CU traits in relation to various forms of non-consensual sexting considering the victim's identity or involved participants from multiple countries.

Aggravated sexting has been analyzed from a theoretical perspective (Dodaj & Sesar, 2020), through the collection of data from law enforcement agencies to outline different profiles of aggravated sexting (Wolak & Finkelhor, 2011) and to highlight its controversial aspects (Salter et al., 2013). These theoretical works have been followed by empirical studies conducted at the national level (Barroso et al., 2021; Bianchi et al., 2019; Van Ouytsel et al., 2021), but there remains a lack of cross-cultural research that integrates samples from diverse cultural contexts. Hence, this study addresses these research gaps by incorporating data from countries with significantly different cultural backgrounds, aiming to investigate aggravated sexting and enhance the generalizability of the findings.

The Present Study

The study aims to investigate the correlation between CU traits (callousness, uncaring, unemotional) and various forms of non-consensual sexting (sharing or posting sexts of one's partner, acquaintances, or strangers without their consent) across 11 countries among adolescents and young adults. Building upon previous studies (Barroso et al. 2021; Fanti et al., 2009; Kokkinos & Voulgaridou, 2017; Wright et al., 2019), it is hypothesized that callousness and uncaring traits will positively correlate with non-consensual sexting, while unemotional traits will not. Specifically, we hypothesize that callousness and uncaring traits will predict non-consensual sexting (Barroso et al., 2021) in all its forms, including interactions with acquaintances, strangers, and partners, whereas unemotional traits will be unrelated (Fanti et al., 2009; Kokkinos & Voulgaridou, 2017; Wright et al., 2019). We further hypothesize an age effect, with older individuals engaging in sexting more frequently than younger individuals (Gewirtz-Meydan et al., 2018; Madigan et al., 2018a; Mori et al., 2022). Finally, we do not have a clear hypothesis regarding gender, as some studies suggest that males engage in sexting more frequently than females (Baumgartner et al., 2010; Morelli et al., 2021; Mori et al., 2020), while others report the opposite (Gewirtz-Meydan et al., 2018; Mori et al., 2022).

Method

Participants

The data utilized in the present study were derived from a larger cross-countries project focused on sexting. Data collection encompassed 11 countries: Belgium, China, Czech Republic, Ireland, Italy, Malaysia, Poland, Russia, Turkey, Uganda, and the USA. The study comprised a total of 6093 participants, with 3682 girls and 2401 boys (ten participants did not indicate their gender), averaging 20.35 years old (SD = 3.63; range = 13 to 30 years

old). Regarding relationship status, approximately 81.8% ($n = 4983$) reported currently having or having had a dating partner, while 17.5% ($n = 1069$) reported never having had a dating partner. Descriptive statistics for participants from each country are presented in Table 1. The participants from each country constituted independent samples, with no repetition in measurements.

The G*Power software conducted an a priori power analysis to determine the necessary sample size for each country, aiming for adequate statistical power and minimizing Type II Error. For bivariate level, assuming a small to medium effect size ($r = .20$), an alpha level of .05, and a power of .80, a minimum of 194 participants per country was required. Therefore, each country aimed to collect at least 200 participants. For multiple regression analysis with 11 predictors, requiring a sample size of 1267 for an alpha level of .05, a power of 80%, and a small expected effect size of $f^2 = 0.02$ (i.e., a conservative worst-case scenario), the global sample size of 6093 in this study exceeded this requirement, ensuring sufficient statistical power.

Table 1
Sample Characteristics by Country

Countries	Sample size	Range	Age		Gender	
			M(SD)	girls	boys
Belgium	505	14-30	19.17 (3.42)	344	161
China	361	17-30	21.27 (2.64)	220	141
Czech Republic	733	13-30	19.51 (3.16)	469	264
Ireland	271	13-17	15.05 (0.69)	0	271
Italy	805	13-30	20.85 (4.25)	474	330
Malaysia	305	14-30	22.09 (2.16)	229	76
Poland	1075	13-30	20.8 (4.18)	543	532
Russia	278	15-30	19.79 (3.31)	208	70
Turkey	601	18-30	22.65 (2.95)	419	176
Uganda	226	14-20	17.29 (1.31)	137	86
USA	933	18-30	20.74 (2.36)	639	294

Note. Few participants failed to report their gender.

Instruments

Socio-Demographic Information

Participants provided information regarding their age, gender (girls were coded as 0, boys as 1), and dating relationship status (participants who had never had a partner were coded as 0, while those who currently have or have had a partner were coded as 1).

Sexting Behaviors

Sexting is defined as sharing sexually suggestive or provocative messages/photos/videos via mobile phones, or internet social networking sites. The frequency of various aggravated sexting behaviors in which participants engaged over the past year was assessed using 12 items selected from the Sexting Behaviors Questionnaire (SBQ; Morelli et al., 2016). Each item was rated on a 5-point Likert scale ranging from 1 (*never*) to 5 (*always or almost daily*). Three dimensions of aggravated sexting were examined: a) Sending or posting sexts of acquaintances without

their consent (4 items, Cronbach's alpha = .86; reliability for each country ranging from .50 to .96). b) Sending or posting sexts of strangers without their consent (4 items, Cronbach's alpha = .83; reliability for each country ranging from .62 to .93). c) Sending or posting sexts of one's partner without their consent (4 items, Cronbach's alpha = .88; reliability for each country ranging from .50 to .93). As the items pertained to the frequency of behaviors, the variables did not exhibit a normal distribution. Consequently, each dimension was dichotomized thereafter, with 0 indicating that participants had never engaged in sexting, and 1 indicating that participants had engaged in sexting at least once.

Callous-Unemotional Traits

The Callous Unemotional (CU) traits were assessed using the Inventory of Callous Unemotional Traits (ICU; Kimonis et al., 2008), a 24-item self-report questionnaire. Participants responded to items on a Likert scale ranging from 0 (*not at all true*) to 3 (*totally true*). CU traits represent the affective dimension of psychopathy (Frick et al., 2003; Hare & Neumann, 2008) and include a lack of empathy, guilt, and emotional expression. The scale includes three sub-scales: callousness, that is the absence of empathy and remorse (9 items; Cronbach's alpha of .69; reliability for each country ranging from .57 to .80), unemotional that is the lack of emotional expressiveness (5 items Cronbach's alpha of .76; reliability for each country ranging from .50 to .79), and uncaring that measures insensitivity toward others' emotions and performance (8 items; Cronbach's alpha of .60; reliability for each country ranging from .63 to .85).

Procedure

Researchers from various countries were contacted by the Italian group coordinating the project and asked to sign a scientific agreement outlining sample size, characteristics, and procedures. An English questionnaire was distributed, with non-English speaking countries translating and back-translating the survey. The study followed Declaration of Helsinki guidelines and gained approval from the Ethics Committee of the Sapienza University of Rome, Italy (protocol code 405, 11/23 and 07.22.2015).

Participants completed an online survey, with underage individuals recruited from public schools after obtaining parental consent. Young adults were recruited from universities and through snowball sampling. Participants provided consent at the beginning of the survey by clicking on "Yes, I give my consent to participate in the study and to the use of my data for research purposes", ensuring anonymity and privacy due to the sensitive nature of the data. Only fully completed questionnaires were considered valid. Response rates varied by country, ranging from 85% to 100%. The use of online test administration can significantly contribute to addressing the three critical aspects mentioned by the reviewer: controlling the administration of tests, standardizing the administration, and minimizing errors. Firstly, online platforms allow for enhanced control of test administration through automation and structured protocols with uniform instructions and environment control. Secondly, online platforms inherently promote standardization as every participant receives the same version of the test, ensuring uniformity. Moreover, in tests with fixed-response formats, automated scoring eliminates the possibility of scoring bias or human error. Last but not least, online

platforms incorporate features to reduce human and procedural errors, enhancing the reliability of the data and reducing the errors in the administration.

Data Analysis

Initially, descriptive statistics, frequencies, and correlations among variables were computed. Subsequently, we investigated how the three CU traits (i.e., Callousness, Uncaring, and Unemotional) predicted different forms of aggravated sexting behaviors (i.e., sending or posting sexts without consent of acquaintances, strangers, and relationship partners, while controlling for gender and age. As participants were nested in various countries, and the dependent variables were dichotomous, we conducted a generalized logistic mixed model for each of the three dependent variables, with Country serving as the grouping variable. In our model, the fixed effects predictors included the two demographic variables (age in years and gender, coded as 0 = *female*, 1 = *male*), the three CU traits (i.e., Callousness, Uncaring, and Unemotional), a fixed intercept, and one random intercept for each country.

The logistic mixed-effects model was adopted to appropriately handle the dichotomous nature of the dependent variables, address the nested data structure, and ensure robust and generalizable findings across the 11 countries included in the study. Firstly, we considered the nature of the Dependent Variables. The dependent variables in this study are dichotomous (e.g., sexting behaviors categorized as "present" or "absent"). Logistic regression is the appropriate statistical technique for analyzing relationships involving binary outcomes, as it models the probability of an event occurring. Secondly, we had a Multilevel Structure of the Data: The dataset includes participants from 11 different countries, introducing a multilevel structure where individuals (Level 1) are nested within countries (Level 2). This creates potential contextual effects and between-country variability that must be accounted for to avoid violating independence assumptions. A mixed-effects model is well-suited for this purpose as it allows us to control for clustering effects by including random intercepts for countries. Overall, this model increased statistical power and precision. In fact, by explicitly modeling the nested data structure, the mixed-effects model provides more accurate parameter estimates and standard errors. Ignoring the multilevel structure could result in underestimated standard errors and inflated Type I error rates. Moreover, the inclusion of random effects allows us to quantify

and account for the variability attributable to countries, improving the generalizability of the results across different cultural or national contexts.

Additionally, we considered possible interactions between the demographic variables and the CU traits by including interaction terms as six additional fixed effects: age*Callousness, age*Uncaring, age*Unemotional, sex*Callousness, sex*Uncaring, and sex*Unemotional. Following suggestions from various authors (e.g., Aiken & West, 1991; Cohen et al., 2013), variables were mean-centered. To interpret the findings of potential interactions between variables, a simple slope analysis was also conducted. As non-consensual sexting of one's partner without their consent included items about sexting behaviors with a dating partner, the analysis for this variable was conducted only on the subsample of participants who reported having or having had a dating partner (*n* = 4974). The exact number of observations for each analysis will be provided in each table. Analyses were performed through Jamovi version 2.4.11 (the Jamovi project, 2023) and the Jamovi module GAMLj3 (Gallucci, 2019).

Results

Descriptive Statistics and Correlations

With regard to prevalence of aggravated sexting across relationship contexts, individuals reported sending or posting sexts without consent at least once of acquaintances (12.9%, *n* = 786), strangers, (21.5%, *n* = 1310), and relationship partners (9.3%, *n* = 462).

Correlations, means, and standard deviations of the investigated variables are summarized in Table 2. Both Callousness and Uncaring traits showed significant and positive correlations with all measured aggravated sexting behaviors, whereas the Unemotional dimension did not exhibit any significant correlation.

CU Traits and Sending or Posting Sexts of Acquaintances Without Their Consent

As previously mentioned, three generalized logistic mixed models were conducted to examine how CU traits (i.e., Callousness, Uncaring, and Unemotional) predicted three different forms of aggravated sexting behaviors: sending or posting sexts of one's partner without their consent, of acquaintances without their consent, and of strangers without their consent, while controlling

Table 2

Correlations Among Variables

	1	2	3	4	5	6	7	8
1. Gender	1							
2. Age	-.02	1						
3. Callousness	.13**	.01	1					
4. Uncaring	.14**	-.14**	.21**	1				
5. Unemotional	.15**	-.09**	.19**	.25**	1			
6. Sharing sext of acquaintances without their consent	.11**	-.08**	.15**	.12**	-.01	1		
7. Sharing sext of strangers without their consent	.14**	-.06**	.11**	.12**	.02	.54**	1	
8. Sharing sext of one's partner without their consent[a]	.11**	-.04**	.19**	.11**	.01**	.52**	.35**	1

Note. * *p* < .05; ** *p* < .01. Gender was coded as 0 = girls and 1 = boys. [a] Correlations for Sext of one's partner were run on a subsample of *n* = 4974 participants who currently have or have had a partner in the past.

for gender, and age. Additionally, interaction terms between the demographic variables and the CU traits were included in the model.

The first logistic mixed model examined sending or posting sexts of acquaintances without their consent, which explained about 11% of the variance (*R*-square marginal = 0.11; *R*-square conditional = 0.14). Results of the analysis are presented in Tables 3 and 4.

Both gender and age emerged as significant predictors, with males and younger participants tending to send/post more sexts of acquaintances without their consent. Callousness and Uncaring traits were significant predictors (Table 3): participants who scored higher on Callousness and Uncaring were 2.6 and 1.5 times, respectively, more likely to send/post more sexts of acquaintances without their consent. The Unemotional trait emerged as a negative significant predictor: participants who scored higher on this trait had a 31% lower probability of sending/posting more sexts of acquaintances without their consent.

Notably, a significant interaction was observed between age and Callousness (see Table 3). To elucidate this interaction effect, a simple slope analysis was conducted. When the level of age was higher (Mean+1·*SD*), the effect of Callousness on sending/posting more sexts of acquaintances without their consent was more pronounced (*O.R.* = 3.15, *p* < .001) compared to the effect observed when the level of age was lower (*O.R.* = 2.15, *p* < .001). It appeared that higher scores of Callousness were associated with sending/posting more sexts of acquaintances without their consent, particularly among older participants (refer to Figure 1).

CU Traits and Sending or Posting Sexts of Strangers Without Their Consent

The second logistic mixed model examined the impact of CU traits on sending or posting sexts of strangers without their consent, accounting for approximately 6% of the variance (*R*-square marginal = 0.06; *R*-square conditional = 0.12). Results of the analysis are depicted in Tables 4 and 5. Gender emerged as a significant predictor, with male participants more inclined to send/post more sexts of strangers without their consent, while age did not exhibit statistical significance. Callousness and Uncaring traits remained significant positive predictors (Table 5): participants

Table 3
Sending or Posting Sexts of Acquaintances Without Their Consent: Fixed Effects Parameter Estimates

	B	*SE*	*exp(B)*	95% *Exp(B) CI*		*z*	*p*
Gender	0.53	0.09	1.69	1.42	2.01	5.93	<.001
Age	-0.06	0.01	0.94	0.92	0.97	-4.59	<.001
Callousness	0.96	0.09	2.60	2.18	3.11	10.52	<.001
Uncaring	0.43	0.08	1.55	1.33	1.80	5.59	<.001
Unemotional	-0.38	0.07	0.69	0.59	0.79	-5.14	<.001
Gender * Callousness	0.27	0.17	1.31	0.94	1.84	1.59	.11
Gender * Uncaring	0.02	0.14	1.02	0.77	1.35	0.14	.89
Gender * Unemotional	-0.23	0.15	0.80	0.60	1.06	-1.58	.11
Age * Callousness	0.05	0.03	1.05	1.00	1.11	2.09	.036
Age * Uncaring	-0.01	0.02	0.99	0.95	1.03	-0.51	.61
Age * Unemotional	-0.01	0.02	0.99	0.95	1.03	-0.34	.74

Note. N = 6083; Gender was coded as 0 = girls and 1 = boys.

Table 4
Sending or Posting Sexts of Acquaintances/Strangers/Partners Without Their Consent: Estimates of Random Components

		SD	*Variance*	*ICC*
Acquaintances	Intercept	0.31	0.097	0.029
Country	Residuals	1.00	1.00	.
Strangers	Intercept	0.46	0.21	0.06
Country	Residuals	1.00	1.00	.
Partners	Intercept	0.42	0.17	0.05
Country	Residuals	1.00	1.00	.

Note. N = 6083 (acquaintances and strangers); *N* = 4974 (partners); groups: COUNTRY; ICC = Intra Class Correlation.

Figure 1
The Effect of Callousness on Sending or Posting Sexts of Acquaintances Without Their Consent in Function of Age
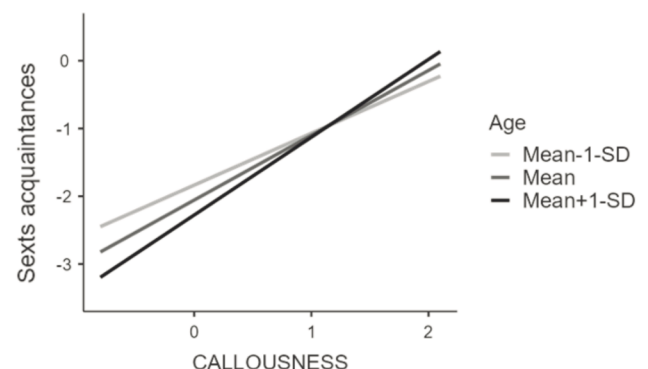
Table 5
Sending or Posting Sexts of Strangers Without Their Consent: Fixed Effects Parameter Estimates

	B	*SE*	*exp(B)*	*95% Exp(B) CI*		*z*	*p*
Gender	0.58	0.07	1.79	1.56	2.06	8.27	<.001
Age	-0.02	0.01	0.98	0.96	1.00	-1.89	0.06
Callousness	0.63	0.08	1.87	1.60	2.18	7.99	<.001
Uncaring	0.27	0.06	1.31	1.16	1.49	4.31	<.001
Unemotional	-0.18	0.06	0.84	0.75	0.94	-3.08	.002
Gender * Callousness	0.16	0.15	1.18	0.88	1.58	1.11	.27
Gender * Uncaring	0.15	0.12	1.16	0.92	1.47	1.26	.21
Gender * Unemotional	-0.14	0.12	0.87	0.69	1.09	-1.21	.23
Age * Callousness	0.01	0.02	1.01	0.97	1.05	0.52	.60
Age * Uncaring	-0.03	0.02	0.97	0.94	1.00	-1.77	.08
Age * Unemotional	0.00	0.02	1.00	0.97	1.03	-0.04	.96

Note. N = 6083; Gender was coded as 0 = girls and 1 = boys.

scoring higher on Callousness and Uncaring were 1.87 and 1.31 times, respectively, more likely to send/post more sexts of strangers without their consent. The Unemotional trait emerged as a significant negative predictor: participants with higher scores on this trait had a 16.5% lower probability of sending/posting more sexts of strangers without their consent. No interaction effects were observed.

CU Traits and Sending or Posting Sexts of one's Partner Without Their Consent

The last logistic mixed model investigated the effect of CU traits on sending or posting sexts of one's partner without their consent and explained about 13% of the variance (*R*-square marginal = 0.13; *R*-square conditional = 0.17). Results of the analysis are displayed in Tables 4 and 6. Both gender and age emerged as significant predictors, with males and younger participants tending to send/post more sexts of one's partner without their consent. Callousness and Uncaring traits were significant positive predictors (Table 6):

participants who scored higher on Callousness and Uncaring were 3.05 and 1.68 times, respectively, more likely to send/post more sexts of one's partner without their consent. Consistent with previous findings, the Unemotional trait emerged as a negative significant predictor: participants who scored higher on this trait had about 31% lower probability of sending/posting more sexts of one's partner without their consent.

Remarkably, a significant interaction was observed between gender and Unemotional trait (see Table 6). To interpret this interaction effect, a simple slope analysis was conducted. In males, the impact of the Unemotional trait on sending/posting more sexts of one's partner without their consent was more pronounced (*O.R.* = 0.56, *p* < .001) compared to the non-significant effect observed among females (*O.R.* = 0.86, *p* = .28). In other words, higher scores on the Unemotional trait were negatively associated with sending/posting sexts of one's partner without their consent among males, whereas this association was absent among females (refer to Figure 2).

Table 6
Sending or Posting Sexts of one's Partner Without Their Consent: Fixed Effects Parameter Estimates

	B	*SE*	*exp(B)*	*95% Exp(B) CI*		*z*	*p*
Gender	0.59	0.12	1.80	1.43	2.27	5.02	<.001
Age	-0.04	0.02	0.96	0.93	1.00	-2.12	.034
Callousness	1.12	0.11	3.05	2.45	3.80	9.97	<.001
Uncaring	0.52	0.10	1.68	1.38	2.04	5.22	<.001
Unemotional	-0.36	0.10	0.70	0.57	0.84	-3.74	<.001
Gender * Callousness	0.25	0.21	1.29	0.85	1.96	1.19	.24
Gender * Uncaring	0.12	0.19	1.13	0.78	1.63	0.65	.52
Gender * Unemotional	-0.43	0.19	0.65	0.45	0.95	-2.25	.02
Age * Callousness	0.02	0.03	1.02	0.96	1.08	0.67	.50
Age * Uncaring	0.01	0.03	1.01	0.95	1.06	0.26	.80
Age * Unemotional	-0.04	0.03	0.96	0.91	1.01	-1.62	.11

Note. N = 4974; Gender was coded as 0 = girls and 1 = boys.

Figure 2
The Effect of Unemotional on Sending or Posting Sexts of one's Partner Without Their Consent in Function of Gender
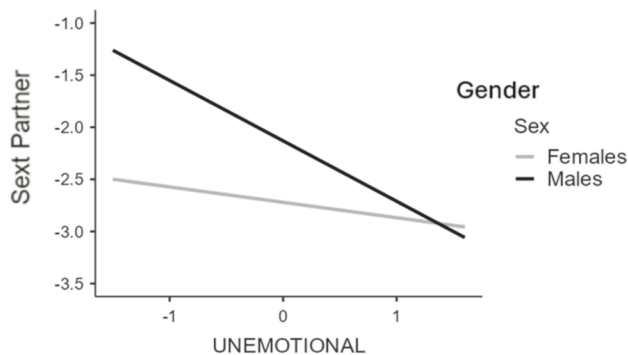
Discussion

Sexting is now widely acknowledged as a common sexual behavior among adolescents and young adults (Bianchi et al., 2017; Wachs et al., 2017). However, similar to other forms of sexual exploration, concerns may arise in specific circumstances, such as when explicit messages or images exchanged with an individual are shared without their knowledge or consent (Ringrose et al., 2013). In such cases, it is crucial to recognize the occurrence of abusive interactions, commonly referred to as non-consensual sexting (Barrense-Dias et al., 2020). Previous research has identified certain traits and experiences associated with non-consensual sexting, including behavioral and emotional difficulties, callousness, and histories of neglect and abuse during childhood (Barroso et al., 2021; Marinho et al., 2023).

There is a scarcity of research concerning non-consensual sexting, particularly regarding the investigation of the depicted person's identity in the shared sext. The present study contributes to the existing knowledge on non-consensual sexting by examining its association with CU traits, which represent the affective core components of psychopathy in adulthood. In doing so, this study enhances understanding of this phenomenon in a relatively underexplored area. Specifically, this research examines three potential victims involved in non-consensual sexting: romantic partners, acquaintances, and strangers. Additionally, the study focuses on three distinct CU traits: callousness, uncaring, and unemotional. Since CU traits are acknowledged as a risk factor for persistent antisocial behaviors among some youth (Viding & Kimonis, 2018), investigating the connections between these traits and non-consensual sexting can offer vital insights for identifying at-risk youth and implementing timely, targeted prevention interventions.

Previous studies examining the relationship between CU traits and non-consensual sexting have been limited in their scope, as they used a single-item measure to assess non-consensual sexting (instead of delineating different relationship contexts) and were limited to a single sample (Barroso et al., 2021; Marinho et al., 2023), thereby lacking in reliability. In contrast, our study employed a multi-item measure specifically administered for the present investigation, which has demonstrated good reliability in recent research (Morelli et al., 2023a, 2023b, 2023c) and collected primary data

from a total of 6093 adolescents and young adults (aged 13-30) across 11 countries worldwide.

Regarding the prevalence of aggravated sexting across different relational contexts, a higher propensity to engage in non-consensual sexting with strangers, rather than with acquaintances or partners, has emerged. This may confirm a tendency to experiment with risky forms of sexting outside of one's significant relationship (Dev et al., 2022).

The findings of the present study show that CU traits are key predictors of non-consensual sexting. As hypothesized, callousness and uncaring predicted an increased likelihood of engaging in all types of non-consensual sexting investigated (involving acquaintances, strangers, and partners). Conversely, lower unemotional traits predicted greater involvement in non-consensual sexting only concerning partners and strangers. These results align partially with previous research on CU traits and other forms of harassment (i.e., bullying, cyberbullying): callousness and uncaring were positively linked to bullying behaviors, whereas unemotional traits were found to be unrelated (Fanti et al., 2009; Kokkinos & Voulgaridou, 2017; Wright et al., 2019).

From a personality perspective, these findings can be interpreted through the lens of established theoretical models, such as the Dark Triad, HEXACO, and the Five Factor Model. Dark Triad traits—Narcissism, Machiavellianism, and Psychopathy—share similarities with CU traits, especially callousness and lack of empathy, which may increase the likelihood of harmful online behaviors like non-consensual sexting (March et al., 2017). Following the HEXACO model, high callousness and uncaring traits may correspond to low honesty-humility, indicating a propensity for exploiting others and engaging in unethical behavior (Morelli et al., 2020). Our expectation that callousness and uncaring traits would have differing associations compared to the unemotional trait concerning non-consensual sexting stems from viewing these dimensions as indicating common traits with distinct specificities. Callousness (i.e., lack of empathy, guilt, and remorse), and uncaring (i.e., disregard for consequences, may prompt younger individuals to impulsively engage without considering others' emotions. Conversely, the inability to express or experience emotions may lead to indifference towards romantic and sexual relationships. Therefore, individuals with unemotional characteristics may be less inclined to engage in sexting behaviors due to their overall lack of interest in forming emotional connections, even online. Consequently, young individuals with unemotional traits may avoid sexting altogether, as their reduced emotional responsiveness may extends to online interactions (Frick et al., 2014).

Again, within a personality perspective, our results highlighted important outcomes Findings revealed a low ICC, suggesting that the variance attributable to differences between groups was small compared to the variance within groups. In other words, individuals within the same group were not substantially more similar than individuals in other groups. In this sense, our primary aim was to investigate the relationships between variables, focusing on a regression-based approach and modeling country membership. We believe that studying these relationships can provide broadly applicable insights across contexts, whereas group differences often reflect country-specific phenomena. Importantly, our findings strongly indicate that the relationships among the study variables hold despite potential differences in objective and contextual factors between countries (e.g., education rates, internet accessibility, GDP,

and similar factors). The results suggest that individual-level factors, rather than country membership, predominantly drive the observed outcomes. This finding enhances the generalizability of our results across diverse contexts. Furthermore, it underscores the crucial role of psychological variables. Notably, despite variations in the prevalence and frequency of sexting across the different countries considered, the relationships between personality factors, such as CU traits, and various forms of aggravated sexting behaviors remain consistent across different countries.

Furthermore, most studies on sexting have been conducted within a single country, limiting the generalizability of their results to other countries. This is the first study to investigate the personality correlates of different aggravated sexting behaviors, providing the opportunity to generalize the findings across countries from different continents.

Interestingly, younger individuals and women are more likely to engage in non-consensual sexting than older individuals and men, which contradicts previous studies suggesting older adolescents are more prone to such behavior (Barroso et al., 2021; Kernsmith et al., 2018). However, some authors propose that this difference could be due to the overall increase in sexual activity and sexting behavior with age (Barroso et al., 2023). Essentially, older teenagers engage in more sexting overall, putting them at greater risk for non-consensual sexting compared to younger individuals.

Younger individuals' tendency towards non-consensual sexting aligns with broader perspectives on psychological and sexual development, as they may exhibit reduced responsibility and future orientation, failing to consider consequences similar to other aspects of life (Clancy et al., 2019; Naezer & van Oosterhout, 2021). Young people often struggle with impulse control and risk assessment, leading to limited awareness of the seriousness of sexting and its consequences. Engagement in non-consensual sexting may stem from seeking attention, enjoyment, or peer acceptance, akin to behaviors like bullying (Barrense-Dias et al., 2020).

The literature on both consensual and non-consensual sexting offers conflicting findings regarding gender prevalence, with some studies indicating higher engagement among adolescent males and others among females (Barroso et al., 2023). Contrary to patriarchal stereotypes, men aren't necessarily more prone to non-consensual sexting. Motivations include misuse, lack of awareness, peer validation, gossip, and entertainment (Barrense-Dias et al., 2020). Women may receive unsolicited sexts, leading to public dissemination as protest or self-protection, with revenge possibly occurring in response to relationship endings or perceived deserving punishment (Naezer & van Oosterhout, 2021).

Two notable interaction effects emerged from the analyses. Firstly, younger individuals with heightened levels of callousness displayed increased likelihood of engaging in non-consensual sexting, suggesting that traits linked to lack of empathy and responsibility may exacerbate risks in younger age groups, potentially due to impulsive tendencies (Blair et al., 2014). Secondly, males with low unemotional traits were more prone to non-consensual sexting, echoing discussions on emotional detachment potentially facilitating abusive behaviors (Frick et al., 2014). However, male predominance in this dimension implies heightened importance of emotional involvement and communication for young males, possibly hindered by societal expectations discouraging emotional

expression, thereby fostering disruptive manifestations. Again, these insights may be useful in developing and providing targeted interventions and education to adolescents who may be at greater risk of this behavior.

This study has several limitations that need to be acknowledged. Firstly, the data collected was cross-sectional, which prevents us from establishing causal relationships among the variables. Additionally, the use of a snowball sampling method may limit the generalizability of our findings. Moreover, relying on self-report questionnaires introduces the possibility of social desirability bias. Furthermore, a more in-depth examination of the role played by recipients of forwarded sexts was lacking. Additionally, the study did not explore the motivations underlying non-consensual sexting, which could have been addressed by directly asking participants about their reasons for forwarding sexts without consent. Understanding these motivations could provide a more nuanced understanding of non-consensual sexting behavior. Future research should address these gaps through more targeted investigations (Barrense-Dias et al., 2020). Utilizing a mixed-method approach could be particularly beneficial, as it allows for the integration of quantitative data, such as the frequency of non-consensual sexting, with qualitative insights into motivations, thus offering a more comprehensive understanding of the phenomenon.

While acknowledging limitations, this study brings significant strengths and practical implications. It addresses the gap in understanding the link between maladaptive personality traits and sexting behaviors across multiple countries, focusing on victim identity. Exploring the unemotional dimension alongside callousness and uncaring, it sheds light on emotional involvement's role in non-consensual sexting. Findings suggest emotional detachment and reduced involvement act as protective factors, offering valuable insights for further research.

Moreover, this study engaged a substantial number of participants from diverse cultural backgrounds, spanning ages 13 to 30. This broader age spectrum facilitated insights into non-consensual sexting across different developmental stages. It is worth noting that previous studies often employed methodologically weak approaches, using single-item measures or general sexting behavior assessments (e.g., Barroso et al., 2023). In contrast, our study employed a comprehensive multi-item questionnaire tailored to explore various aspects of non-consensual sexting, capturing nuances among individuals involved. This robust measurement strategy yielded specific, detailed data with favorable psychometric properties, enhancing its suitability for future research endeavors.

These findings emphasize the importance of prevention interventions concerning non-consensual sexting. Understanding how personality traits influence online behaviors is crucial for designing effective measures. The study highlights a lack of empathy and guilt as predisposing factors for non-consensual sexting. Targeted interventions addressing callousness and uncaring can be developed, such as school programs fostering empathy and emotion management. This aligns with recent research on the role of emotional intelligence in sexting behaviors (Morelli et al., 2023b). The associations between CU traits and non-consensual sexting behaviors emphasize the need for targeted interventions focusing on emotional self-awareness, empathy training, and the promotion of ethical online conduct, particularly among individuals displaying high callous and uncaring traits.

In this regard, the findings underscore the importance of implementing comprehensive emotional and sexual education programs in schools. These programs should prioritize emotional self-awareness, promote gender equality, and challenge gender stereotypes. The primary aim of such initiatives should be to educate young individuals about the importance of refraining from engaging in non-consensual sexting. Educators and psychologists play a crucial role in implementing programs that equip young people with valuable skills for establishing healthy relationships and fostering positive interactions, both online and offline. By increasing awareness of the potential adverse outcomes associated with sexting, individuals can better cope with the negative repercussions that may arise from being involved as either a perpetrator or a victim of aggravated sexting.

Author Contributions

Mara Morelli: Project administration, Conceptualization, Methodology, Data curation, Writing - Original draft, Writing – review & editing, Supervision. **Fau Rosati:** Writing - Original draft, Data curation, Writing – review & editing. **Elena Cattelino:** Conceptualization, Data curation, Supervision, Writing – review & editing. **Flavio Urbini:** Investigation. **Roberto Baiocco:** Investigation, Writing – review & editing. **Dora Bianchi:** Investigation, Writing – review & editing. **Fiorenzo Laghi:** Investigation, Writing – review & editing. **Maurizio Gasseau:** Data curation. **Piotr Sorokowski:** Data curation. **Michal Misiak:** Data curation. **Martyna Dziekan:** Data curation. **Heather Hudson:** Data curation. **Alexandra Marshall:** Data curation. **Thanh Truc Nguyen:** Data curation. **Lauren Mark:** Data curation. **Kamil Kopecky:** Data curation. **René Szotkowski:** Data curation. **Ezgi Toplu Demirtaş:** Data curation. **Joris Van Ouytsel:** Data curation. **Koen Ponnet:** Data curation. **Michel Walrave:** Data curation. **Tingshao Zhu:** Data curation. **Ya Chen:** Data curation. **Nan Zhao:** Data curation. **Xiaoqian Liu:** Data curation. **Alexander Voiskounsky:** Data curation. **Nataliya Bogacheva:** Data curation. **Maria Ioannou:** Data curation. **John Synnott:** Data curation. **Kalliopi Tzani-Pepelasis:** Data curation. **Vimala Balakrishnan:** Data curation. **Moses Okumu:** Data curation. **Eusebius Small:** Data curation. **Silviya Pavlova Nikolova:** Data curation. **Michelle Drouin:** Data curation. **Antonio Chirumbolo:** Conceptualization, Methodology, Data curation, Writing – Original draft, Writing – review & editing, Supervision.

Funding

Declaration of Interests

The authors declare that there are no conflicts of interest.

Data Availability Statement

Data are available under request to the first author.

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