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Anexo 3

Estudio 3

The Dark Tetrad and online sexual victimization: Enjoying in the distance

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The Dark Tetrad and online sexual victimization: Enjoying in the distance

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ABSTRACT

Online sexual victimization (OSV) refers to the experience of online pressure to obtain unwanted sexual contact or/and the distribution of sexual images or information of the victim against his/her will. This behaviour is predisposed by a wide variety of risk factors, including personality. Focusing on personality, antisocial behaviours tend to be better predicted by the Dark Tetrad of personality. Therefore, the main aim of the present study was to study the connections between the Dark Tetrad and OSV. Secondly, we aimed to clarify the OSV construct by exploring its prevalence in our sample. For this purpose, 1988 participants answered measures assessing the Dark Tetrad and their involvement in OSV. To analyze the connections structural equation modelling was performed between the two constructs. To explore the OSV construct, gender differences were calculated, and different rates of perpetration and victimization are offered. Results showed that the Dark Tetrad of personality is closely related to OSV, being the sadistic enjoyment the strongest predictor trait for both, to be victimized and perpetrate it. Additionally, women tend to be more victimized by OSV while men tend to perpetrate it. OSV usually happens through messaging apps or social media in a background of an existing relationship.

1. Introduction

It is a reality that in recent years Information and Communications Technologies (ICT) have taken an important place in our daily life. ICT are not good or bad by themselves but a problematic use of them can lead to negative outcomes (Olatunde & Balogun, 2017; United Nations Children's Fund, 2021). Some of these negative consequences may be caused by a wide range of antisocial behaviours as for example cyberstalking, cyberbullying, or cyber intimate partner violence (e.g., Brankovic, Dinic, & Jonason, 2022; Pineda, Rico-Bordera, Martínez-Martínez, Galán, & Piqueras, 2022; Pineda, Galán, Martínez-Martínez, Campagne, & Piqueras, 2021). These problematic antisocial behaviours may also have a sexual nature. In this case, we can mention image-based sexual abuse, sextortion, online sexual victimization, or revenge pornography, among others (e.g., Marcum, Zaitzow, & Higgins, 2022; McGlynn, Rackley, & Houghton, 2017; Patchin & Hinduja, 2018).

The previously mentioned sexual antisocial online behaviours refer to a variety of practices that although with marked differences, are related to each other (Citron & Franks, 2014; Gasso, Mueller-Johnson, &

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Montiel, 2020; McGlynn & Rackley, 2017). Thus, for instance, the term sextortion is used to express “the threatened dissemination of explicit, intimate, or embarrassing images of a sexual nature without consent, usually for the purpose of procuring additional images, sexual acts, money, or something else” (Patchin & Hinduja, 2018, p. 2). While the combination of the words pornography and revenge (i.e., revenge porn) as part of the image-based sexual abuse continuum (McGlynn et al., 2017) refers to the dissemination of intimate and sexual material, without the consent of the victim with the sole intention of damaging his or her image, usually in the context of a previous relationship (Citron & Franks, 2014). As can be noticed by the previous descriptions, there is an extensive variety of terms used to describe analogous behaviours —to which we could add a definition of image-based sexual abuse, pressured sexting, non-consensual pornography, cyber harassment, etc. This diversity may lead to difficulties in specifying the construct or behaviours that are being referred to, as it happens with other online new constructs (e.g., Baggio et al., 2022; Rocha-Silva, Nogueira, & Rodrigues, 2021). Therefore, in the present manuscript, we will use and specifically define the term online sexual victimization (OSV) to express some of the aforementioned behaviours.

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OSV is defined as “the experience of some type of pressure through the Internet or mobile phones to obtain unwanted cooperation or sexual contact or/and the distribution or dissemination by the perpetrator of sexual images or information of the victim against his/her will” (Gamez-Guadix, Almendros, Borrajo, & Calvete, 2015, p. 2). In this line, it is worth noting that OSV as well as other antisocial behaviours online can be perpetrated without time or geographical limits and that the perpetrator can easily be anonymous making the situation even more threatening for the victims (Gavrilović, Tzani-Pepelasis, Ioannou, & Lester, 2019; Smith, Thompson, & Davidson, 2014). However, OSV and other related behaviours usually tend to happen in the context of an existing relationship, mainly performed by romantic partners or former partners (O'Malley & Holt, 2020; Patchin & Hinduja, 2018). When it comes to predicting OSV, the term sexting, appears as one of the best predictors of it (Gasso, Klettke, Agustina, & Montiel, 2019; Marcum et al., 2022; Powell, Henry, Flynn, & Scott, 2019). Sexting as a combination of “sex” and “texting”, refers to the generation and voluntary distribution/reception of own private sexual photos, videos or messages via social media, e-mail or other technological tools (Mitchell, Finkelhor, Jones, & Wolak, 2012; Morelli, Bianchi, Baiocco, Pezzuti, & Chirumbolo, 2016). By the previous definition, sexting itself is not negative or antisocial, however, when the delivery or the use of these photos and videos ceases to be consensual, the phenomenon of online sexual victimization (OSV) appears (Gasso et al., 2019). This potentially dangerous behaviour is quite common with approximately 60% of people accepting having received or sent some sexual information or pictures (Gamez-Guadix et al., 2015; Gasso et al., 2020). As mentioned, sexting can act as the gateway to more harmful behaviours such as those previously discussed (Gasso et al., 2019). Thus Marcum et al. (2022), reported that 16% of their sample were victimized by revenge porn, Gámez-Guadix et al. (2015), one-third of their participants informed about having been pressured to sext at some point, and even 11.1% of the sample collected by Powell et al. (2019) admitted having perpetrated image-based sexual abuse during their lifetime.

With these large prevalence rates, considering the consequences of these behaviours is a must. Engaging in sexting behaviours has been linked with depressive and anxious symptomatology, but usually in situations in which there is some coercion or lack of will —OSV— (Gasso et al., 2019, 2020; Lu, Baumler, & Temple, 2021; Zetterstrom & Gillander, 2018). Sexting and other OSV-related behaviours are also related to poorer mental health and emotional well-being, less positive emotions, impulsiveness, and in the last term, suicide (Alonso & Romero, 2019; Gasso et al., 2020; Gavrilović et al., 2019; McGlynn et al., 2021). Although less studied than the consequences, OSV as a complex phenomenon might be predicted by several different risk factors (Karasavva & Forth, 2021; Zetterstrom & Gillander, 2018). Previous literature has demonstrated that those people who sexted before 18 and those who sexted to more than one person were at higher risk (Englander & McCoy, 2017). Also, those who are more sexually active are in high danger (Clancy, Klettke, & Hallford, 2019, 2021), as well as those who have suffered bullying (Zetterstrom & Gillander, 2018) or people with less emotional competence (Sesar, Dodaj, & Kordić, 2019). Furthermore, low levels of self-control appeared as a good predictor of sexting showing that at some point sexting might be driven by the short-term benefits without considering the long-term consequences (Marcum et al., 2022). Delving into the gender differences in these behaviours, men tend to perpetrate them more while women are more victimized (e.g., Henry & Powell, 2015; Patchin & Hinduja, 2018; Powell et al., 2019). However, when observing other related antisocial or aggressive behaviours inside a couple, these differences tend to disappear (Pineda, Galán, et al., 2021).

To avoid the mentioned consequences, it is important to locate the individual differences that lead someone to engage in these behaviours. In this regard, personality is connected with sexting and OSV-related behaviours (e.g., Gamez-Guadix, de Santisteban, & Resett, 2017; Karasavva & Forth, 2021). Specifically, these behaviours are related to high

scores in extraversion, openness, and neuroticism; and low scores in conscientiousness and agreeableness (Alonso & Romero, 2019; Crimmins & Seigfried-Spellar, 2017; Gamez-Guadix et al., 2017).

When we talk about personality and antisocial behaviours, they tend to be predicted in a better way by the Dark Tetrad of personality (Muris, Merckelbach, Otgaar, & Meijer, 2017; Tortoriello, Hart, & Richardson, 2019). Paulhus and Williams (2002) defined The Dark Triad, as a personality construct composed of three subclinical traits: narcissism, Machiavellianism, and psychopathy. Subsequently, Chabrol, Van Leeuwen, Rodgers, and Sejourne (2009) added everyday sadism to this model making it more complete —the Dark Tetrad—. Narcissism describes a pattern of personality with marked beliefs about themselves, idealizing their personalities as superior or grandiose, also with a necessity to obtain attention and usually confirmation from other people (Raskin & Hall, 1981). Machiavellianism is described mainly as a manipulative personality, with a tendency to be cynical, callous, and deceitful; that usually pursues their own goals without attending to morality issues (Fehr, Samsom, & Paulhus, 1992). Subclinical psychopathy describes an antisocial, callous personality marked by a lack of emotionality and empathy, high impulsivity, and a tendency to be manipulative (Hare, 1999). Finally, everyday sadism, the last trait to be added to the Dark personality, refers to a personality that obtains pleasure or joy from hurting or seeing the suffering of other people (O'Meara, Davies, & Hammond, 2011).

To our knowledge, there are a few studies that have examined the relationship between the Dark Tetrad and OSV-related behaviours such as sexting, image-based sexual abuse, revenge porn, etc (e.g., Karasavva & Forth, 2021; Pina, Bell, Griffin, & Vasquez, 2021; Thomason-Darch, 2021). However, none of them has examined the relations between these malevolent traits and OSV itself. Clancy et al. (2019) showed that the three Dark Triad traits (i.e., Machiavellianism, narcissism, and psychopathy) presented positive connections with the behaviours of sexting. Those people with higher scores in Machiavellianism were the ones who sexted the most. Notwithstanding, Karasavva and Forth (2021) analyzed the connections between image-based sexual abuse and the Dark Tetrad, showing with logistic regressions that the traits that predicted more image-based sexual victimization were psychopathy and sadism. But when it comes to perpetration, narcissism appears as the best predictor in Karasavva and Forth's (2021) study, while Pina et al. (2021) showed that the trait that most correlated was sadism. On the other hand, attending to other related online antisocial behaviours, sadism appears as an important predictor of behaviours such as cyberstalking, trolling, cyberbullying, etc (Brankovic et al., 2022; Buckels, Trapnell, Andjelovic, & Paulhus, 2019; van Geel, Goemans, Toprak, & Vedder, 2017). While for example, psychopathy and narcissism are better predictors of cyber intimate partner violence (Pineda, Galán, et al., 2021).

1.1. The present study

One of the main objectives of this study is to examine the connections between OSV perpetration behaviours (hereinafter OSV/P), and the Dark Tetrad, using structural equation modelling. Nevertheless, since the Dark Tetrad traits have been shown not only a relationship with perpetration behaviours but with victimizing ones (e.g., Pineda et al., 2022), we also aim to measure the connections of these personality traits with OSV. Moreover, we intend to explore which is the relationship between the OSV perpetrator with the victim and the virtual media used to perpetrate these behaviours. Adding more value to the current work, we seek to analyze whether there are differences between elevations in certain traits in the perpetrator and who is the victimized person which might explain the differences observed in the traits that most predict different online abusive behaviours (Pineda, Galán, et al., 2021; van Geel et al., 2017). Another objective of the current research is to clarify the gender differences in OSV and OSV/P.

Based on the objectives stated, we develop the following hypothesis:

Smodis, & Forth, 2022; Karasavva & Forth, 2021), and the previous findings on the relationship between personality and sexting (Alonso & Romero, 2019; Borrajo, Gámez-Guadix, Pereda, & Calvete, 2015; Clancy

Attending to the connection between sexting and OSV or other OSV-related behaviours (Gamez-Guadix et al., 2015; Karasavva, Swanek,

et al., 2019; Gamez-Guadix et al., 2017), we expect to observe a positive relationship between the Dark Tetrad and OSV (H_1). Specifically, we expect that traits such as psychopathy or sadism will be the most related ones with OSV/P (H_2). This hypothesis is formulated because, on the one hand, Marcum et al. (2022) found that those people who sext tend to present lower self-control and more impulsivity, thus, we anticipate psychopathy as a good predictor of OSV/P (Clancy et al., 2021; Malesza & Kalinowski, 2021). On the other hand, we expect sadism also to be closely related to OSV/P, since this trait as the enjoyment of other people suffering is a good predictor of a wide variety of antisocial and criminal behaviours (Bonfa'-Araujo, Lima-Costa, Hauck-Filho, & Jonason, 2022; Karasavva & Forth, 2021). We also expect psychopathy to be higher in those perpetrators victimizing people whom they already know from a previous face-to-face relationship while sadism in the perpetrators of victims whom they do not know face-to-face (H_3), attending to previous findings and the nature of the traits (e.g., Pineda, Gala'n, et al., 2021; van Geel et al., 2017).

Even though previous investigations in other intimate, online, antisocial-related behaviours have shown similarities between men and women in perpetration and victimization rates (Pineda, Gala'n, et al., 2021); and according to earlier findings in OSV-related behaviours, we expect that being men will be related with OSV perpetration and being women with OSV (Patchin & Hinduja, 2018; Zetterstrom & Gillander, 2018) (H_4). Finally, regarding the context of OSV and following previous studies (e.g., Patchin & Hinduja, 2018), we expect the majority of these behaviours to happen between people who know each other from a previous face-to-face relationship instead of strangers (H_5).

2. Method

2.1. Participants and procedure

Participants were recruited using convenience sample method via online websites and social media (e.g., Facebook, Instagram, Twitter, etc). A total of 3095 participants started the survey. However, participants were included in this study if they had completed the measures of interest to achieve the objectives of the study. Therefore, a final sample of $N = 1988$ (21.00% men, 79.00% women) was obtained. The average age of the participants was 29.37 ($SD = 10.00$), ranging between 18 and 74. Most of them were Spanish (90.96%) followed by Latin American (7.84%), and the rest from other nationalities (1.20%). From this sample, 4.20% fulfil primary studies, 6.1% secondary studies, 8.60% high school, 18.60% vocational training, and 62.50% university studies.

The Project was approved by the Ethics Committee of the Miguel Hern'andez University of Elche, Spain (Reference DPS. JPR.04.16). As previously stated, to reach the participants, the link to the online survey was posted on different social media. Participants were not compensated for finishing the survey and were informed that their answers were recorded anonymously. These research analyses were not preregistered prior to data collection.

2.2. Measures

2.2.1. Online sexual victimization (OSV)

To measure OSV, we used the scale developed by Gamez-Guadix et al. (2015). It is a scale that consists of 20 items with answers on a Likert scale from 0 "never" to 4 "more than seven times". The instrument measures OSV with questions that refer to typical OSV situations such as being pressured to sext, having received threats to obtain unwanted online sexual contact, or suffering the dissemination of sexual images or information. To assess the perpetration of the same behaviours, all the

items were modified to measure the perpetration condition (e.g., "Has anyone ever threatened or coerced you to reveal erotic or sexual information about yourself?" or "Has anyone disseminated information of erotic or sexual nature about you without your consent?" for "Have you ever threatened or coerced someone to reveal erotic or sexual information about themselves?" Or "Have you disseminated information of erotic or sexual nature about others without their consent?" respectively). Additionally, the instrument includes questions to identify who the perpetrator was (i.e., "someone I met on the internet", "my partner or former partner", "a friend or an acquaintance", or "someone I don't know") and the electronic medium used. The internal consistency values reported in our sample are shown in Table 1.

2.2.2. Short Dark Triad (SD3; Jones & Paulhus, 2014)

The SD3 is a scale that measures the Dark Triad traits (i.e., narcissism, Machiavellianism, and psychopathy) with 27 items (9 per trait). Participants have to answer each of the items on a Likert scale from 0 "Strongly disagree" to 4 "Strongly agree". The Spanish version of the instrument was used (Pineda, Sand'fn, & Muris, 2020). The reliability values reported by Pineda et al. (2020) were between 0.60 and 0.81. The internal consistency values of this sample are shown in Table 1.

2.2.3. Assessment of sadistic personality (ASP; Plouffe, Saklofske, & Smith, 2017)

The Spanish version of the ASP was used (Pineda, Piqueras, Gala'n, & Mart'inez-Mart'inez, 2021). The ASP is a questionnaire developed to be added to the SD3 to allow a measure for the SD4. It measures subclinical sadism with 9 items that are answered on a Likert scale from 0 "Strongly disagree" to 4 "Strongly agree". The reliability values reported by Pineda, Piqueras, Galan, and Mart'inez-Mart'inez (2021) were $\alpha = 0.75$, and $\omega = 0.75$. The internal consistency values for the scale in this sample are shown in Table 1.

2.3. Data analyses

As a first step, we used the software SPSS version 26 to elaborate the descriptive statistics and the bivariate analyses. To evaluate differences between groups attending to the person whom they victimized, we divided the sample into two parts, those who knew their victim from a previous face-to-face relationship (including the ones who selected "my partner or former partner" or "a friend or an acquaintance") and those who did not know their victim from a previous face-to-face relationship ("someone I have met on the internet" or "someone I don't know"). Similar divisions were made for the victims. The significance level of all the comparisons (10) was adjusted following Bonferroni correction for amplified alpha resulting in a significance level of 0.005.

Intending to avoid measurement error and aim to show the connections between the Dark Tetrad and OSV, controlling other variables, we used structural equation modelling (SEM). The program used to perform SEM was R (R Core Team, 2016), using the Lavaan package (Rosseel, 2012) with the syntax defined by Beaujean (2014). To estimate parameters Diagonally weighted least squares (DWLS) were chosen. DWLS are based on the polychoric matrix correlations and does not assume any assumptions on the distribution. Moreover, this estimation method has demonstrated fewer biases and higher accuracy than other procedures of parameter estimation as, for example, robust maximum likelihood (Li, 2016).

The path model (Fig. 1) was elaborated by adding all the items from each of the variables in their expected factor and after linking the Dark Tetrad traits to the two OSV variables, victimization, and perpetration. The fit indices used were the standardized root mean square residual (SRMR), the root mean square error approximation (RMSEA), the normed-fit index (NFI), the goodness-of-fit statistic (GFI), the comparative fit index (CFI) and the Tucker-Lewis index (TLI). A good fit of the model would be concluded with a non-significant χ^2 , a SRMR less than or equal to 0.05 (but acceptable until .08), a RMSEA was less than or

Table 1

Means (standard deviations), gender differences, and reliability coefficients (Cronbach's alphas and McDonald's omegas).

Variables	Total N = 1988	Women n = 1571	Men n = 417	t	d	α	ω
Psychopathy	7.14 (5.22)	6.41 (4.91)	9.77 (5.49)	-8.70*	0.65	.73	.70
Narcissism	12.74 (5.03)	12.27 (4.96)	14.42 (4.94)	-6.03*	0.43	.64	.59
Machiavellianism	14.53 (6.32)	13.88 (6.32)	16.84 (5.76)	-6.63*	0.49	.80	.76
Sadism	3.78 (4.51)	3.23 (3.94)	5.77 (5.72)	-9.47*	0.52	.76	.76
OSV	3.76 (5.61)	4.19 (5.89)	2.13 (3.99)	8.38*	0.41	.87	.87
OSV/P	0.40 (1.45)	0.25 (1.04)	0.97 (2.36)	-6.03*	0.39	.74	.65

Note. t = Student's t; d = Cohen's d; OSV = Online sexual victimization; OSV/P: Perpetration of online sexual victimization behaviours.

*p < .005 (Bonferroni fit).

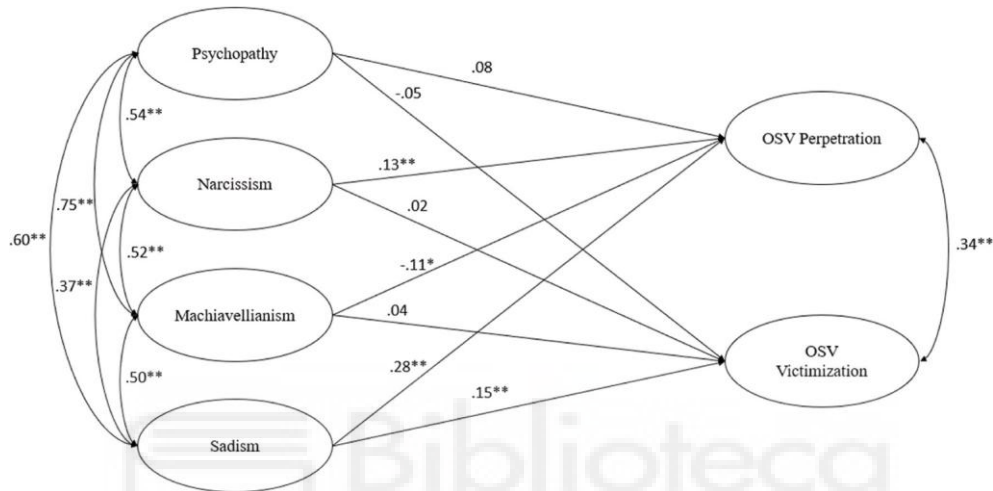


Fig. 1. SEM of the Dark Tetrad predicting Online Sexual Victimization behaviours *p < .05, **p < .01.

equal to 0.08, a NFI greater than 0.90, a GFI equal or greater than 0.90, a CFI equal or greater than 0.95, and a TLI equal or greater than 0.95 (Hu & Bentler, 1999; Kline, 2010).

To assist in the future meta-analysis, we report that part of the data, specifically those scores derived from the Dark Tetrad instrument have previously been used in Pineda et al. (2021). Furthermore, the interested reader can find the data that support the findings of this study at (Removed for anonymous review).

3. Results

Means, standard deviations, gender differences, and internal consistency indices are shown in Table 1. All the scales show acceptable internal consistency indices ranging between 0.70 and 0.87, except for narcissism with questionable alpha and omega values and OSV/P with also a questionable omega value. Gender differences showed a small to medium effect size with men scoring higher on all the scales except for OSV Victimization in which women score higher. All these differences are statistically significant (see Table 1) (H₄).

Table 2 shows the perpetrator and the online medium used frequencies from those participants who have been victimized by or perpetrated any OSV behaviours. From the participants who admitted having been victimized by any OSV behaviour at least once (54.00%), their perpetrators tended to come from an existing face-to-face relationship (Z = 6.30, p < .01) (either partner or former partner or a friend or an acquaintance, against someone they do not previously know or who have met on the internet). Similar patterns were found for those who recognized to have engaged in any form of OSV (15.00%), with people who already knew from a face-to-face relationship against those who did not know each other or who just met on the internet (Z = 7.91, p < .01) (H₅). Also, descriptive results of the medium in which these

Table 2

The perpetrator/victim and the medium used frequencies from those participants who have been victimized by or perpetrated any OSV behaviours.

Victim (%)	Perpetrator (%)	
Identification of the perpetrator/victim		
Someone I have met on the internet	25.42	12.36
My partner or former partner	29.55	45.60
A friend or an acquaintance	27.99	25.82
Someone I don't know	15.35	8.79
Another person	1.69	7.42
Electronic medium used		
Social media	31.78	23.51
E-mail	2.13	1.19
Messaging apps (WhatsApp, Line ...)	48.04	64.29
Online chats	15.24	7.74
Online forums	2.81	3.27

behaviours happened are collected in Table 2.

The bi-variate analyses (see Table 3) show the highest correlations between OSV perpetration and the sadism trait. All the traits present positive connections with both OSV behaviours, perpetration and victimization (H₁). Furthermore, sex also presents significant correlations (p < .01) with both OSV behaviours, perpetration and victimization.

Regarding the SEM analyses, the tests performed for the model showed a good fit: χ² = 2536.88, DF = 1469, p < .001, SRMR = 0.076, RMSEA = 0.025, NFI = 0.900, GFI = 0.946, CFI = 0.955, and TLI = 0.953.

Structural paths were added to the model to connect the Dark Tetrad personality traits to the OSV behaviours (see Fig. 1). In this model, everyday sadism remains the best predictor of OSV/P (β = 0.28, p < .01)

Table 3

Correlations between age, sex, the Dark Tetrad, and Online sexual victimization (OSV) measures.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Age (1)	1							
Sex (2)	.069**	1						
Psychopathy (3)	-.103**	.266**	1					
Narcissism (4)	.037	.176**	.370**	1				
Machiavellianism (5)	-.100**	.193**	.498**	.324**	1			
Sadism (6)	-.129**	.220**	.547**	.253**	.381**	1		
OSV (7)	-.206**	-.149**	.088**	.029	.073*	.150**	1	
OSV/P (8)	-.101**	.200**	.213**	.158**	.113**	.262**	.226**	1

Note. For sex, 0 = women and 1 = men; OSV = Online sexual victimization; OSV/P: Perpetration of online sexual victimization behaviours.

* $p < .05$, ** $p < .01$.

as well as being victimized by them ($\beta = 0.15$, $p < .01$) (H_2). Likewise, high scores in narcissism tend to predict high scores in OSV/P ($\beta = 0.13$, $p < .01$). Conversely, high scores in Machiavellianism seem to predict fewer OSV/P ($\beta = -0.11$, $p < .05$).

To delve more into the relationship between the Dark Tetrad traits and OSV/P, attending to the person victimized we conducted multiple t -tests. Rejecting H_3 no differences ($p < .005$; Bonferroni fit) appeared on any of the traits showing that those people with high scores in the Dark Tetrad traits victimize equally whether they know or do not know their victims.

4. Discussion

The main aim of the present study was to investigate the links between OSV and the Dark Tetrad of personality. Additionally, we also aim to clarify the gender differences and the existing in the OSV and OSV/P and the agents involved in these behaviours.

The Dark Tetrad (i.e., psychopathy, narcissism, Machiavellianism, and sadism) is a personality construct deeply related to antisocial and criminal behaviours (Moor & Anderson, 2019; Muris et al., 2017). Therefore, it was expected to find that the four malevolent constructs predicted better the OSV/P behaviours than the victimization from them (Karasavva et al., 2022; Pina et al., 2021; Pineda, Galan, et al., 2021). In this regard, the personality trait that predicts better the OSV/P is sadism, followed by narcissism. The result obtained for sadism was not surprising since this trait describes a person “who humiliates others, shows a longstanding pattern of cruel or demeaning behaviours to others, or intentionally inflicts physical, sexual, or psychological pain or suffering on others in order to assert power and dominance or for pleasure and enjoyment” (O’Meara et al., 2011, p. 523). This previous definition is materialised in some OSV behaviours such as the dissemination of sexual information about others or pressuring other people to maintain online sexual relationships. Furthermore, our results meet previous literature stating that those people with higher sadism tend to openly show aggression in offline contexts (e.g., Branković et al., 2022) and in online contexts where they can act behind the screen (e.g., Branković et al., 2022; Buckels, Trapnell, & Paulhus, 2014).

The predictive capacity of narcissism, which resembles Karasavva and Forth’s (2021) findings about image-based sexual abuse, could be explained by the narcissistic necessity of controlling other people, and thus, finding a way for it by obtaining and using other peoples’ sexual content for their gain on this purpose. The narcissism results might be explained by the narcissistic sense of entitlement, considering themselves as people who should receive special treatment, and thus with the right of pressuring or threatening others to share images, and information or to maintain sexual online contacts (Raskin & Hall, 1981). These results are convergent with previous findings, asserting that those people with high scores in narcissism are prone to perpetrate controlling behaviours in the context of cyber intimate partner violence (Pineda, Galan, et al., 2021).

Attending to Machiavellianism in predicting OSV/P, while a small positive association with this trait was observed (r equal to .11), a

negative direct effect was observed in SEM Model (β equal to -0.11). Taken together, all these could be explained due to suppression statistics effect (MacKinnon, Krull, & Lockwood, 2000; Petraitis, Dunham, & Niewiarowski, 1996). This finding might be explained by the possible drawbacks derived from these behaviours, leading to a greater risk of getting caught while perpetrating it through an online platform rather than in a face-to-face without the interactions being recorded or saved. Previous investigations have found similar findings for the relationship between Machiavellianism and other online behaviours, in which those people with higher Machiavellianism scores tend to perpetrate more indirect or covert behaviours (Branković et al., 2022; March, Litten, Sullivan, & Ward, 2020; Pineda, Galan, et al., 2021).

On the other hand, and akin to the connections with OSV/P, the dark trait that most predicted OSV was sadism. This shows that people with high scores in sadism, while they perpetrate more OSV behaviours, tend to suffer them more. The same results were obtained by Karasavva and Forth (2021) studying image-based sexual abuse. This relationship might be explained by the pleasure that those people with elevated rates in this trait obtain from victimizing others, making them not consider the possibility of being victimized by the same behaviours. Notwithstanding, this tendency would be better explained by a closely connected to the sadism personality construct, spitefulness, which refers to “the willingness of an individual to incur a cost in order to inflict harm on another person” (Zeigler-Hill & Vonk, 2015, p. 694).

For both, OSV/P and OSV, psychopathy was a very weak predictor, even presenting negative connections with being victimized by it. This finding is contrary to our hypotheses that the high impulsivity shown by the people who sext and thus more associated with OSV and other related behaviours could be associated with higher scores on this trait (Karasavva & Forth, 2021; Marcum et al., 2022). This result might be explained by the construct overlaps between sadism and psychopathy, both cruel traits related to a general tendency to exploit others (Book et al., 2016). In which specifically attending to this antisocial behaviour, our findings may be better explained by the sadistic tendencies of feeling pleasure from other’s suffering rather than the psychopathic impulsiveness, lack of emotionality and conscientiousness among other more psychopathy-related characteristics (Book et al., 2016; Foulkes, 2019).

There is some gender effect present in our results. Regarding the Dark Tetrad scores, as expected, men scored significantly higher than women in all the traits, convergent results with the previous investigation in the dark side of personality (e.g., Pineda et al., 2020). As regards OSV, men tend to perpetrate it more and women are more prone to be victimized. This finding is in line with previous beliefs, stating OSV or sextortion as a possible species of violence against women (Wittes, Poplin, Jurecic, & Spera, 2016). On the contrary, Pineda, Galan et al. (2021), assessing similar behaviours but in the context of an existing romantic relationship found almost no gender differences. These discrepancies could be explained by a social learning effect, in which some behaviours may be normalized by the fact that one member of the couple performs them and the other member understands that they are valid and thus might be more prone to perform them (Knight, 2011).

Finally, from all those participants who asserted had been victimized

by any OSV behaviours, most of their perpetrators were someone they know from a previous face-to-face relationship instead of someone they just knew from the internet or someone they did not know. Similar patterns have been found in previous studies about related behaviours (e.g., Karasavva & Forth, 2021; Powell et al., 2019). These results underline that special attention should be paid those face-to-face relationships which involve online sexual contact or in which erotic pictures or information is shared. Notwithstanding, no differences were observed among the four Dark Tetrad traits attending to who people high on each of them tend to victimize. This means that people with high scores in sadism (as well as the other three traits) victimize other people regardless they previously know them or not. Furthermore, at a descriptive level, these OSV contacts were made via messaging apps and social media, as expected nowadays since its use is normalized and accessible to nearly everybody.

As a final reflection of the implications, the findings of this study could be used for improving the actual prevention programs that are developed to address these online negative behaviours (to know more about these programs see: Canas & Estevez, 2021). These programs base their interventions on educative, psychoeducative practices and attitudinal changes, obtaining good results (e.g., Ortega-Baron, Gonzalez-Cabrera, Machimbarrena, & Montiel, 2021). Not diminishing the achievements made by these programs, our results show that more resources ought to be located in those people with a higher risk of suffering from OSV and perpetrating it. Thus, for future programs, we suggest applying more efforts to those participants who tend to be related to more antisocial behaviours, which is closely related to the Dark Tetrad of personality, and those who seem to feel pleasure from other people suffering, addressing these specific characteristics. Future research may also focus on the possibilities of working with these different characteristics and attitudes to avoid all the non-adaptive behaviours related to them. Furthermore, and specifically addressing online abusive behaviours, research would benefit from the use of an umbrella term to connect the diverse literature related to interpersonal online abusive behaviours. Although accordingly to the different behaviours, other specific terms should also be used. As a recent example, Rocha-Silva et al. (2021) reviewing 126 manuscripts found 42 different terms used to refer to similar constructs related only to intimate abuse through technology, making explicit the necessity of unifying the terminology in this constantly and rapidly developing research area.

4.1. Limitations and conclusion

This study presents different limitations. The first limitation involves the use of self-reported measures to assess all the constructs. These instruments can lead to measurement biases, from misunderstanding the statement or question to faking the answers to offer a more socially desirable view of oneself. Another limitation refers to the lack of control for the spitefulness trait, since this construct involves personal costs, it could conceivably explain better the victimization from OSV than sadism. Since 79% of the participants of the study are women from a western culture, the generalization of the results might be affected. However, it is also noteworthy that the origin of the sample is a strong point considering that most of the samples on this subject come from North America. Finally, it is worth mentioning that the value of the correlation is under 0.30 showing low relationships between variables that are after analyzed in more depth.

In conclusion, this study shows how the antisocial side of personality—the Dark Tetrad—is connected with perpetrating and being victimized by OSV behaviours. Specifically, OSV is better predicted by sadistic enjoyment than by any other individual characteristic. Additionally, at a more descriptive level, the results show that women tend to be more victimized by OSV behaviours and men are more prone to perpetrate it, both in a situation of an existing relationship. These findings may serve as a possible starting point for online sexual violence prevention programs, focusing efforts on those participants who may be more related to

this issue.

Credit author statement

David Pineda designed the study and oversaw all aspects of study implementation. Jos´e Antonio Piqueras acquired permissions for the research. Ana Mart´ınez and Manuel Gal´an collected the data and Manuel Gal´an managed the database. David Pineda and Manuel Gal´an performed the statistical analyses. David Pineda wrote the first draft of the article and Manuel Gal´an completed this first draft. Pilar Rico Bordera critically reviewed and edited the final manuscript. All authors reviewed the last version and approved the final manuscript.

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Declaration of competing interest

The authors report there are no competing interests to declare.

Data availability

The data that support the findings of this study are available at <https://osf.io/uqze8/>
[view_only=09f064769b014d988c0569cc800e352](https://doi.org/10.1016/j.addbeh.2022.107451).

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Anexo 4

Estudio 4

The influence of dark personality and pornography on sexual aggression beliefs

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The influence of dark personality and pornography on sexual aggression beliefs

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Introduction: Violence against women, particularly sexual violence, poses a significant public health concern. Predispositions toward perpetrating such acts often stem from the acceptance of myths that justify or deny these behaviours. This study aimed to explore how dark personality traits (narcissism, Machiavellianism, psychopathy, and sadism) and pornography consumption relate to the acceptance of these myths.

Methods: Surveying 598 participants, the research employed Latent Profile Analyses (LPA) to identify distinct population profiles. Additionally, regression analyses were employed to further explore the relationships among variables.

Results: Three profiles emerged, showcasing varying degrees of acceptance of sexual aggression myths. The most concerning profile, encompassing 9.2% of participants, displayed the highest alignment with these myths, alongside elevated scores in dark personality traits and pornography consumption. Notwithstanding the three profiles showed significant differences in the acceptance of these myths. Interestingly, the regression analysis highlighted that Machiavellianism stood out as the primary predictor for accepting sexual aggression myths, overshadowing the influence of pornography consumption.

Conclusion: This emphasizes the role of personality traits in influencing attitudes towards sexual aggression myths. Moreover, implications for tailored prevention strategies, focusing on high-risk profiles, are discussed, highlighting the potential for targeted interventions to address harmful beliefs and behaviours.

KEYWORDS

dark tetrad, pornography, sexual violence, violence against women, latent profile analysis

1 Introduction

Violence against women, because of its implications, has been treated as a public health problem since 1996 (United Nations, 1996; World Health Organization, 2019). This violence can take different forms, including sexual violence. The World Health Organization (2013) defines sexual violence as being forced to have unwanted sex, to have sex out of fear of what the other person might do to you, and/or being forced to do something sexual that is humiliating or degrading to the victim. This situation can have significant physical, emotional, cognitive, and behavioural consequences for victims as for example, increased likelihood of PTSD, depression, anxiety, specific physical injuries, suicide, re-victimization, etc. (Classen et al., 2005; Barker et al., 2019). Understanding the factors that facilitate or predispose to this phenomenon is, therefore, necessary to prevent it.

1.1 Acceptance of modern sexual aggression myths

The acceptance of sexual aggression myths refers to generally false attitudes or beliefs that are widely accepted and used to deny or justify men's aggressive behaviour against women (Lonsway and Fitzgerald, 1994). This set of attitudes or beliefs entails the denial of reality, minimization of the problem, and normalization of coercive attitudes (Gerger et al., 2007). All of this influences the normalization, facilitation, and execution of aggressive, hostile, and sexually violent behaviour towards women (Fernández-Fuertes et al., 2020; Samji and Vasquez, 2020; Trottier et al., 2021).

The effect of the acceptance of sexual aggression myths not only influences the perpetrators but also has effects on other actors involved in these situations, such as the victims, society, and the courts. In this case, victims may normalize aggressive situations or confuse what could be treated as rape for a sexual encounter based on their understanding of how a normative sexual encounter might take place (Ryan, 2011). Previous literature indicates that women who have experienced rape or sexual aggression are less accepting of these myths (Vonderhaar and Carmody, 2015). On the other hand, these myths affect courts and influence their decision-making, as for example, towards a 'not guilty' verdict, especially among individuals with stereotypical views about rape (Dinos et al., 2015; Leverick, 2020).

1.2 The role of pornography

Multiple social and cultural factors influence the acceptance of sexual aggression myths (Cooke et al., 2020; Trottier et al., 2021). Among other factors, it seems that new technologies can significantly influence how we see the world and relate to each other. Some studies have affirmed that the consumption of pornography might affect how we relate to each other sexually, reproducing the patterns we visualize (Wright et al., 2016; Rostad et al., 2019). Nevertheless, other authors argue that increased exposure to pornographic material does not affect attitudes towards sexual aggression on its own; it might influence in combination with different factors such as previous sexist attitudes, psychopathic or antisocial tendencies, low empathy, and alcohol use among others (Malamuth, 2018; Borgogna et al., 2022). Additionally, attempting to trace the mutual influences between the individuals and their environment from the confluence model, it has even been pointed out that these aggressive tendencies shape the preferred pornographic material and not the other way round (Seto et al., 2001). More specifically, a study by Borgogna et al. (2022) assesses the relationship between the use of generic and violent pornography and the acceptance of rape myths, which are less subtle than sexual aggression myths, and finds no clear and direct connection between these myths and pornography use.

1.3 The influence of personality

In this regard, as highlighted in previous paragraphs, sexual aggression is related to psychopathic or antisocial tendencies and low empathy among other factors. All of these factors are represented, to a greater or lesser extent, in the different traits that make up what has come to be known as the dark personality (Muris et al., 2017; Turner et al., 2019).

This dark personality construct refers to four personality traits, known as the Dark Tetrad personality (Paulhus and Williams, 2002; Chabrol et al., 2009). These four traits are subclinical narcissism, Machiavellianism, subclinical psychopathy, and everyday sadism. Subclinical narcissism defines a personality marked by feelings of grandiosity and importance, as well as a certain need for the approval of others (Raskin and Hall, 1981). Machiavellianism refers to a personality trait related to manipulation and the use of strategy; those with high scores on this trait tend to use others for their own benefit (Fehr et al., 1992). Subclinical psychopathy is related to people with impulsive tendencies, low empathy, and a lack of morality, among other characteristics (Hare, 1999). Finally, those with high scores in everyday sadism tend to enjoy the suffering of others, being the ones who inflict it or simply observe it (O'Meara et al., 2011).

These personality traits have already shown some relationship to pornography use (e.g., Burtáverde et al., 2021; Trapnell et al., 2024). More specifically, those scoring higher on the traits tend to view more pornography considered to be truly deviant (sex with minors and animals or rape) (Muris et al., 2020). On the other hand, dark personality has also been linked to a wide range of aggressive or violent behaviours, both sexual and non-sexual, including gender-independent outcomes (Pavlović et al., 2019; Pineda et al., 2021a). Additionally, different studies have shown that traits like psychopathy or Machiavellianism predict harmful attitudes toward intimate partner violence (IPV), as well as sexually violent behaviours. These traits, along with early adverse experiences, have been identified as significant contributors to violent and controlling behaviours in both general and incarcerated populations (Debowska et al., 2018; Waite and Mooney, 2024).

Furthermore, specifically addressing the relationship between these dark personality traits and the acceptance of sexual aggression myths has not been explicitly studied. However, to the knowledge of the authors, there are a few studies that have investigated the relationship between these traits and the acceptance of rape myths (e.g., Cooke et al., 2020; Lyons et al., 2022; Sánchez-Ruiz et al., 2021). For example, the study carried out by Sánchez-Ruiz et al. (2021) found that these traits predicted rape myth acceptance, although this relationship was moderated by gender beliefs. Explicitly, the authors found that the dark triad traits influenced masculine honour beliefs and hostile sexism, consequently influencing hostile attitudes. Longpré et al., 2022 also found a connection between the dark tetrad traits and rape myth acceptance, emphasizing the importance of the study of these links in order to develop effective intervention programs.

Further studies have examined the specific associations between each of these traits and constructs related to attitudes towards rape. For instance, the egocentric aspect of psychopathy, including deficits in the ability to mentally represent others' cognitive responses and emotionally engage with them (cognitive responsiveness), has been found to predict positive attitudes toward rape or sexual aggression (Ioannides and Willmott, 2023; Willmott et al., 2024). Notwithstanding, in a recent review of all these connections, Costa et al. (2023) pointed out the necessity of exploring the relative effect of each of the tetrad constructs on this matter.

1.4 Person-centred analysis

Despite the growing body of research exploring personality traits and their influence on various behavioural outcomes, previous studies

have predominantly relied on variable-centred analyses. These analyses focus on relationships between variables and often assume that patterns observed across groups apply equally to individuals who score highly or lowly on these traits (Wang et al., 2013; Von Eye and Wiedermann, 2015). However, this approach may overlook individual nuances or subgroup variations that could play a critical role in understanding complex phenomena like personality traits' influence on behaviour.

Importantly, few studies have adopted a person-centred approach, which allows for the identification of subgroups of individuals who share similar patterns across multiple traits or behaviours (e.g., Rico-Bordera et al., 2024). Person-centred methods could offer more refined insights into how personality traits cluster within individuals and how these clusters are associated with outcomes, such as the acceptance of sexual aggression myths, yet these methods remain underutilized in the literature. Research in this area remains limited, with the majority of work focusing on variable-centred analyses and not fully exploring these individual-level patterns (Koehn et al., 2019).

Thus, our study employs both variable-centred and person-centred approaches to capture not only the broad trait-outcome relationships but also the nuanced variations within our sample. By combining these two methods, we aim to provide a more comprehensive understanding of how dark personality traits in combination with the behavioural variable of watching pornography influence the acceptance of sexual aggression myths. This approach addresses limitations in previous research that has not explored how these variables cluster or their varying effects on behaviour.

1.5 Objectives and hypotheses

With the aim of expanding our understanding of the interconnections between the introduced constructs, the present study endeavors to elucidate the relationships among dark personality traits, pornography consumption, and the acceptance of sexual aggression myths within the general population. For this purpose, from a person and a variable-centered approach, we pose the following research questions (RQs):

- RQ1: Are there different profiles based on pornography use and dark personality traits?
- RQ2: If there are different profiles, will there be differences among them in their acceptance of modern sexual aggression myths?
- RQ3: Are there gender differences in the study variables, and if so, will both genders be represented in all groups?
- RQ4: Which trait or traits will predict the most the acceptance of modern sexual aggression myths?

To answer the above questions, and based on previous literature, the following hypotheses (H) are put forward:

- *H1*: At least four different profiles are expected to exist depending on personality and pornography use: High dark personality traits and low pornography use; low traits and high pornography use; high traits and high pornography use; low traits and low pornography use; and average scores on all the variables.

- *H2*: Looking at the different profiles, it is expected that those with higher scores on both constructs (the dark traits and pornography use) will also have higher scores on the acceptance of sexual aggression myths than those with lower scores on pornography use or dark personality traits, and those with low scores on both.
- *H3*: Women will tend to score lower on all study variables (i.e., dark traits, pornography use, and sexual aggression myths acceptance) compared to men, as shown in previous research (Jones and Paulhus, 2014), but will also be represented in all the groups. Hence, while gender will impact the outcome, it will not stand as the sole predictive variable.
- *H4*: Machiavellianism and psychopathy will exhibit a stronger inclination towards accepting modern sexual aggression myths compared to the other dark tetrad traits.

2 Materials and methods

2.1 Participants

The survey initially reached a total of 1,537 participants; however, only 598 met the inclusion criterion of being over 18 and fulfilled the measures of interest, with 74% of these respondents being women. The sample collection used a convenience sampling method, utilising social networks such as Facebook, Instagram, and LinkedIn to access potential participants for the survey created with LimeSurvey.¹ The age range of the participants was 18 to 80 years, with a mean age of 31.16 years ($SD = 18.90$). Regarding marital status, most were single at the time of the study (56%), 17.8% were married, 16.7% had a partner, and the remaining 10.5% were separated, divorced, widowed, or in other civil situations. In terms of educational level, a large proportion of the participants had completed a university degree or master's degree (48.9%), followed by those who had completed a bachelor's degree (36.1%); 8.9% of the participants had vocational training, 2.9% had a doctorate, 1.5% had completed primary education, 1.3% had completed secondary education, and the remaining 0.3% had no education.

2.2 Variables and instruments

The questionnaire filled in by the participants consisted of a first section with *ad hoc* socio-demographic questions such as age, gender, level of education, marital status, and so on. The following variables were then assessed.

2.2.1 Dark personality

2.2.1.1 Short dark triad (SD3)

The SD3 (Jones and Paulhus, 2014) scale was used to measure three dark personality traits—subclinical narcissism, Machiavellianism, and subclinical psychopathy. On this occasion, the Spanish version of the SD3 scale was used (Pineda et al., 2020). It is a 27-item instrument with a Likert-type response scale (0 = "Strongly

¹ <https://www.limesurvey.org>

Disagree” to 4 = “Strongly Agree”). Item examples are: “many group activities tend to be dull without me,” for narcissism; “it’s not wise to tell your secrets” for Machiavellianism; and “I avoid dangerous situations” for psychopathy. It consists of 9 items for each dimension or trait. For the current sample, the reliability values of the different scales were: $\alpha = 0.65$, $\omega = 0.65$ for narcissism; $\alpha = 0.77$, $\omega = 0.77$ for Machiavellianism; and $\alpha = 0.71$, $\omega = 0.72$ for psychopathy.

2.2.1.2 Assessment of sadistic personality (ASP)

The Spanish version of the ASP (Plouffe et al., 2017) scale was used to assess the variable of everyday sadism (Pineda et al., 2021b). This instrument was designed to measure the construct of everyday sadism and can be used in combination with the previous instrument, SD3, to jointly assess the Dark Tetrad. In this case, it is an instrument with 9 items and a 5-point Likert-type scale (0 = “Strongly disagree” to 4 = “Strongly agree”). An example of an item is: “Being mean to others can be exciting.” The Spanish version of this instrument has already been used in combination with the SD3 in previous studies showing a multidimensional factor structure confirmed through Confirmatory Factor Analysis (CFA) and good psychometric properties (Pineda et al., 2021a, 2023). The reliability values for this scale in this sample were: $\alpha = 0.80$, $\omega = 0.81$.

2.2.2 Use of pornography

Pornography use was assessed with a single item (“How often do you use pornographic material?”). Participants responded on a 5-point Likert-type scale (1 = Less than once a month, 2 = 1–2 times a month, 3 = 1–2 times a week, 4 = 3–4 times a week, 5 = 5 or more times a week). This item, and variations according to typologies, have been used in previous recent research (Rostad et al., 2019; Fisher and Kohut, 2020; Borgogna et al., 2022).

2.2.3 Acceptance of sexual aggression myths

Acceptance of Modern Myths about Sexual Aggression scale (AMMSA; Gerger et al., 2007). The Spanish version of the AMMSA scale was used to measure the tendency to accept sexual aggression myths (Megías et al., 2011). It was developed to overcome the drawbacks marked by the social desirability of earlier scales such as the “Rape Myth Acceptance Scale” (RMAS; Burt, 1980). It is a 30-item scale with seven Likert-type response options (1 = “Strongly Disagree” to 7 = “Strongly Agree”). The Spanish version of the AMMSA (Megías et al., 2011) scale has adequate psychometric properties and a unidimensional structure $\alpha = 0.90$. Our scale offered a five-factor factor structure similar to that initially theorized in the original study of the scale in English and German by Gerger et al. (2007). The factor analysis of the AMMSA in our sample derived the following dimensions: denial of the problem, consisting of 7 items from the original scale, an example is “Many women tend to exaggerate the problem of gender-based violence” and the reliability coefficients for our sample are $\alpha = 0.83$, $\omega = 0.84$; antagonism towards victims’ demands (antagonism), consisting of 4 items of the original scale, an example is “Instead of worrying about alleged victims of sexual violence, society should attend to more urgent problems, such as environmental destruction” and the reliability coefficients for our sample are $\alpha = 0.59$, $\omega = 0.60$; over-support, consisting of 3 items from the original scale, an example is “After rape, women today receive a lot of support” and the reliability coefficients for our sample are $\alpha = 0.70$, $\omega = .70$; naturalization of coercion (coercion), consisting of

4 items from the original scale, an example is “When it comes to sexual contact, women expect men to take the initiative” and the reliability coefficients for our sample are $\alpha = 0.54$, $\omega = 0.55$; and, finally, exoneration of guilt (exoneration), consisting of 5 items from the original scale, an example is “For men, it is a biological necessity to release their accumulated sexual tension from time to time” and the reliability coefficients for our sample are $\alpha = 0.65$, $\omega = 0.66$. However, to allow for the comparison of our results with other studies in this area, calculations were also carried out using the one-dimensional proposal (Megías et al., 2011), obtaining reliability coefficients for our sample of $\alpha = 0.91$, $\omega = 0.91$.

2.3 Procedure

After the Ethics Committee approved the research, a cross sectional online survey was disseminated through the social networks stated in the participants section and messaging applications of the participating researchers. In turn, those who responded were also asked to share the survey. After giving their consent, participants responded to the instruments in the order previously presented. Participants did not receive direct compensation for completing the survey. However, they could request feedback on their personality profile and be entered into a prize draw for 10 Amazon cards worth 50 euros each. These measures were implemented to encourage the completion of the survey and enhance participant engagement. Additionally, the automated feedback and raffle procedures were ensured that the answers kept anonymous.

2.4 Data analysis

Initially, the reliability of the instruments (Cronbach’s alpha and McDonald’s omega) as well as the factor analysis of the AMMSA scale were conducted with the Jamovi (The Jamovi Project, 2021) following the recommendations of Kalkbrenner (2021). The same statistical package was used to obtain descriptive analyses, calculations of bivariate correlations, and comparisons between groups. Student’s and Fisher’s tests were used to analyze the differences between groups. Following (Cohen, 1988) suggestions, a η^2_p equal to 0.009, 0.059, and 0.138, as well as a d equal to 0.2, 0.5, and 0.8 would be considered small, medium, and large effect sizes, respectively in both tests.

The latent profile analysis technique (LPA) was used to divide the sample into groups using MPlus (V. 8.6) (Muthén and Muthén, 2017). LPA is a technique that seeks to find profiles in the sample of people who respond in the same way to specified variables, in this case, the four traits of the Dark Tetrad and pornography consumption. To determine the most optimal clustering for the sample, fit indices were calculated for six possible models (from a single cluster to six different clusters). The fit indices used to find the solution were the Bayesian Information Criterion (BIC), the Akaike Information Criterion (AIC), the sample size adjusted BIC (SSA-BIC), the entropy, the Vuong-Lo-Mendel-Rubin index (VLMR), and the adjusted Likelihood Ratio Test (adjusted LRT). To determine the most optimal model, the significance of the VLMR, and adjusted LRT, a value close to 1 in entropy, as well as reduced AIC, BIC, and SSA-BIC values were considered (Spurk et al., 2020). Further, the Elbow graph was produced, which allows us to visualize the most optimal solution.

Furthermore, to further explore the results and account for other sociodemographic variables that could typically influence the outcomes, a regression model was constructed. The initial block encompassed sociodemographic factors (gender and age), while the second block incorporated both Dark traits and pornography use.

3 Results

With regard to the analysis of the variables (Table 1), direct correlations can be observed between all the variables studied. Participants' gender shows the highest correlations with scores on aggression myth acceptance and pornography viewing, with males tending to score higher on these measures, confirming H₃. Looking at the relationship between these two variables, acceptance of sexual aggression myths (total scale) and pornography use, an *r* of 0.21 is obtained (*p* < 0.01). In terms of the Tetrad traits, the trait most closely related to pornography use was psychopathy (*r* = 0.30, *p* < 0.01). The trait most closely related to the overall scale of acceptance of sexual aggression myths was Machiavellianism (*r* = 0.31, *p* < 0.01).

Regarding the latent profile analysis (LPA), Table 2 shows the fitting values for the solutions of 1 to 6 different profiles. After analyzing these results and the elbow graph's results (Figure 1), the most optimal solution was the one with 3 different profiles or classes, partially fulfilling H₂.

Having obtained the most optimal solution for our sample, Figure 2 plots the standardized mean scores of the 3 profiles on the grouping variables (i.e., pornography consumption and Tetrad traits). It can be observed that the first profile, composed of most of the participants (49.5%), presents low scores on all variables, consuming little pornography and scoring low on all personality traits. On the other hand, the second group, made up of 41.3% of the sample, has scores very close to the average on all variables. Finally, the last group (profile 3) could be defined as the group with the most malice. This

group has the highest scores in pornography consumption and in all the traits of the Dark Tetrad, with everyday sadism as the most marked trait.

The sample was divided into different profiles; Table 3 shows the existence of differences in the standardized scores between these subgroups. The mean effects of the differences between groups can be observed on the total scale ($\eta_p^2 = 0.10$), as well as in the denial dimensions of the problem ($\eta_p^2 = 0.07$), of antagonism towards the demands ($\eta_p^2 = 0.08$), and exoneration of guilt ($\eta_p^2 = 0.06$).

Post hoc comparisons revealed significant differences among the three profiles, particularly evident between profiles 1 and 3 across all dimensions, and between 1 and 2 across all dimensions except for the over-support dimension. Groups 2 and 3 were more similar, only finding significant differences when considering the total AMMSA score and the dimension of antagonism towards demands.

These results, as can be seen graphically in Figure 3, show that profile 1 (participants who scored lowest on the Dark Tetrad and pornography use) have the lowest scores on all dimensions of the Acceptance of Sexual Aggression Myths scale, supporting H₂. Conversely, profile 3 (those with the highest scores on pornography use and the Dark Tetrad) have the highest scores on the AMMSA scale, indicating greater acceptance of sexual aggression myths.

Gender differences, in line with H₃, were observed in all variables included in the study (*p* < 0.01). The biggest difference, attending to the effect sizes, was observed in the use of pornography and the AMMSA total score variables (Cohen's *d* = 1.56 and Cohen's *d* = 0.73, respectively). Notwithstanding, women were present in the three groups of the LPA with 83.9% in Profile 1, 73.4% in Profile 2, and 35.2% in Profile 3, indicating an overrepresentation in groups one and two.

For a further analysis of these results, and aiming to test H₄, a regression model was calculated with the total AMMSA score. The results are presented in Table 4. The trait that predicted AMMSA

TABLE 1 Bivariate correlations and means and standard deviations of gender, pornography consumption, the dark tetrad traits, and acceptance of sexual aggression myths.

	<i>M</i> (<i>SD</i>)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Gender (1)		1											
Pornography consumption (2)	1.72 (1.06)	0.56*	1										
Narcissism (3)	13.61 (4.98)	0.13*	0.18*	1									
Machiavellianism (4)	16.04 (6.14)	0.17*	0.28*	0.33*	1								
Psychopathy (5)	8.53 (5.18)	0.27*	0.32*	0.40*	0.59*	1							
Sadism (6)	5.31 (5.06)	0.29*	0.30*	0.29*	0.59*	0.70*	1						
Denial of the problem (7)	17.66 (9.82)	0.28*	0.18*	0.19*	0.26*	0.25*	0.23*	1					
Antagonism (8)	12.00 (5.78)	0.20*	0.18*	0.20*	0.24*	0.23*	0.24*	0.70*	1				
Over-support (9)	8.60 (4.50)	0.27*	0.20*	0.13*	0.12*	0.13*	0.10*	0.52*	0.49*	1			
Coercion (10)	12.17 (5.26)	0.24*	0.14*	0.16*	0.26*	0.23*	0.21*	0.50*	0.44*	0.33*	1		
Exoneration (11)	13.11 (6.75)	0.18*	0.10*	0.18*	0.26*	0.23*	0.23*	0.63*	0.53*	0.39*	0.58*	1	
Acceptance of sexual aggression myths (12)	78.71 (30.68)	0.31*	0.21*	0.24*	0.31*	0.30*	0.28*	0.90*	0.81*	0.64*	0.69*	0.80*	1

For Gender: 1, female; 2, male.

**p* < 0.01.

TABLE 2 Model fit indices for 1- through 6-profile solutions.

Profiles	AIC	BIC	SSA-BIC	Entropy	VLMR	Adjusted LRT
1	8470.703	8514.639	8482.892			
2	7816.712	7887.010	7836.214	0.787	0.0001	$p < 0.001$
3	7556.933	7653.592	7583.749	0.854	0.0001	$p < 0.001$
4	7474.554	7597.575	7508.683	0.881	0.1989	$p > 0.05$
5	7358.454	7507.836	7399.896	0.886	0.4217	$p > 0.05$
6	7279.831	7455.575	7328.586	0.904	.1,204	$p > 0.05$

AIC, Akaike Information Criterion; BIC, Bayesian Information Criteria; SSA-BIC, BIC adjusted for sample size; VLMR, Vuong-Lo-Mendel-Rubin; LRT, Likelihood Ratio Test. Bolded values indicate the chosen solution.

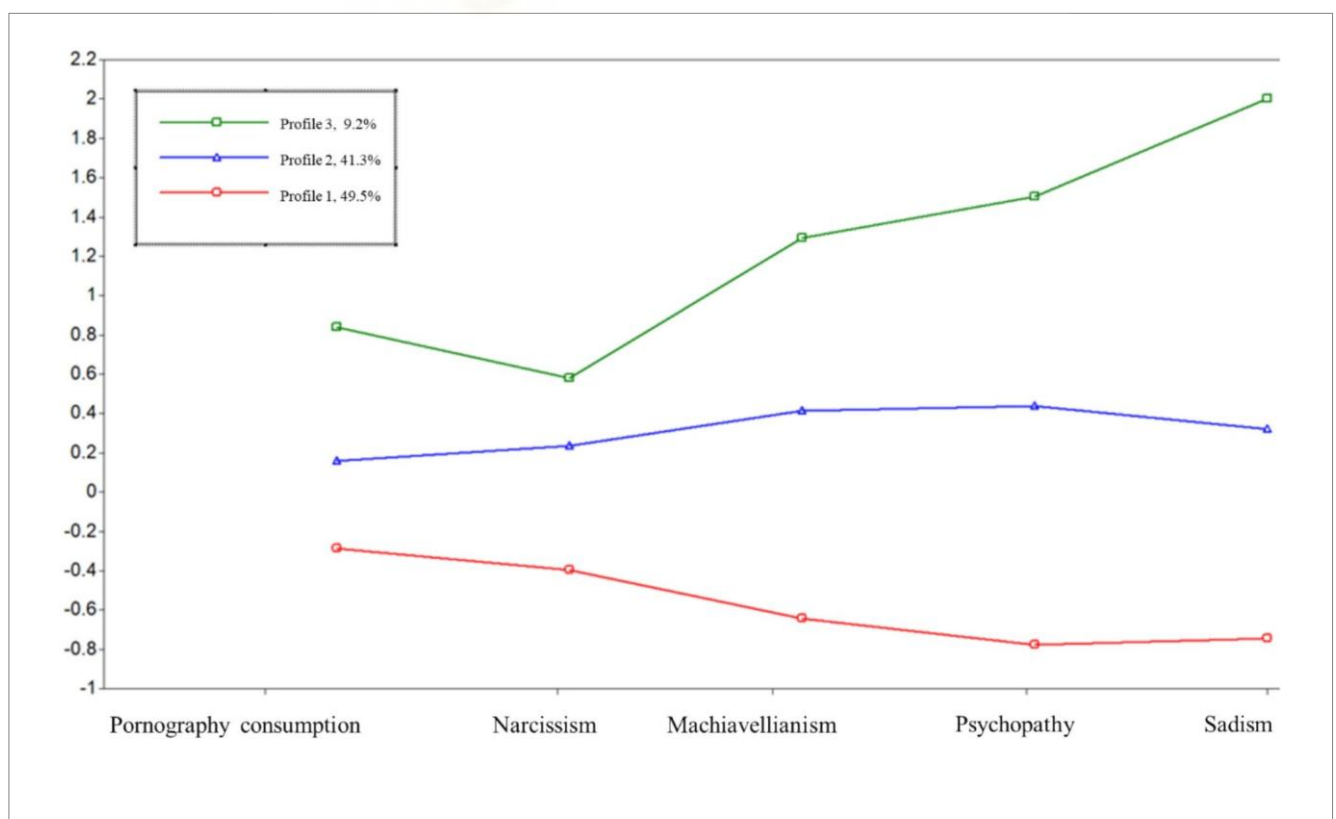
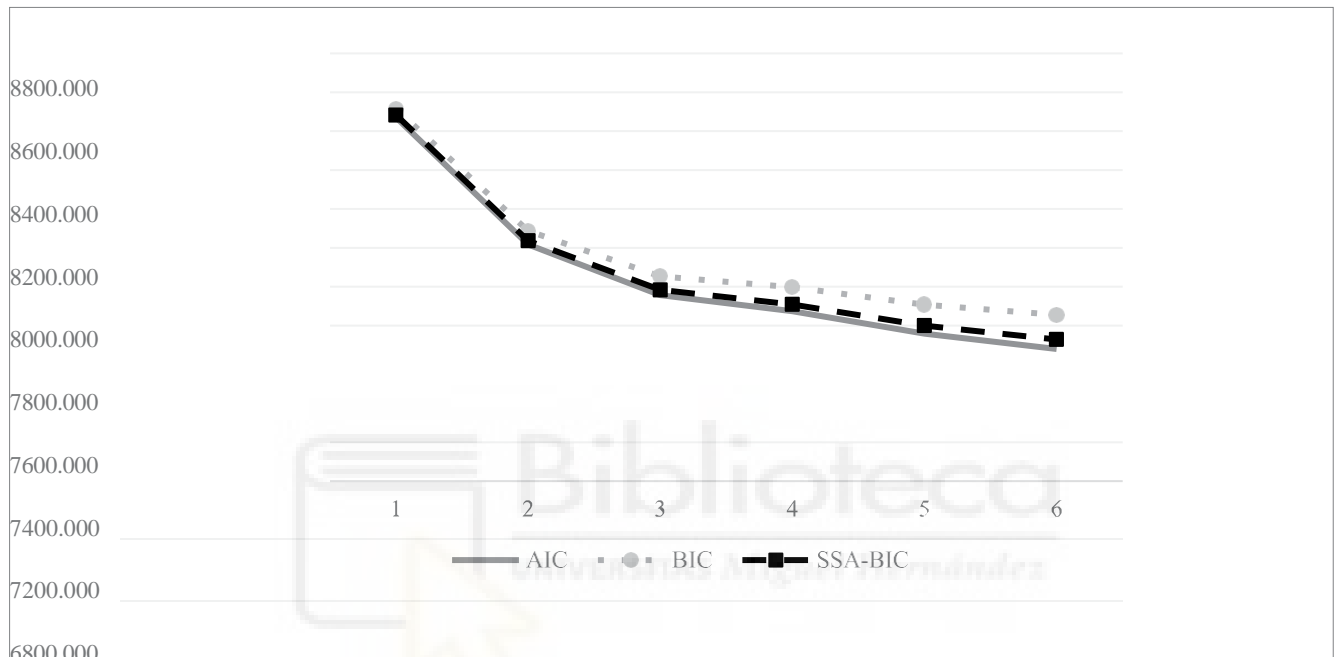


TABLE 3 Differences in the standardised scores among the three profiles in the variables of interest.

Variables	M (SD)			F _(2,597)	η^2_p	p Scheffe (Cohen's d)		
	Profile 1 (n = 296)	Profile 2 (n = 249)	Profile 3 (n = 53)			1 vs. 2	1 vs. 3	2 vs. 3
AMMSA denial	-0.24 (0.86)	0.11 (1.00)	0.55 (1.04)	21.16*	0.07	<0.001 (0.39)	<0.001 (0.85)	0.009 (0.47)
AMMSA antagonism towards demands	-0.24 (0.89)	0.10 (0.96)	0.71 (1.14)	25.61*	0.08	<0.001 (0.36)	<0.001 (1.00)	<0.001 (0.64)
AMMSA over-support	-0.12 (0.95)	0.01 (1.02)	0.48 (0.99)	8.33*	0.03	0.344 (0.13)	<0.001 (0.61)	0.007 (0.48)
AMMSA coercion	-0.23 (0.88)	0.14 (0.99)	0.43 (1.13)	16.23*	0.05	<0.001 (0.38)	<0.001 (0.69)	0.123 (0.31)
AMMSA exoneration	-0.23 (0.86)	0.10 (1.01)	0.51 (1.13)	17.60*	0.06	<0.001 (0.35)	<0.001 (0.78)	0.019 (0.43)
AMMSA total	-0.27 (0.78)	0.12 (0.97)	0.72 (1.21)	33.11*	0.10	<0.001 (0.45)	<0.001 (1.11)	<0.001 (0.66)

*p<0.01.

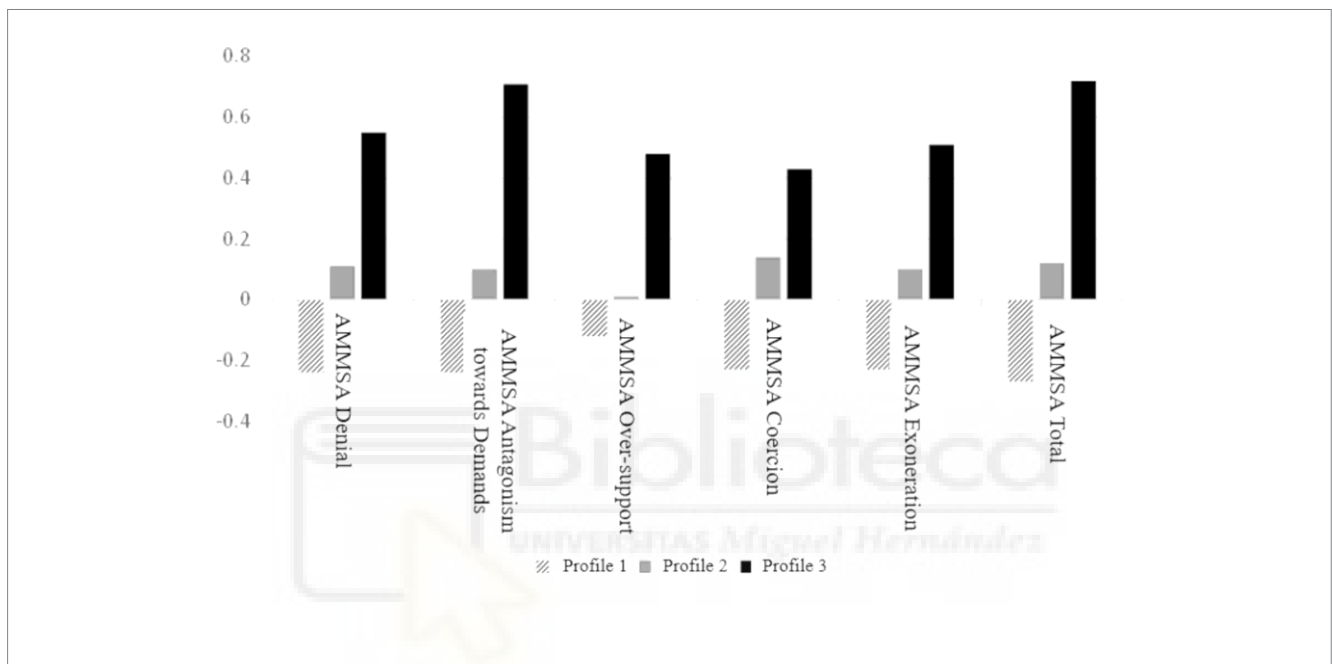


TABLE 4 The predictive capacity of the dark tetrad and pornography use for acceptance of sexual aggression myths (total score).

Predictor variables	Step 1				Step 2			
	β	t	r_{xy}	sr^2	β	t	r_{xy}	sr^2
Gender	0.30	7.65*	0.30	9%	0.22	4.71*	0.19	3.61%
Age	0.08	1.94	0.08	0.64%	0.12	3.20*	0.13	1.69%
Narcissism					0.11	2.74*	0.11	1.21%
Machiavellianism					0.17	3.53*	0.14	1.96%
Psychopathy					0.07	1.27	0.05	0.25%
Sadism					0.05	0.95	0.04	0.16%
Pornography use					-0.01	-0.97	0.00	0.00%
$R^2_{Adjusted}$	0.10				0.18			
F	32.56**				20.11***			

*p<0.01.

better was Machiavellianism, while sadism did not have an effect, as well as pornography use with no effect in this model. However, it is worth noting that gender also played an important role in this model accounting for a 3.61% in the observed variance change.

4 Discussion

The main aim of the present study was to clarify the relationships among the Dark Tetrad, pornography consumption,

and the acceptance of sexual aggression myths by the use of variable and person-centred analyses. Our analysis reveals a clear association between higher pornography consumption, elevated Dark Tetrad traits, and increased acceptance of sexual aggression myths. This pattern suggests underlying mechanisms worth exploring further.

In a latent profile analysis, we identified three distinct groups: a majority with low scores on dark personality traits and low pornography use (49.5%), a second group with medium scores on all five measures (41.3%), and a smaller group with high scores on all traits, particularly everyday sadism (9.2%). Notably, higher Dark Tetrad trait scores were consistently associated with greater pornography consumption. These findings may reflect a combination of sensation-seeking tendencies and a possible alignment with desires for power and control found in certain pornographic content (Muris et al., 2020; Pineda et al., 2023; Trapnell et al., 2024).

Regarding the main objective of the study, the three groups showed significant differences in their acceptance of sexual aggression myths. Group 3, with higher Dark Tetrad scores and more frequent pornography consumption, demonstrated a notably higher acceptance of these myths. Our study corroborates previous research by Sánchez-Ruiz et al. (2021), indicating that the Dark Triad traits observed in our study are similarly associated with the acceptance of these myths, although in their case, they focused on rape myths. However, our study extends their work by highlighting that everyday sadism, which they did not assess, is similarly correlated with the acceptance of sexual aggression myths.

As for the analysis of the variables, we observed that Machiavellianism presents its highest correlations with the coercion, denial, and exoneration scales, indicating that those with high scores on this trait tend to use deception as a strategy for sexual purposes, and may use denial of the problem as a form of exculpation of their actions (Lyons et al., 2020). On the other hand, traits such as psychopathy and sadism also had their highest correlations with the denial and exoneration scales, which could be explained by the lack of empathy, deficits in cognitive responsiveness and lack of morality in people who score high on these scales, not understanding the severity of the problem for others and downplaying its importance (Moshagen et al., 2018; Turner et al., 2019; Willmott et al., 2024). These findings would align with the confluence model, emphasizing how these dark personality traits might shape individuals' perceptions, which, in turn, might influence their tendencies to downplay or deny the severity of sexual aggression, perpetuating a cycle where these traits feed into and reinforce one another within the individual-environment dynamic (Seto et al., 2001; Turner et al., 2019).

In terms of predictive capacity, among the dark personality variables, Machiavellianism exhibited the strongest predictive capacity, whereas psychopathy and sadism showed minimal impact. Notably, consistent with a prior meta-analysis (Ferguson and Hartley, 2022), pornography consumption did not influence the acceptance of sexual aggression myths in the predictive model. Consequently, the disparities observed among profiles primarily align with differences in dark traits.

Trends in the variables analyzed also showed a relationship with the gender of the participants. As expected in relation to the findings of previous studies (Pineda et al., 2020, 2021a), males tended to present higher scores on the Dark Tetrad. Simultaneously, they

consumed more pornography, which is also consistent with previous studies (Rostad et al., 2019; Borgogna et al., 2022), even though women were also represented in the three profiles. Finally, men also tended to accept more the myths of sexual aggression, especially those relating to denial of the problem, the use of coercive strategies, and the perception of over-support for victims. The latter could be because men do not identify with the possibility of being victims of sexual aggression and, therefore, tend to downplay the importance of the problem and its consequences. However, this relationship can also be explained by the wording of the items, which refers to the victimization of women (Geger et al., 2007; Megías et al., 2011).

Previous literature reviews regarding sexual violence prevention have offered different suggestions about how to improve the programs designed to this end (e.g., by increasing the hours of the program, incorporating multiple sessions or focusing on bystanders; Kovalenko et al., 2020; Orchowski et al., 2020). However, there is limited literature regarding the disparities in the populations benefiting from these programs. In this regard, certain authors have emphasized the significance of targeting specific groups (DeGue et al., 2014). Based on our findings, we suggest enhancing program effectiveness by targeting individuals whose personality traits and patterns of pornography use indicate a higher susceptibility to accepting sexual aggression myths. This focused approach may effectively address and engage those more likely involved in such behaviours (Trottier et al., 2021). Our study's findings may also have implications for the criminal justice system, particularly regarding how dark personalities and sexually aggressive attitudes influence juror decision-making. Research by Willmott (2018) and Lilley et al. (2023) shows that jurors with higher psychopathic traits and rape myth beliefs are more likely to render biased verdicts, even post-deliberation. Understanding these biases could lead to more effective jury selection and training reforms, potentially enhancing trial fairness and outcomes.

However, locating this group might be a challenge when it comes to non-research related fields, and thus non-anonymous situations (Galán et al., 2023). Therefore, several alternative measures are currently being developed to address the issues of self-report-based assessments in this field (Rico-Bordera et al., in press). Additionally, future research should focus on developing and validating tools that more accurately assess the impact of pornography consumption and examine how different types of pornography may influence attitudes toward sexual aggression. Furthermore, longitudinal studies could provide valuable insights into how these relationships evolve over time, offering a clearer understanding of causal pathways and the long-term effects of pornography consumption on sexually aggressive attitudes.

5 Limitations

The present research has several limitations. First, it's important to note the limitation posed by the convenience sampling method employed. Specifically, this method resulted in a sample composition of 74% Western women, potentially impacting the broader generalizability of the findings. Another important limitation of the sample is the lack of data on participants' sexual orientation, which may be an important factor influencing the variables of interest. Future research should consider including

sexual orientation in the assessment to provide a more comprehensive understanding of its potential impact on the findings. Furthermore, as previously mentioned the study uses a cross-sectional design, which limits the ability to draw conclusions about causal relationships between Dark Tetrad traits, pornography consumption, and acceptance of sexual aggression myths. Longitudinal research could better clarify the directionality of these relationships over time.

As for the scales used, the use of self-reported instruments is a very common criticism of these studies given that participants may falsify the answers or offer responses that are marked by social desirability. This is even more significant in the case of socially reprehensible constructs. However, research in this field shows that people with high scores in the Dark Tetrad tend to be sincere, not caring about the image they show to the outside world since they have nothing to gain or lose in the field of research (Galán et al., 2023). Concerning the dark personality traits, it is relevant that they present important overlaps, reaching $r = 0.70$ between sadism and psychopathy, which may have contributed to the distinguished composition of the groups, without observing any intersections in the profiles. An additional limitation concerns the measurement of psychopathy and dark personality traits. The factorial structure and validity of these traits are debated, with scales like the PPTS and PPTS-R showing inconsistent results (Boduszek et al., 2018, 2022). This underscores the need for further research to improve and standardize psychopathy assessments. Regarding the instrument used to measure the acceptance of modern myths of sexual aggression, some scales, such as coercion or antagonism towards demands presented low internal consistency indices, which could have affected the results.

Finally, the last limitation concerns the measure used to assess pornography use, given the absence of validated measures for this purpose (Fisher and Kohut, 2020). The use of a more specific tool would be more appropriate given the typology of pornography that may influence the acceptance of aggression myths (i.e., degrading, violent, demeaning, objectifying, etc.). In this context, as mentioned in the discussion previous studies, have not found such a relationship between pornography use and sexual aggression, and even a weak correlation when speaking about violent pornography (Borgogna et al., 2022). However, it is worth mentioning that these small differences in the associations between the types of pornography and sexual aggression might be understood from a feminist perspective, considering a large part of pornography as violent or degrading towards women (De Miguel, 2021; Tranchese and Sugiura, 2021).

6 Conclusion

In conclusion, through an analysis of latent profiles, we have shown that there are different profiles according to the traits of the Dark Tetrad (i.e., narcissism, Machiavellianism, psychopathy, and sadism). Specifically, there is a profile (composed of 9.4% of our participants) with high scores on the Tetrad, a higher consumption of pornography, and which is more accepting of the myths of sexual aggression. This may serve as a possible starting point for sexual violence prevention programs, focusing efforts on those who are more likely to accept these myths.

Data availability statement

The datasets presented in this study can be found in online repositories. The names of the repository/repositories and accession number(s) can be found at: https://osf.io/8e3cs/?view_only=eb2b322ed19547a0945da8d36a1a8b8b, doi: 10.17605/OSF.IO/8E3CS.

Ethics statement

The studies involving humans were approved by Office for Responsible Research of the Miguel Hernandez University of Elche (Reference DPS.JPR.04.16). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

MG: Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. DP: Writing – review & editing, Validation, Software, Resources, Methodology, Funding acquisition, Formal analysis, Data curation, Conceptualization. PR-B: Writing – review & editing, Supervision, Methodology, Investigation, Formal analysis. AM-M: Writing – review & editing, Supervision, Methodology, Funding acquisition. JP: Writing – review & editing, Supervision, Resources, Project administration, Investigation, Funding acquisition, Conceptualization.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

The author(s) declared that they were an editorial board member of *Frontiers*, at the time of submission. This had no impact on the peer review process and the final decision.

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Anexo 5

Estudio 5

Personality Comparison between Lethal and Non-lethal Intimate Partner Violence Perpetrators and Their Victims

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Personality Comparison between Lethal and Non-lethal Intimate Partner Violence Perpetrators and Their Victims

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Abstract

Intimate partner violence against women (IPVAW) and femicide (intimate partner femicide, IPF), as a worldwide phenomenon, cannot be explained in a simple way. From an ecological point of view, there are individual factors contemplated. In the current studies, we consider personality as an individual factor to clarify what differentiates a non-lethal IPVAW situation from a femicide. Study 1 was designed to investigate the accuracy with which trained interviewers judged the personality of a group of IPVAW perpetrators during an interview. The target sample of study 1 was composed of 293 males who after being interviewed completed a measure of personality assessing the “Big Three” model of personality. The interviewers performed fairly accurate judgements about the personality of the target participants. Study 2 shows the differences in personality, using Eysenck’s personality model, between the IPF and IPVAW perpetrators and their victims. The total sample study 2 was formed of 551 participants distributed among IPF perpetrators, IPVAW perpetrators, and the victims of both groups. Differences in proportions were observed between both groups of perpetrators as well as between each group and their respective victims. With these findings, we propose personality as a femicide risk factor that should be taken into consideration by police officers and other practitioners when receiving an IPVAW report.

Keywords Personality · Neuroticism · Extraversion · Psychoticism · Intimate partner violence against women · Intimate partner femicide

Introduction

Intimate partner violence against women (IPVAW) is a common type of violence, even considered recently as a public health problem (Organización Mundial de la Salud

[OMS], 2013). Inside this frame, violence against women is described by the United Nations (1993, p.2) as “any act of gender-based violence that results in, or is likely to result in, physical, sexual, or mental harm or suffering to women, including threats of such acts, coercion or arbitrary deprivation of liberty, whether occurring in public or in private life”. Prior research on batterer typologies has provided

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insights into the heterogeneous nature of IPVAW and, thus, into the possibility of providing more accurate population-based interventions, risk management procedures, and police and judicial measures, based on the characteristics of the offenders (González-Álvarez et al., 2021).

IPVAW, even though considered a different phenomenon from intimate partner femicide (IPF), can eventually finish with the death of the female partner (Pineda, Galán et al., 2023). In the Spanish context, it is alarming to note that approximately 15% of women have experienced some form of physical or sexual violence, with approximately 30% reporting incidents of psychological violence. However, a stark reality emerges when examining homicide statistics. Less than 20% of overall homicide victims are women, but within this percentage, over half of them fell victim to their partner, former partner, or another relative (United Nations Office on Drugs and Crime, 2019). This underscores the deeply concerning prevalence of intimate partner violence. Kivisto (2015) sheds further light on this issue, revealing that women are six times more likely to be victims of homicide than men. Specifically, within the Spanish context, 51% of all femicides in Spain were perpetrated by their partner or former partner.

Following the ecological perspective developed by various authors, IPVAW would appear as a result of aggregated risk factors organized in multiple levels (Heise, 1998; Krug et al., 2002). A risk factor is understood as any aspect that correlates with a possible result without the necessity of a direct cause-effect relationship, just increasing the likelihood of occurrence (López-Ossorio et al., 2017). Opposite to risk factors, protective factors take place. These are the ones that make the likelihood of occurrence decrease, for example, the distance between victim and perpetrator (Bonta & Andrews, 2016). Inside this classification, furthermore, we can distinguish between static and dynamic factors, where statics are those developed from the own history of the person and thus unchangeable and dynamics are those that are susceptible to change over time such as a personal situation or couple's affective state (Bonta & Andrews, 2016).

To unravel the complexity of IPVAW, López-Ossorio et al. (2017) delineated four distinct risk levels. These encompass individual factors, including personal experiences during childhood, health issues, substance abuse, and exposure to violence. Moving to the family level, it includes aspects such as traditional upbringing, diminished marital satisfaction, and lower educational attainment. Expanding further, the community level introduces elements such as the normalization of violence and the absence of institutions addressing IPV. Finally, at the societal level, gender-related factors come into play, encompassing traditional associations between masculinity and violence, as well as the unequal societal position of women (López-Ossorio et al., 2018). Considering IPF, certain specific risk indicators have also been located differently from those identified

for IPVAW (Cunha & Goncalves, 2016; Pineda, Galán et al., 2023). Some of the variables that differ are related to economic or work-related problems, psychopathology, or the existence of other different stressors in the perpetrator as being in the process of separation from the victim (López-Ossorio et al., 2021; Pineda, Galán et al., 2023).

Delving specifically into individual factors, one of the most contemplated aspects at this level is the personality, understood as the individual set of characteristics observable in different patterns of feelings, behaviours, and thoughts (Cervone & Lawrence, 2018; Goldberg, 1993). One of the original and thus largely studied models of personality is the PEN model (Eysenck & Eysenck, 1975). This model, understood from a dimensional perspective, is based on three main traits: psychoticism as opposed to “normality”, extraversion in the opposite pole to introversion, and neuroticism in relation to emotional stability (Eysenck & Eysenck, 1985). Psychoticism, as the most antisocial of the three traits, is characterized by a lack of empathy, aggressiveness, and contravening stipulated social norms. Extraversion describes a pattern of personality with a tendency to interact with other people and exteriorise their feelings. The last one, neuroticism, reflects a personality with high levels of stress, affectivity, and a negative approach to life (Eysenck & Eysenck, 1968, 1975).

There is previous literature linking IPVAW with different models of personality. For example, Pineda et al. (2021) found that those people who perpetrated more virtual abusive behaviours towards their partners tend to present higher scores in traits like subclinical psychopathy or everyday sadism. Another example is the research conducted by Ulloa et al. (2016) who mentioned that traits like openness, extraversion, and neuroticism were connected with these types of behaviors. The investigation has extended its focus beyond the perpetrators to include an examination of the victims in the context of IPVAW from a dyadic approach (e.g. Juarros-Basterretxea et al., 2022). Within the context of personality, prior research has shown that some traits (such as neuroticism or sadism) can function as risk and protective factors for both actors, victims, and perpetrators (Juarros-Basterretxea et al., 2022; Pineda, Martínez-Martínez et al., 2023).

However, there is just one pilot investigation using the PEN model of personality. This pilot investigation conducted using just one part of the sample suggests that IPF perpetrators presented high scores in psychoticism, low in extraversion, and high in neuroticism, while their victims tended to present low scores in psychoticism, high in extraversion, and low in neuroticism (García-Barceló et al., 2018). Notwithstanding, there is extensive literature that links the PEN model of personality and criminality (e.g. Dunlop et al., 2012; Eysenck et al., 1977). This previous research reflects that the psychoticism trait is the most related personality factor of this model to different antisocial

and criminal outcomes. However, other investigations have shown that also high levels of extraversion and neuroticism can be related to different criminal typologies (Levine & Jackson, 2004; Naqvi & Kamal, 2013; van Dam et al., 2007). Furthermore, research within other personality models also highlights the significance of the neuroticism or emotional stability factor in relation to these outcomes (Dunlop et al., 2012; Sánchez-Teruel & Robles-Bello, 2013).

Since, from this ecological perspective, personality is considered an IPVAV risk factor, its assessment should be considered (Ulloa et al., 2016). There are several ways to assess personality, which could be broadly summarized in direct and indirect personality assessment methods (Mischel, 1972). Direct personality assessment tends to be considered the gold standard in the evaluation of personality since it implies the use of standardized, validated questionnaires that offer an objective and evaluator-independent score. In this style of evaluation, the assessed people know that they have been evaluated (Kyllonen & Kell, 2018). An example of these questionnaires is the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975), which measures the previously described traits of the PEN model. Furthermore, as mentioned before, personality can also be measured indirectly by not using standardized tools but by observing, obtaining information, and analyzing cues about the different target traits of the assessed person (Ault, 2017).

Indirect personality assessment as the ability to accurately identify other people's personality profiles is part of a broader construct named interpersonal accuracy (Hall et al., 2016). It is called indirect because it does not necessarily need the collaboration of the target person to perform it (González-Álvarez et al., 2015; Sotoca et al., 2019). This assessment strategy employs various techniques, such as conducting open interviews with the subject or their acquaintances and observing their actions and behaviours. These methods are used to comprehensively analyze all available information about the subject and develop a profile or ascertain some of their key traits (Ault, 2017; Muñoz-Espinosa & Santos-Hermoso, 2020).

Indirect personality assessment methods are well established and serve as invaluable, if not essential, tools in several contexts (Allik et al., 2016). For instance, they prove highly beneficial in criminal investigations, aiding in interviews, suspect interrogations to gather additional information, during negotiations, or even in predicting potential behaviours of individuals (Ault, 2017; Muñoz-Espinosa & Santos-Hermoso, 2020). One main context in which indirect assessment is necessary is when the assessed person has deceased (i.e. the psychological autopsy) (Aquila et al., 2018). A psychological autopsy is a methodological approach used in forensic psychology that seeks to reconstruct or obtain information about different psychological variables of an individual who has died (e.g. emotional

states, personality traits). This investigative technique involves a comprehensive examination of various sources of information, including medical records, personal documents, and interviews with family and friends, among others (Isometsä, 2001).

However, an important drawback of personality assessment using indirect tools is that it might vary from one perceiver to another. Theoretical models such as the lens model and a variant of it, the realistic accuracy model, have been developed to explain why perceivers are or are not accurate (Funder, 2012; Karelaia & Hogarth, 2008). The basis of these models relies on the idea that there are different, observable, and valid personality cues (e.g. an extravert person tends to be more talkative and expressive, or a neurotic might express some degree of frustration or use negative self-references) that the perceiver should detect and use them to make an accurate judge (Back & Nestler, 2016; Eysenck & Eysenck, 1975; Nestler & Back, 2013). Thus, it is important to identify the variables that result in an accurate judgement of someone's personality to control them (Back & Nestler, 2016).

In this line, personality research has identified some moderators that influence the accuracy of the judgements, which are named: "good trait", traits that are more observable than others (Connelly & Ones, 2010); "good information", the more information, the better (Letzring & Human, 2014); "good judge", where it has been suggested that people with a background in behavioural sciences and better emotion recognition might be better in this task (Ault, 2017; Back & Nestler, 2016); "good target" which refers to those people who are more expressive and generate more valid cues (Biesanz, 2010; Human et al., 2014); and its interactions (Funder, 2012).

The Present Study

The present study seeks to explore the differences in personality between lethal IPVAV perpetrators and non-lethal ones to deeply understand this risk factor at an individual level what makes someone commit homicide or aggression. Also, understanding IPVAV from a dyadic approach (Leone et al., 2016; Sommer et al., 2017), we aim to explore the differences between these perpetrator personalities and their victims and between both groups of victims as has been done in previous studies with other different characteristics of these populations (e.g., Pineda, Galán, et al., 2023; Pineda, Rico-Bordera, et al., 2023). Furthermore, due to its usefulness in this applied field, we aim to add research to the interpersonal accuracy field, by testing the accuracy of trained judges in assessing personality indirectly in non-laboratory conditions.

With the purpose of addressing the stated objectives, and based on the previous literature, we formulated the following hypothesis (*H*):

H1. The interviewers will perform accurate judgements of the target's personality.

H2. Attending to personality, lethal perpetrators will present higher scores in psychoticism and neuroticism, while non-lethal perpetrators will display higher scores in extraversion, compared to each other. Also, they will show differences in these traits with their victims.

Study 1

Study 1 was specifically designed to evaluate whether the trained interviewers were or were not accurate in assessing victims' and perpetrators' personalities. It was performed to provide a methodological basis for the personality assessment procedure in study 2.

Method

The present study is part of a research project carried out by the national team for the detailed review of intimate partner homicides against women coordinated by the Secretary of State for Security of the Ministry of the Interior (see González et al., 2018) and carried out between 2015 and 2021. To carry out this project, the mentioned team counted on the collaboration of three other government agencies at the national level in Spain, the General Prosecutor's Office for Violence against Women, the General Council of the Judiciary and the Government Delegation against Gender Violence, and the State Security Forces and Corps, and the penitentiary institutions of 28 provinces in Spain, 21 Spanish universities, and 3 scientific institutions (González-Álvarez et al., 2023).

Participants

Judges The judges of this study were master's degree students in forensic psychology and forensic criminology.

Targets Two hundred ninety-three convicted for gender-based violence served as the targets for this study. The age of the participants ranged between 18 and 85 years ($M = 42.01$, $SD = 13.90$). Of them, 75.4% were Spanish, and all of them were male. Participants did not receive any benefits for participating in the study.

The target participants were recruited using stratified sampling from Spanish police records, consulting the VioGen system (González Álvarez et al., 2018), and after selecting the specific participants randomly. The selection criteria were involved in an IPVAV sentence either lethal or

non-lethal. The participants included in this study were the non-lethal perpetrators.

Measures

The indirect assessment of personality was completed by filling out an ad hoc *personality checklist* based on the PEN model of personality (Eysenck & Eysenck, 1968, 1975). The judges had to choose in the three supertraits whether the participant displayed a high or a low level of each of them. Also, the option "not known" was available, to avoid forcing a random choice.

As a direct tool for assessing personality, the *abbreviated form of the Revised Eysenck Personality Questionnaire* (EPQR-A; Francis et al., 1992) was used, which is based on the original EPQ (Eysenck & Eysenck, 1975). The version applied in this study was the Spanish adaptation of the EPQR-A (Sandín et al., 2002). It is composed of 24 items and 4 subscales, with a yes/no type of answer. The reliability coefficients (α) in the original Spanish sample for neuroticism and extraversion were 0.78 and 0.74, respectively. Not so good alpha coefficients for the other two scales are as follows: 0.63 for psychoticism and 0.54 for honesty (Sandín et al., 2002).

Procedure

The judges who were previously trained to detect valid cues related to the PEN model of personality (for more information, see Muñoz-Espinosa & Santos Hermoso, 2020) conducted a semi-structured interview based on the "manual of action for the review of gender-based homicides of the national team for the detailed review of gender-based homicides" (González et al., 2018) with the target perpetrator. All the interviews were performed by two judges, one leading the interview and the other one listening. The judges had to retrieve exhaustive information about the perpetrator's lifestyle before the crime and about the day of the conflict for which the first complaint was made. During the interview, of approximately 2 h, the judges had to decide if the targets showed high or low levels of the PEN traits. Each target participant was assessed by two psychologists (the judges) who independently made an indirect assessment of their personality traits and decided together which option to select in the checklist by consensus (Asua, 2006). When the interview was finished, the target participants completed the EPQR-A. The answers offered by the target participant to the EPQR-A were not corrected by the judges with the objective of not biasing their indirect personality judgements.

Data Analyses

To study the agreement between the judgements' assessment of personality and the EPQR-A scores, bivariate correlations were used. Descriptive statistics and bivariate correlations were obtained using SPSS version 23. To ensure the accuracy of the correlations of interest, corrections were applied to account for measurement error attenuation (Carroll et al., 2006). Following Cohen's suggestion, we assume that small effect size r coefficients are larger than 0.10, medium between 0.30 and 0.50, and large over 0.50 (Cohen, 1988).

Results

Table 1 shows the correlations between the interviewer's personality judgement and the scores obtained by the target participants in the EPQR-A. Large and medium correlations were found for the extraversion and neuroticism traits, respectively, while a small correlation was found for the psychoticism variable. Small but significant correlations were also observed between the sincere scale and the psychoticism ones.

Correcting the observed relationships for measurement error due to attenuation, we obtain higher correlations between the interviewers' judgements and the EPQR-A results for the three traits: neuroticism ($r = 0.46, p < 0.01$), extraversion ($r = 0.23, p < 0.05$), and psychoticism ($r = 0.23, p < 0.01$).

Study 1 Discussion

The main objective of this study was to offer a methodological baseline for study two by testing the accuracy of the interviewers in assessing personality. The results obtained partially confirmed the *H1* showing that interviewers made accurate judgements about the personality of the target participants, offering a substantial baseline for study 2. The "good trait" moderator is clearly observable in our results (Funder, 2012). In this study, our interviewers were more accurate in retrieving cues of the more easily observable traits, thus making more

accurate predictions in extraversion and not so accurate in psychoticism (Connelly & Ones, 2010). Furthermore, the difficulties or the differences in the assessment of psychoticism, against the other traits, might be explained by the sincerity levels of the participants: those who are more sincere might be more prone to reveal or show behaviours that can be considered less socially desirable, making this trait more difficult to recognize in insincere individuals (Galán et al., 2023).

At this point, it is also important to remark that these differences between the direct and the indirect assessment of personality could be also explained by the self-other knowledge asymmetry (SOKA) model. This model proposed by Vazire et al.'s (2010) claims that there are some aspects of one's personality which are better known by other people; meanwhile, others should be recognized in a superior way by oneself, leading to judgement discrepancies (Neubauer et al., 2018). For example, literature about the personality traits developed based on the SOKA model has shown that there is a tendency to obtain higher levels of agreement in the more visible traits such as extraversion (Lee & Ashton, 2017).

Notwithstanding, the study shows that generally, the interviewers were able to retrieve more valid cues—"good information"—the easier the traits were (i.e. extraversion), while the judgements made over those traits with more difficult cues to retrieve (i.e. psychoticism) have to be considered with caution (Letzring & Human, 2014). However, it is also worth mentioning that the psychoticism trait collects a wide variety of behaviours and tendencies making it harder to conceptualize and measure in self-report scales (attending to its internal consistency values) (Cale, 2006; Sandín et al., 2002).

Furthermore, albeit the research about who is a "good judge" is not very consistent, our results suggest that at least those who have a bachelor's graduate degree (in psychology or criminology) and are trained for retrieving cues emit judgements that tend to correlate with the results found in self-report measures—the gold standard in personality assessment (Ault, 2017; Back & Nestler, 2016).

Table 1 Bivariate correlations between the types of personality assessment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Neuroticism (judges)	1						
(2) Extraversion (judges)	−0.13*	1					
(3) Psychoticism (judges)	0.25**	−0.11	1				
(4) Neuroticism (EPQR-A)	0.41**	−0.02	0.13	1			
(5) Extraversion (EPQR-A)	−0.09	0.55**	−0.11	−0.19*	1		
(6) Psychoticism (EPQR-A)	0.08	−0.01	0.23**	0.13	−0.18*	1	
(7) Sincerity (EPQR-A)	0.07	−0.15	0.18*	0.18*	0.30*	0.25*	1

* $p < 0.05$, ** $p < 0.01$

Study 2

The main purpose of study 2 is to investigate the differences or similarities in personality between IPF perpetrators and non-lethal IPVAW perpetrators and to explore these same variables in the victims. In like manner, we pursue to observe the differences in personality between the perpetrators and their victims.

Method

This second study is also part of the research project carried out by the national team for the detailed review of intimate partner homicides against women coordinated by the Secretary of State for Security of the Ministry of the Interior mentioned and described in study 1.

Participants

Participants were recruited following the same procedure as the target participants in study 1. The total sample of study 2 was formed by $N = 551$ participants divided into four groups. On the one hand, from the IPF group, we obtained a subsample of $n = 169$ perpetrators with an average age of 46.17 ($SD = 14.63$) and a subsample of $n = 165$ deathly victims with an average age of 41.87 ($SD = 14.62$). From this IPF subsample, 71.9% of the perpetrators and 68.4% of the victims were Spanish. The selection of these participants was made following the quota sampling method based on the percentages of convicted femicides in Spain (González-Álvarez et al., 2019). On the other hand, the group of non-lethal perpetrators was composed of $n = 110$ and some of their victims $n = 107$. This sample of non-lethal perpetrators was composed of 80.9% Spanish participants with an average age of 35.96 ($SD = 10.82$). And their victims were 83.6% from Spain, with an average age of 32.97 ($SD = 10.34$).

Measures

As in study 1, the indirect assessment of personality was completed by filling an ad hoc *personality checklist* based

on the PEN model of personality. The interviewers had to choose between “high”, “low”, or “not known” to fulfil the answer.

Procedure

The procedure followed in study 2 was similar to study 1, where all the alive participants answered the same semi-structured interview. In those cases, concerning lethal victims and perpetrators who committed suicide (25%), the method to assess their personalities was the psychological autopsy (defined in the introduction). In this case, besides the collection of all the available information from the police records, interviews were conducted with at least five relatives or close friends of the deceased. These interviews aimed to gather accurate insights into the victim's personality, mirroring the information collected from living participants. This comprehensive approach ensures a thorough understanding of the victim's personality within the context of the psychological autopsy.

Data Analyses

Data analyses for descriptive statistics and group differences were conducted with SPSS, version 23. Group differences were compared using chi-square tests. The significance level was corrected using the Bonferroni correction to account for an amplified alpha, which is the result of dividing the α (0.05) by the number of analyses performed (20); hence, a significant effect was considered if $p < 0.0025$.

Results

First, Table 2 compares the personality, between the IPF perpetrators group and the non-lethal IPVAW perpetrators group. Significant differences ($p < 0.0025$, Bonferroni fit) in the proportions are displayed in all the variables. The highest difference between IPF perpetrators and IPVAW perpetrators was found in the psychoticism trait with a higher proportion of IPF perpetrators (75.6%) presenting high scores on this trait compared to the IPVAW group (42.2%).

Table 2 Frequencies and chi-square results for personality and substance consumption in the perpetrators

		IPF perpetrator		IPVAW perpetrator		χ^2 (1)
		<i>n</i>	%	<i>n</i>	%	
Neuroticism	Low	41	25.5	52	47.3	13.79*
	High	120	74.5	58	52.7	
Extraversion	Low	94	58	36	33	16.31*
	High	68	42	73	67	
Psychoticism	Low	39	24.4	63	57.8	30.77*
	High	121	75.6	46	42.2	

* $p < 0.0025$ (Bonferroni fit)

Table 3 shows the comparison between the IPF victims group and the non-lethal IPVAW victims group. There were no significant differences in any of the traits compared.

When comparing the IPF perpetrators with their victims (Table 4), significant differences are observed in all the personality traits ($p < 0.0025$). With bigger differences in the psychoticism ($\chi^2_{(1)} = 98.35, p < 0.0025$) and extraversion traits ($\chi^2_{(1)} = 41.18, p < 0.0025$). In the case of the extraversion trait, the proportion of victims rated as high in this trait (77.2%) was bigger than the proportion of perpetrators rated in the same way (42.0%).

The proportions in the psychoticism trait ($\chi^2_{(1)} = 18.73, p < 0.0025$) were higher for the non-lethal IPVAW perpetrators (42.2%) compared to their victims (11.6%) (Table 5).

Study 2 Discussion

The main objective of study 2 was to investigate the differences in personality between lethal and non-lethal IPVAW perpetrators and their victims, being the last objective to establish differentiated patterns that reflect the personality profiles of the perpetrators and their victims.

Starting with the differences in the personality profiles, we have found several differences in the three traits between the studied groups. First, supporting $H2$, lethal perpetrators present higher levels of neuroticism and psychoticism traits than non-lethal ones. These findings were expected since personalities with high levels of neuroticism tend to present elevated levels of anxiety, be worried, and have difficulties coping with emotions. Furthermore, the psychoticism trait is conceived as the most antisocial of the three traits, related to aggressiveness

Table 3 Frequencies and chi-square results for personality and substance consumption in the victims

		IPF victim		IPVAW victim		$\chi^2 (1)$
		<i>n</i>	%	<i>n</i>	%	
Neuroticism	Low	77	49	26	37.7	2.50
	High	80	51	43	62.3	
Extraversion	Low	36	22.8	26	37.7	5.37
	High	122	77.2	43	62.3	
Psychoticism	Low	125	80.1	61	88.4	2.29
	High	31	19.9	8	11.6	

* $p < 0.0025$ (Bonferroni fit)

Table 4 Frequencies and chi-square results for personality and substance consumption in the lethal IPVAW group

		IPF perpetrator		IPF victim		$\chi^2 (1)$
		<i>n</i>	%	<i>n</i>	%	
Neuroticism	Low	41	25.5	77	49	18.94*
	High	120	74.5	80	51	
Extraversion	Low	94	58	36	22.8	41.18*
	High	68	42	122	77.2	
Psychoticism	Low	39	24.4	125	80.1	98.35*
	High	121	75.6	31	19.9	

* $p < 0.0025$ (Bonferroni fit)

Table 5 Frequencies and chi-square results for personality and substance consumption in the non-lethal IPVAW group

		IPVAW perpetrator		IPVAW victim		$\chi^2 (1)$
		<i>n</i>	%	<i>n</i>	%	
Neuroticism	Low	52	47.3	26	37.7	1.59
	High	58	52.7	43	62.3	
Extraversion	Low	36	33	26	37.7	0.40
	High	73	67	43	62.3	
Psychoticism	Low	63	57.8	61	88.4	18.73*
	High	46	42.2	8	11.6	

* $p < 0.0025$ (Bonferroni fit)

or lack of empathy (Eysenck & Eysenck, 1968, 1985). Finally, also in accordance with *H2*, regarding the extraversion trait, the non-lethal IPVAW group is the one displaying higher levels. And no differences were found between the victims.

Attending to the differences in personality inside the couples, for the non-lethal IPVAW participants, our results show similar levels in the proportions of the evaluated traits excluding psychoticism where the perpetrators present higher scores. On the contrary, the proportions displayed in the IPF couples showed differences between the three traits. In this case, the perpetrator group showed higher proportions of high scores in psychoticism and neuroticism while smaller in extraversion compared to their victims. Again, as expected, those traits more related to antisocial behaviour and emotional instability appear more frequently in the perpetrators than in the victims (Davoren et al., 2017; Eysenck & Eysenck, 1968; Galán et al., 2023).

General Discussion

The main objective of the current investigation was to explore the differences in personality among lethal and non-lethal IPVAW perpetrators and victims. Furthermore, we aimed to show how trained interviewers were able to make accurate judgements about others' personality, because in applied environments, the direct assessment of the personality is not usually possible, especially when there are dead persons involved. In this regard, our results showed that the interviewers provided sufficiently accurate personality assessments.

Attending to the differences in personality between groups, the lethal perpetrators tend to present higher levels in the psychoticism and neuroticism dimensions while lower levels in extraversion, compared to the non-lethal group of perpetrators. The lethal perpetrators tend to show higher levels of anxiety and an odd or bizarre way of acting and thinking (Eysenck & Eysenck, 1985). These findings are convergent with previous literature stating that those disorders related to an anxious way of behaving and thinking and those characterized by eccentric behaviour tend to be more related to this type of lethal perpetrators (Liem & Koenraadt, 2008). Regarding the extraversion personality dimension, as asserted, the IPF group displays lower levels. As explained by López et al. (2016; p.11), "When a high score in neuroticism is combined with a low score in extraversion, the person tends to be very anxious, worried, pessimistic, negative, with low self-esteem and with a tendency to depression". This definition presents some characteristics associated with personality disorders such as paranoid, avoidant, or obsessive-compulsive, disorders that tend to be related to lethal IPVAW perpetrators (Belgrave & Rying, 2004; Liem & Koenraadt, 2008).

Additionally, by combining these results, we obtain a personality pattern for the lethal IPF perpetrators characterized by high neuroticism, high psychoticism, and low extraversion, related to the "stress-accumulator" personality type (Eysenck & Eysenck, 1985; Gray, 1970). However, this does not imply that non-lethal IPVAW perpetrators cannot display similar patterns of personality too (Loinaz et al., 2018).

Attending to the differences in personality between perpetrators and victims, the perpetrators tend to present higher scores on the psychoticism scale than their victims. This finding, again, is convergent to the nature of psychoticism as the most antisocial trait described by Eysenck and Eysenck (1968), which presents important correlations with psychopathy as a trait, defining the perpetrators as more violent, impulsive, and less empathetic than their victims (Galán et al., 2023).

Contrasting the IPF victims with the non-lethal ones, there were no significant differences in any of the personality dimensions convergent with Ulloa et al. (2016) findings. Considering, as stated before that the personality differences are bigger between the perpetrators than between the victims of the different groups, the personality pattern of the perpetrator should be understood as a risk factor for IPF and considered by practitioners at the moment they receive an IPVAW report to extreme their precautions.

Limitations and Conclusions

The first limitation affects study 2. The objectivity of the method used for personality assessment, indirect profiling, can be affected by many risks or biases such as cultural or political differences, prejudices, or other personal variables (Back & Nestler, 2016; Meloy, 2004). To overcome this limitation, study 1 was performed, showing that the interviewers were able to perform accurate judgements. However, since the main objective of the present study was to assess the perpetrator's and victims' personalities, no information was recorded on how to better retrieve these observational cues, which we consider a very interesting area of investigation in personality assessment. In addition, with regard to study 1, the nature of the sample prevented the inclusion of a control group for assessing whether accurate judgements were influenced or biased by interviewers' backgrounds, training effects, or other variables, such as the timing of the completion of the EPQR-A questionnaire, which consistently occurred after the interviews (Funder, 2012; Karelaia & Hogarth, 2008).

A second limitation is related to the correlational methods. Since the groups, although similar, were not matched attending to different sociodemographic variables, thus the personality differences might have been affected by variables like the number of stressors at the time of the events,

lack of support from the perpetrator, or other variables that differentiate these groups (for more information about these differences, see Pineda, Galán, et al., 2023; Pineda, Rico-Bordera, et al., 2023).

A third limitation pertains to the group of IPF victims and the constraint of assessing them solely through the psychological autopsy method. While this approach is reliable, a more comprehensive evaluation is always preferable, ideally employing various direct and indirect methodologies. This becomes particularly important, especially when the bulk of the information about the deceased individuals is derived from external third-party perspectives (Aquila et al., 2018; Isometsä, 2001).

Finally, attending to the representativeness of the sample, since the participants were not receiving any compensation for taking part in the study, some of the randomly contacted participants denied participating. In those cases, a new couple was randomly selected attending to the Spanish foreigners proportions mentioned.

In conclusion, we have provided information for police officers and other practitioners the moment they receive an IPVAW report to extreme their precautions based on the personality of the perpetrators. In this sense, IPF perpetrators tend to be less emotionally stable (i.e. high neuroticism), with a lower interest in having social interactions with other people or more interested in their own thoughts and feelings (i.e. low extraversion) while also presenting a tendency towards bizarrely, as well as being more aggressive or less empathic (i.e. high psychoticism). These findings can also help practitioners in developing more specific reinsertion programs attending to the specific population differences found in these groups mainly focusing on controlling the behaviours related to the psychoticism trait (Costa & McCrae, 1994). Furthermore, we have found that personality typology in all victims and the non-lethal IPV perpetrators is more diffuse than in the IPF group. However, the victims tend to appear as more extroverted, more emotionally stable, and with lower scores in psychoticism compared with the IPF perpetrators.

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Data Availability The data that support the findings of this study are openly available in osf.io at <https://doi.org/10.17605/OSF.IO/VM9XC>.

Declarations

Ethics Approval The study was approved by the Autonomous University of Madrid Ethics Committee under the reference number CEI-

108–2102 and was in accordance with the guidelines of the World Medical Association and the Declaration of Helsinki.

Consent to Participate All participants filled out informed consent before participating in the study. And furthermore, all the interviewers signed a confidentiality agreement before being involved in the project.

Competing Interest The authors declare no competing interests.

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Anexo 6

Estudio 6

Dark childhood, dark personality: Relations between experiences of child abuse and dark tetrad traits

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Dark childhood, dark personality: Relations between experiences of child abuse and dark tetrad traits[☆]

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ABSTRACT

Extensive literature connects the Dark personality traits—narcissism, Machiavellianism, psychopathy, and sadism—with antisocial behaviours, but less is known about the origins of these traits. This study examines the relations between childhood abuse and Dark Tetrad traits. A cross-sectional retrospective research design was used involving a sample of 372 non-clinical adult participants who completed self-report measures assessing non-violent and violent parental discipline tactics and the Dark Tetrad traits. Correlations showed that all parental discipline tactics were positively related to Dark Tetrad traits. Regression analyses revealed that psychological aggression uniquely and positively predicted psychopathy and sadism, while severe assault emerged as a unique positive predictor of Machiavellianism, narcissism, and psychopathy. Nonviolent discipline and corporal punishment or minor assault did not make a significant contribution to any of the dark traits. In conclusion, these findings suggest a modest but significant role of an adverse childhood environment in shaping dark personality traits.

1. Introduction

There is extensive literature linking adverse childhood experiences to antisocial tendencies in adulthood (Basto-Pereira et al., 2022). Despite the considerable amount of research, the underlying mechanisms of this connection remain a topic of ongoing study. Much of this research focuses on the mediating role of personality in the relationship between negative childhood experiences and antisocial behaviours displayed in the later, adult life (Liu et al., 2021; Plouffe et al., 2022).

Theoretically, the link between childhood adversity and antisocial behaviour in later life can be explained from various perspectives. For example, the behavioural perspective focuses on environmental influences and different learning pathways, emphasising the social learning theory in which individuals imitate the behaviours they observe from models in their surroundings, mainly their parents or other authority figures (Bandura, 1977). Meanwhile, the evolutionary perspective assumes that the development of behavioural patterns that might be more adaptive to the context in which the individual is

developing, suggesting that these behaviours may have evolved to help individuals cope with adverse circumstances (Kaplan & Gangestad, 2015). Typically, the context in which an infant develops is heavily influenced by their parents, who provide the primary conditions for socialisation (Del Giudice & Belsky, 2011).

Another point-of-view from the evolutionary perspective is provided by the life history theory, which postulates that young people who grow up in unpredictable and harsh conditions, or with inconsistent parenting styles tend to develop fast life strategies (Del Giudice & Belsky, 2011). These strategies are characterized by increased reproductive efforts, a focus on short-term relationships, and immediate survival, along with personality traits or behavioural tendencies such as reduced self-control, risk-taking, aggression, low future orientation, or opportunism. All these characteristics help individuals to adapt and survive in challenging environments, similar to those experienced during their childhood years (Csathó & Birka's, 2018).

Specifically addressing the personality characteristics related to antisocial outcomes, the Dark Tetrad traits of narcissism,

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Machiavellianism, psychopathy, and sadism also encompass the previously mentioned fast life strategies (Csathó & Birka's, 2018; Thomas & Egan, 2022). The vast majority of the literature concerning these four traits has aimed to examine how they relate to antisocial behavioural outcomes (e.g., Pineda et al., 2023). Considerably less research has focused on identifying which individuals are more prone to develop these traits and ultimately are at greater risk for engaging in antisocial behaviours (Nickisch et al., 2020; Plouffe et al., 2022). Genetic studies suggest a significant role of heritability in trait development. More precisely, moderate to large heritability coefficients have been found for psychopathy and narcissism, whereas in the case of Machiavellianism generally lower heritability coefficients have been reported (Vernon et al., 2008). As with other complex personality traits, genetics alone cannot fully explain the emergence of Dark Tetrad traits, and so there must be environmental influences contributing to their development.

For example, narcissism, briefly defined by a sense of self-importance and entitlement, may develop as a defense mechanism to protect a fragile self-esteem, particularly in response to emotional neglect or a lack of parental mirroring (Brummelman et al., 2015; Raskin & Terry, 1988). Parental overvaluation, excessive control, and lower-quality maternal care further contribute to fostering feelings of entitlement and an inflated sense of self-importance (Green, 1986; Jonason et al., 2014; Orth et al., 2024). This "self" constructed to secure admiration and validation, may help individuals cope with inadequacy, especially in competitive environments where the achievement of status or resources is critical (Green et al., 2020).

Machiavellianism, which is characterized by manipulative behaviours and a strategic focus on self-interest, on the other hand, may emerge as an adaptive response to unpredictable or unstable environments where manipulative and strategic behaviours can aid survival (Lang & L'ena'rd, 2015). While it shares some developmental antecedents with other dark traits, Machiavellianism's comparatively lower heritability (Vernon et al., 2008) underscores the central role of environmental influences. Early familial experiences, such as harsh or inconsistent parenting, seem to help shape the subtle and strategic nature of this trait, which, though less overtly antisocial, often results in impactful interpersonal outcomes (e.g., Lang & Birka's, 2014; Lang & L'ena'rd, 2015).

Psychopathy, generally typified by the characteristics of impulsivity, a lack of empathy, and tendency towards antisocial behaviours, seem to be tied to adverse childhood experiences. Studies have consistently shown its developmental precursors to be closely linked to childhood maltreatment, including emotional, physical, and sexual abuse, as well as neglect (de Ruiter et al., 2022; Todorov et al., 2023). These experiences may foster traits that facilitate immediate action and risk-taking, which could be advantageous in high-risk or hostile environments (de Ruiter et al., 2022).

Lastly, sadism, although less extensively studied than the other dark traits, appears to be influenced by environment-related factors such as avoidant attachment patterns, exposure to childhood intimate partner violence, and negative parenting styles (Nickisch et al., 2020; Plouffe et al., 2017). This trait, defined by deriving pleasure from others' suffering, may develop as a means of asserting dominance, protection, or control in harsh or abusive environments (Plouffe et al., 2017).

From an evolutionary perspective, these traits—though generally viewed negatively in stable societies—can be interpreted as adaptive responses to difficult or hostile environments, where survival and resource competition require specific behavioural strategies (Csathó & Birka's, 2018). At the same time, broader cultural and contextual influences, including peer relationships, social norms, and community factors, play a critical role in shaping these traits. These elements likely interact with early familial experiences, amplifying or mitigating their influence on personality development (Larsen & Buss, 2024; Oyserman et al., 2002). Such a multifaceted perspective highlights the importance of understanding how proximal and distal factors intersect to contribute to the emergence of Dark Tetrad traits.

relationships by assessing the discipline tactics used by parents. We

Building on this context, the present study aims to examine the associations between specific childhood experiences within the family environment, particularly non-violent and violent parental discipline tactics and the Dark Tetrad traits. By focusing on the proximal context of the family, we seek to deepen the understanding of how parental behaviours may relate to these traits. We hypothesize that violent or aggressive parental discipline tactics will be associated with the emergence of Dark Tetrad traits. Specifically, we aim to explore whether particular forms of aggression used as discipline tactics have unique relations to various Dark Tetrad traits. We anticipate that the most severe forms of physical aggression will be particularly linked to psychopathy and sadism, while psychological aggression may have a stronger influence on Machiavellianism. No specific hypotheses are made regarding the relationship between childhood abuse and narcissism, which was more of an exploratory nature.

2. Method

2.1. Participants and procedure

To determine the sample size, a power analysis was conducted using G*Power 3.1.9.4 (Faul et al., 2007). To detect an effect size of $f^2 = 0.15$ using multiple regression analyses with four predictor variables, with a power of 0.95 and an alpha of 0.05, the minimum proposed sample size was 129 participants. We obtained a considerable larger sample, consisting of 370 Spanish participants who had an average age of 36.57 years ($SD = 15.97$), ranging from 18 to 80 years. The majority of our sample was female (73.8 %). Most participants were undergraduate students (32.4 %), followed by graduates (26.5 %), those with a master degree (14.6 %), and individuals who completed vocational training (14.1 %). Participants were also asked to subjectively assess their socioeconomic level on a scale from 1 to 5 (very low to very high). Most rated themselves in the middle, opting for a 3 (61.7 %; $M = 3.02$, $SD = 0.67$).

This sample was recruited using a convenience sampling method. Participants were reached through social media networks such as Instagram, Facebook, and LinkedIn. They received some general information about the study and completed a survey containing several self-report measures (some not reported here). Although they were not compensated for completing the survey, they were promised feedback on their scores regarding the dark traits upon completion. The study was approved by the Ethics Committee of [information removed for anonymous review].

2.2. Instruments

2.2.1. Short dark triad (SD3; Jones & Paulhus, 2014)

The Spanish version of the SD3 was used (Pineda et al., 2020) to assess narcissism (e.g., "People see me as a natural leader"), Machiavellianism (e.g., "Most people can be manipulated"), and psychopathy (e.g., "People often say I'm out of control"). This scale is composed of 27 Likert-type items with response options ranging from 0 "totally disagree" to 4 "totally agree". For this sample, the internal consistency values were $\alpha = 0.63$ $\omega = 0.64$ for narcissism, $\alpha = 0.75$ $\omega = 0.76$ for Machiavellianism, and $\alpha = 0.63$ $\omega = 0.64$ for psychopathy.

2.2.2. Assessment of sadistic personality (ASP; Plouffe et al., 2017)

The Spanish version of the ASP was used to assess everyday sadism (Pineda et al., 2021). This instrument is composed of 9 items (e.g., "I think about hurting people who irritate me") which have to be answered on a 5-point Likert scale with anchors 0 "totally disagree" and 4 "totally agree". The internal consistency value for our sample was $\alpha = 0.83$ $\omega = 0.83$.

2.2.3. Parent-child conflict tactics scales (CTSPC; Straus et al., 1998)

The CTSPC is a scale designed to measure violence in parent-child relationships. The instruction of the scale, which run as follows: "Below you can find a list of things that might have happened to you

when you were a child. Estimate how often your parents did these things to you". To score the scale, we used the structure proposed by Cotter et al. (2018) which organises the 21 items that compose the questionnaire into four subscales: nonviolent discipline (e.g., "explained why something was wrong"), psychological aggression (e.g., "shouted", "yelled", or "screamed"), corporal punishment/minor assault (e.g., "spanked on the bottom with the hand"), and severe assault (e.g., "grabbed neck and choked"). All the items were rated in a 7-point Likert scale from 0 = "This never happened" to 7 = "More than 20 times". The internal consistency values in our sample were $\alpha = 0.60$ $\omega = 0.63$ for the non-violent discipline subscale, $\alpha = 0.80$ $\omega = 0.81$ for psychological aggression, $\alpha = 0.79$ $\omega = 0.79$ for corporal punishment/minor assault, and $\alpha = 0.80$ $\omega = 0.85$ for severe assault.

2.3. Data analysis

Jamovi (The Jamovi Project, 2023) was the statistical software used to perform all analyses: descriptive statistics, inferential analyses, and internal consistencies (Cronbach's alpha and McDonald's Omega). Inferential analyses included correlations and regression models. To explore the specific relationships between sociodemographic variables, parent-child conflict tactics, and the dark personality traits series of stepwise regression analyses were conducted. Sex and age were included in the first block of each regression model to control for their influence and ensure that the associations between parental behaviours and Dark Tetrad traits were not affected by these demographic factors. The subscales of the Parent-Child Conflict Tactics Scales were included in the second block as independent variables to assess their specific contributions to the prediction of each personality trait. Percentages of the total variance explained (sr^2) were calculated for each independent variable.

3. Results

Table 1 presents the correlations among parents' behaviour during conflicts and the Dark Tetrad traits. Significant positive correlations were observed between all types of parental conflict behaviour and the Dark Tetrad traits.

Table 2 presents the results of hierarchical and stepwise multiple regression analyses, examining the predictive power of various types of parental behaviour during conflicts on Dark Tetrad traits while controlling for gender and age. The findings revealed that parental behaviours, particularly severe assault and psychological aggression, significantly predicted the development of these traits. For narcissism, gender, age, and severe assault were significant predictors, with severe assault accounting for most of the explained variance. In the case of Machiavellianism, age emerged as the strongest predictor, followed by gender and severe assault, each making notable contributions. Psychopathy was significantly predicted by gender, age, and psychological

aggression, with gender having the strongest effect. Severe assault also contributed to predicting psychopathy, albeit to a lesser extent. Finally, sadism was strongly predicted by gender, with psychological aggression and age also explaining a significant proportion of the variance.

4. Discussion

This research aimed to examine the relationships between parental conflict tactics and Dark personality traits. The results showed that psychological aggression was related to psychopathy and sadism, while severe assault was uniquely associated to Machiavellianism, narcissism, and psychopathy. Nonviolent discipline and corporal punishment did not have a significant effect on any of the Dark Tetrad traits. Overall, these findings highlight a modest yet significant impact of adverse childhood environments on the development of Dark Tetrad traits. These findings support personality development models like Bronfenbrenner's ecological systems theory (Bronfenbrenner, 1979), which highlights the role of parent-child interactions in shaping individual development. They also contribute to life-course theories, suggesting that adverse childhood experiences are critical events that influence the trajectory of personality traits (Caspi et al., 2005; Kaplan & Gangestad, 2015).

For Machiavellianism, the current findings align with previous research highlighting the role of environmental factors in its development (e.g., Jonason et al., 2014; La'ng & Birka's, 2014). Specifically, Machiavellianism may arise as a coping mechanism for dealing with unpredictable, hostile parental behaviours, particularly severe violent tactics. The resulting cynical worldview and strategic manipulation help individuals navigate such environments by fostering distrust of others (L'ang & L'ena'rd, 2015), which can later influence their social and professional interactions. While psychological aggression was initially expected to have the strongest link to Machiavellianism, severe violence emerged as a more significant contributing factor.

While the influence of genetics appears to be higher for psychopathy (Vernon et al., 2008), our findings suggest that abusive or aggressive parental behaviours also play a substantial role in the emergence of psychopathic traits. Psychological aggression and severe assault were consistent predictors, indicating that harsh, abusive environments play a key role alongside genetic factors (Frazier et al., 2019). The severity of corporal punishment is linked to psychopathy, which may contribute to related traits to traits like callousness, low self-control, and impulsivity (Chapple et al., 2021; de Ruiter et al., 2022). These results suggest that while corporal punishment alone may foster manipulative behaviours, the added impact of psychological aggression may further enhance the emotional and behavioural traits characteristic of psychopathy (Rico-Bordera et al., 2025).

Although narcissism and sadism were less convincingly related to parental conflict tactics, some interesting findings were noted. Psychological aggression emerged as the strongest predictor for sadism. This developmental pathway, though less extensively studied, can be interpreted as a learning mechanism for exerting control over others. These

Table 1
Correlations among the parents' behaviour during conflict and the Dark Tetrad traits.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
CTSPC Nonviolent Discipline (1)							
CTSPC Psychological Aggression (2)	0.49**						
CTSPC Corporal Punishment/Minor Assault (3)	0.48**	0.67**					
CTSPC Severe Assault (4)	0.29**	0.60**	0.72**				
SD3 Narcissism (5)	0.13*	0.19**	0.18**	0.25**			
SD3 Machiavellianism (6)	0.19**	0.32**	0.18**	0.25**	40**		
SD3 Psychopathy (7)	0.17**	0.31**	0.23**	0.27**	0.40**	0.56**	
ASP Sadism (8)	0.15**	0.28**	0.17**	0.21**	0.29**	0.57**	0.69**

Note. $N = 372$, CTSPC = Parent-Child Conflict Tactics Scales, SD3 = Short Dark Triad, ASP = Assessment of Sadistic Personality.

* $p < .05$.

** $p < .01$.

Table 2

Hierarchical and stepwise multiple regression analysis: Predicting Dark Tetrad Traits based on parental behaviour during conflict.

Criterion Variable	Predictor Variable	R ²	ΔR ²	B	SE B	β	t	s _{r_{x,y}}	s ²
SD3 Narcissism	Gender	0.03	0.03	1.65	0.54	0.16	3.05**	0.16	2.56 %
	Age	0.04	0.01	-0.04	0.02	-0.15	-2.42*	-0.13	1.69 %
	CTSPC Severe Assault	0.08	0.05	0.16	0.04	0.23	4.46**	0.23	5.29 %
SD3 Machiavellianism	Age	0.12	0.12	-0.13	0.02	-0.35	-7.14**	-0.34	11.56 %
	Gender	0.19	0.07	3.48	0.61	0.27	5.70**	0.29	8.41 %
	CTSPC Severe Assault	0.23	0.04	0.16	0.41	0.18	3.86**	0.20	4.00 %
SD3 Psychopathy	Gender	0.13	0.13	3.82	0.52	0.36	7.35**	0.36	12.96 %
	Age	0.16	0.03	-0.05	0.01	-0.17	-3.53**	-0.18	3.24 %
	CTSPC Psychological Aggression	0.21	0.05	0.15	0.03	0.25	4.86**	0.25	6.25 %
	CTSPC Severe Assault	0.22	0.01	0.09	0.04	0.12	2.07*	0.11	1.21 %
ASP Sadism	Gender	0.10	0.10	3.72	0.57	0.32	6.53**	0.32	10.24 %
	Age	0.14	0.04	-0.06	0.02	-0.18	-3.75**	-0.19	3.61 %
	CTSPC Psychological Aggression	0.17	0.03	0.13	0.03	0.21	3.95**	0.20	4 %

Note. Predictors were entered stepwise. Gender: 1 = Female, 2 = Male. CTSPC = Parent-Child Conflict Tactics Scales, SD3 = Short Dark Triad, ASP = Assessment of Sadistic Personality.

* $p < .05$.

** $p < .01$.

individuals might internalize aggressive behaviours as a means of establishing dominance (Bandura, 1977; Plouffe et al., 2017). In contrast, narcissism was more strongly predicted by severe assault tactics experienced during childhood. This link, while not initially hypothesized, may be understood through the lens of developmental psychology. Severe physical aggression could undermine the child's sense of security and self-worth, leading to the development of narcissistic traits as a compensatory mechanism (Green et al., 2020).

Note that the influence of parental behaviours is not always straightforward and can extend beyond simple imitation. In some cases, individuals may actively reject or adopt opposing traits to assert their identity or cope with past experiences (Truhan et al., 2023; Yendell et al., 2022). This highlights the complexity of parental influence, where some children internalize these behaviours, while others distance themselves (Petrica & Panisoara, 2024; Seiffge-Krenke & Pakalniskiene, 2011). Practically, this emphasizes the importance of early detection and intervention for maladaptive parental tactics to prevent the development of Dark Tetrad traits. Mental health professionals could focus on identifying harmful dynamics and helping individuals develop healthier coping mechanisms. Future research could also explore how interventions—such as therapy, family-based approaches, or educational programs—might reduce the risk of these traits leading to antisocial behaviours in social or workplace settings.

4.1. Limitations

This study provides valuable insights into how parental conflict tactics relate to Dark Tetrad traits but is also subject to several limitations. First, it relies on retrospective self-reports, which may be influenced by recall biases and social desirability, potentially affecting the accuracy of the associations (Galán et al., 2023). Second, the cross-sectional design limits causal inferences, and longitudinal studies are needed to further clarify the role of parental conflict tactics and the development of Dark Tetrad traits over time (e.g., Chapple et al., 2021). The sample, predominantly composed of students due to the convenience sampling method that was used, may not be representative of the general population, so future research should include more diverse samples in terms of age, socioeconomic status, and cultural background. The study also relies on a single data source for both predictors and outcomes, so incorporating multiple informants could provide a more comprehensive perspective (Rico-Bordera et al., 2024). Additionally, while the study treats Dark Tetrad traits as unidimensional, future research could refine measures to capture the nuances of each trait and better differentiate overlapping constructs like sadism and psychopathy (Bonfá-Araujo et al., 2025; Welsh et al., 2024).

Finally, to further enrich the discussion, consider other factors such

as genetic predispositions, socio-cultural variables, and broader ecological factors integrating the findings of some specific experiences within the framework of other existing personality development and provide a more comprehensive understanding of the interplay between environmental influences and personality outcomes (L'ang & Birk'as, 2014; Vernon et al., 2008). Additionally, this study did not account for the potential moderating effects of age or the current environment at the time of completing the questionnaire, which may influence how individuals recall and relate to their childhood experiences (Bleidorn et al., 2022; Briley & Tucker-Drob, 2014). Furthermore, while this study focused on the impact of parental conflict tactics, it did not explore the subjective experiences of individuals, such as how they processed these experiences, their coping mechanisms, and the long-term impact on their identity. Future research could address these aspects to gain a more nuanced understanding of how repeated negative experiences shape one's sense of self and identity, as well as how these factors interact with the nature of the aggressors involved.

4.2. Conclusion

In conclusion, this study sheds light on how different parental conflict tactics shape the development of Dark Tetrad traits, revealing that harsher tactics, particularly severe violence, are significantly associated with higher levels of Machiavellianism, psychopathy, and sadism. Machiavellianism appears to be associated with being reared in hostile environments, where severe violence was used as a discipline tactic. Psychopathy is similarly related to severe assault, with psychological aggression identified as a key predictor in regression analyses. While the links to narcissism and sadism are less direct, being reared in an environment characterized by psychological aggression as a discipline tactic appears to be related to sadism, whereas severe assault shows a stronger relation to narcissism. These insights highlight the profound impact of early life adversities on personality development and underscore the importance of addressing these factors in preventive and therapeutic interventions.

CRediT authorship contribution statement

Manuel Galán: Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **David Pineda:** Writing – review & editing, Supervision, Resources, Project administration, Methodology, Investigation, Formal analysis, Conceptualization. **Pilar Rico-Bordera:** Writing – review & editing, Investigation, Formal analysis. **Jose A. Piqueras:** Writing – review & editing, Resources, Investigation. **Peter Muris:** Writing – review & editing, Supervision, Investigation, Formal analysis, Conceptualization.

Declaration of Generative AI and AI-assisted technologies in the writing process

During the preparation of this work the authors used chatGPT in order to improve the readability and clarity of the manuscript and to correct any minor grammatical issues. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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Declaration of competing interest

The authors report there are no competing interests to declare. The work is part of a dissertation.

Data availability

Materials and analysis code for this study are available by emailing the corresponding author (D.P.).

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Anexo 7

Estudio 7

**From Screens to Personality: Violent Pornography, Problematic Sexual Internet Use
and its Effects on Personality**

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**From Screens to Personality: Violent Pornography, Problematic Sexual
Internet Use and its Effects on Personality.**

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Abstract

The internet is central to modern life, but its problematic use poses challenges, including addiction-like behaviors and psychosocial issues. Problematic sexual internet use, particularly violent pornography consumption, is concerning for its potential to desensitize aggression and normalize antisocial behaviors. The Dark Tetrad traits—narcissism, Machiavellianism, psychopathy, and sadism—may both predispose individuals to and be reinforced by such content. This study explores the links between violent pornography, problematic internet use, and Dark Tetrad traits, focusing on their impact on personality development and antisocial tendencies. For this purpose, we used a total sample of 593 participants, predominantly female recruited via social networks through convenience sampling, who completed an online survey assessing problematic sexual internet use, Dark Tetrad traits, and violent pornography consumption. The results revealed significant associations between Dark Tetrad traits, problematic sexual internet use, and violent pornography consumption. Psychopathy and sadism exhibited the strongest relationships with problematic use, particularly in the dimensions of time spent and craving, as well as time spent consuming violent pornography. Structural equation modeling confirmed that time spent watching violent pornography mediated the relationship between problematic sexual internet use and Dark Tetrad traits, with psychopathy and sadism showing the most robust links. These findings underscore the strong connection between Dark Tetrad traits, particularly psychopathy and sadism, and

problematic sexual internet use, especially involving violent pornography. The findings suggest that such behaviors may reinforce attitudes and actions linked to these traits, potentially normalizing aggression and reducing other related traits.

Keywords: Problematic Internet Use; Dark Tetrad Traits; Violent Pornography Consumption; Antisocial Behaviors; Personality Development.



Introduction

The Internet is essential to contemporary society, enhancing education and facilitating rapid access to information (e.g., Gervasi et al., 2017). However, its problematic use poses a significant public health concern (Baggio et al., 2022). Problematic internet use is characterized by excessive online engagement leading to functional difficulties, such as depression, ADHD, and anxiety (Restrepo et al., 2020; Yen et al., 2007). Often likened to substance addiction, problematic internet use shares similar characteristics, including tolerance, salience, mood modification, withdrawal, conflict, and relapse (Griffiths, 2005).

Adolescents and young adults are particularly vulnerable to problematic internet use (Lim & Nam, 2020) driven by a strong need to remain connected (Peris et al., 2020) during a critical period of exploration and personality formation (Schimmenti et al., 2014). This stage of emerging adulthood is associated with a heightened risk of internet addiction (Ciarrochi et al., 2016). This problematic internet use can manifest in various forms, including excessive online gaming and gambling (Andreassen et al., 2016; McCormack et al., 2014). However other common manifestations might also include sexual-related activities such as cyber-pornography, or sexting among others (Blais-Lecours et al., 2016; Gómez-García et al., 2020). In this sense, research by Drouin and Miller (2016) supports a significant connection between internet addiction and risky online sexual behaviors, including offline sexual encounters and the sharing of explicit images with online contacts. Notwithstanding, online sexual behaviors are not inherently harmful and often involve harmless activities (Wéry et al., 2016). Nevertheless, these behaviors can become problematic for a subset of individuals and lead to serious consequences (Piqueras et al., 2024). In such cases, problematic sexual activities are characterized by excessive use, a lack of control, unsuccessful attempts to reduce or stop

use, withdrawal symptoms, increased tolerance, and negative outcomes (Wéry et al., 2016).

One of the most common and potentially addictive online sexual activities is the consumption of pornography (Hakkim et al., 2022). Excessive and uncontrolled use can result in physical adverse effects such as erectile dysfunction (Park et al., 2016) as well as psychosocial ones reflected in dissatisfaction for both males and females (Blais-Lecours et al., 2016). This excessive use has also been linked to psychological distress, although it remains unclear whether it causes the distress or if distressed individuals use it as a coping mechanism for negative emotions (Kraus et al., 2013). In addition to these internalizing outcomes, exposure to certain types of pornography, particularly violent content, may contribute to the development of attitudes affecting externalizing behaviors.

In this sense, violent pornography (i.e., sexually explicit material with aggressive themes) tends to have degrading and aggressive content (Wright et al., 2016). Such content can negatively influence expectations and behaviors in offline sexual encounters and relationships (Ferguson & Hartley, 2009). The more an individual consumes this type of content the more likely they are to activate related scripts in real-life contexts (Wright et al., 2016). This connection is further supported by evidence linking violent pornography consumption to the development of more permissive attitudes toward sexual aggression and coercion (e.g. Ybarra et al., 2011).

However, the relationship between pornography consumption and aggressive behaviors does not occur in isolation; it may also reflect individual predispositions (Galán et al., 2024). Specifically, the consumption of more unconventional and deviant forms of pornography (intercourse with minors, animals, or rape) is related to the personality traits of the Dark Tetrad (Muris et al 2020; Sindermann 2018; Burtaverde

2021). These traits may not only predispose individuals to seek out more extreme content but also play a critical role in shaping their attitudes and behaviors, particularly toward violence and aggression (Galán et al., 2024; Pineda, Martínez-Martínez, et al., 2023).

The dark tetrad comprises subclinical traits of narcissism, Machiavellianism, psychopathy, and sadism. Specifically, subclinical narcissism centers on entitlement and the tendency to take advantage of others for self-benefit (Krizan & Herlache, 2018; Thomas et al., 2008). Machiavellianism concerns domination, manipulation, a cynical worldview, and self-centered behaviors (Jones & Paulhus, 2011; Rauthmann & Will, 2011). Subclinical psychopathy is characterized by impulsivity, lack of empathy, manipulation, anti-social behavior, and emotional shallowness (Mefdedović & Petrović, 2016; Williams et al., 2003). Ultimately, subclinical sadism is known for the enjoyment of the suffering of others by actively or passively participating in sadistic behavior and causing others pain (Foulkes, 2019).

The vast majority of research on these personality traits has focused on their behavioral outcomes (e.g., Pineda et al., 2024; Rico-Bordera et al., 2023; Rico-Bordera et al., 2024); however, relatively few studies have explored the antecedents or behavioral patterns that may contribute to the development and enhancement of these traits (e.g., Galán et al., 2024; Plouffe et al., 2022). In this regard, evidence from the evolutionary perspective suggests that adverse childhood experiences, such as inconsistent parenting, abuse, and neglect, play a crucial role in fostering these traits. Notwithstanding, other environmental factors like harsh or unpredictable conditions may also promote these as adaptive responses, enabling individuals to navigate difficult or hostile environments (e.g., Jonason et al., 2014; Láng & Birkás, 2014).

In addition to environmental factors, learning mechanisms play a significant role in the development of these traits. From a behavioral perspective, individuals often learn and internalize antisocial behaviors through observation and imitation, particularly from influential figures such as parents, peers, or authority figures (Bandura, 1977). Exposure to aggressive or manipulative behaviors in one's environment can lead to the adoption of similar strategies as effective means of navigating social and interpersonal situations. Social learning theory suggests that repeated exposure to such behaviors reinforces these patterns over time, contributing to the enhancement of traits like Machiavellianism and psychopathy, which thrive in competitive or high-risk environments (Bandura, 1977; Láng & Lénárd, 2015). This process highlights how socialization experiences shape not only behavior but also personality development, making it critical to consider both environmental and learned influences when studying the emergence of the Dark Tetrad traits (Csathó & Birkás, 2018).

Similarly, the online environment, particularly through prolonged internet use and exposure to violent content, may play a crucial role in reinforcing these traits. A relevant factor in understanding this connection is the relationship between online time and heightened arousal (Muñoz-Rivas et al., 2010). This constant arousal from problematic sexual internet use can reduce sensitivity to social stimuli and disrupt health habits, leading to addictive behaviors such as craving and withdrawal, which negatively impact various aspects of personal and professional life (Gür et al., 2015; Muñoz-Rivas et al., 2010). Additionally, exposure to violent content online not only desensitizes individuals to aggression but also normalizes aggressive scenarios, diminishes empathy, and fosters permissive attitudes toward aggression (Anderson et al., 2010; Bartholow et al., 2006). This underscores the importance of examining how online environments, particularly the

consumption of violent pornography, influence the development and expression of dark personality traits in the context of problematic internet use (Jain et al., 2016).

Therefore, the primary objective of the present study is to investigate the relationships between violent pornography consumption, problematic internet use, and dark personality traits. Drawing on previous research (Basto-Pereira et al., 2022; Ferguson & Hartley, 2009; Huesmann & Kirwil, 2007; Kircaburun & Griffiths, 2018; Muris et al., 2020) we hypothesize that the levels of problematic sexual internet use and the consumption of violent pornography will exhibit a greater prevalence of dark personality traits, because of the desensitizing effects of violent content and the potential reinforcement of aggressive attitudes and behaviors associated with such consumption. More specifically, we predict that excessive exposure to violent pornography will be related to heightened subclinical characteristics of psychopathy and sadism. By exploring these relationships, this study aims to contribute to understanding how online environments shape personality development and influence antisocial behaviors.

Method

Participants and procedure

From a total sample of 593, 439 were women. A convenience sampling method was used to gain our sample by reaching out on social networks like LinkedIn, Facebook, and Instagram. The survey was conducted in LimeSurvey. The oldest participant was 80, and the youngest was 18, providing a mean age of 31.1 years ($SD = 12.9$). 56% of the participants were single, 18% were married, 17% had a partner, and 5% were divorced. 27% of the participants had completed a bachelor's degree, 22% had completed a master's degree, and 3% had completed a doctoral degree.

Instruments

The Brief Internet Sex Addiction Test (S-IAT-sex; Laier et al., 2013)

The Spanish version of the S-IAT-sex was used (Salusex, 2020). It is a test assessing subjective unpleasantness concerning the utilization of internet sex sites. 12 items are included in this version with a 5-point Likert scale ranging from never (1) to very often (5). The total score obtained by the respondent ranges from 12 to 60, providing two different profiles of internet sex consumption: a total score greater than 30 indicates problematic consumption and a total score greater than 37 indicates addictive consumption (Laier et al., 2013). This scale also contains two subscales, one directed toward measuring time spent or lost online “How often do you neglect your responsibilities at home to spend more time on online sex sites?” and craving towards this behavior “How often do you get engrossed in thinking about sex on the Internet or fantasize about connecting to online sex sites?”. The internal consistency values of the S-IAT-sex for this sample were on the two subscales were: $\alpha = .85$ and $\omega = .86$ for time spent, and $\alpha = .78$ and $\omega = .83$ for craving.

Short Dark Triad (SD3; Jones & Paulhus, 2014)

The SD3 was used to measure subclinical Machiavellianism, subclinical psychopathy, and subclinical narcissism (the three dark personality traits). This scale has 27 items (9 items per trait) with a Likert scale ranging from strongly disagree (0) to strongly agree (4). Examples of items are “It is not wise to tell your secrets” (Machiavellianism), “many group activities tend to be dull without me” (narcissism), and “I avoid dangerous situations” (psychopathy). In the current study, the Spanish version of this scale was used (Pineda et al., 2020). The internal consistency values in this sample

were: $\alpha = .76$ and $\omega = .77$ for Machiavellianism, $\alpha = .71$ and $\omega = .72$ for psychopathy, $\alpha = .65$ and $\omega = .65$ for narcissism.

Assessment of Sadistic Personality (ASP; Plouffe et al., 2017)

The ASP is a scale that assesses everyday sadism, commonly used in combination with SD3 to provide a comprehensive view of the Dark Tetrad. This scale has 9 items with a 5-point Likert scale ranging from strongly disagree (0) to strongly agree (4). “When I get annoyed, tormenting people makes me feel better” is an example of an item. The Spanish version of this scale was used for the current study (Pineda, Piqueras, et al., 2023). The internal consistency values in this sample were: $\alpha = .80$ and $\omega = .81$.

Violent Pornography Use Scale

The Violent Use Scale is an ad hoc set of questions, consisting of 5 items, developed to measure the frequency of visualization of different kinds of pornographic violence (e.g. physical, objectifying, and verbal violence). The participants are asked to subjectively indicate how much they watched violent pornography in a Likert scale ranging from “Not at all” (1) to “Many times” (5). The internal consistency values in this sample were: $\alpha = .87$ and $\omega = .88$.

The scale's construction was based on Hald's and Štulhofer's (2015) scale for unconventional or paraphilic pornography use. Their original scale includes a single item addressing all forms of violent pornography: "violent sex (including simulated rape, assault, and coercion)" (Hald & Štulhofer, 2016, p. 11). This item was further refined by detailing specific types of violence commonly found in pornographic content, drawing on research by (Boeringer, 1994; Malamuth, 2018; Rostad et al., 2019; Saramago et al., 2019) among others.

Data Analysis

First, descriptive analyses and correlations as well as internal consistency coefficients were calculated using Jamovi (The Jamovi Project, 2023). With the objective of avoiding measurement error, a structural equation model (SEM) using the Lavaan package (Rosseel, 2012) was estimated on R (R Core Team, 2016) to examine the relationships between the Dark Tetrad traits —Narcissism, Psychopathy, Machiavellianism, and Sadism— and problematic sexual internet use divided into time spent and craving dimensions. Time spent watching violent pornography was included as a mediator between problematic sexual internet use and the Dark Tetrad traits. Diagonally Weighted Least Squares (DWLS) was the estimator used as it does not assume any specific distribution for the observed variables, it is designed for ordinal data and it has shown higher accuracy and reduced bias compared to other estimation methods, such as robust maximum likelihood (Li, 2016).

The fit indices considered included the standardized root mean square residual (SRMR), root mean square error of approximation (RMSEA), normed-fit index (NFI), goodness-of-fit index (GFI), comparative fit index (CFI), and Tucker-Lewis index (TLI). A model was deemed to fit well with a non-significant χ^2 , an SRMR of 0.05 or lower (acceptable up to 0.08), an RMSEA of 0.08 or lower, an NFI above 0.90, a GFI of 0.90 or higher, a CFI of 0.95 or higher, and a TLI of 0.95 or higher (Hu & Bentler, 1999; Kline, 2023).

Results

Table 1 shows a significant correlation between all dark personality traits and the amount of time spent on problematic sexual internet use, the cravings experienced during such use, and the time spent viewing violent pornography. Notably, sadism and psychopathy are more strongly linked to these variables compared to the other dark traits.

Both sadism and psychopathy are equally correlated with time spent on problematic sexual internet use ($r = .34, p < .001$). Likewise, psychopathy ($r = .40, p < .001$) and sadism ($r = .36, p < .001$) are more strongly associated with time spent consuming violent pornography. Narcissism is the least related trait overall, though its highest correlation, although low, is with time spent consuming violent pornography ($r = .21, p < .001$). Machiavellianism, like the other traits, also shows its highest correlation with time spent on violent pornography ($r = .30, p < .001$). The strongest connections among the different instruments were found between the time spent watching violent pornography and the problematic sexual use of the internet variables with r s of .64 for the overall time spent and .50 for the craving.

Table1.
Correlations between the study variables.

	1	2	3	4	5	6
1. Narcissism.	1					
2. Machiavellianism .	.33*	1				
3. Psychopathy.	.39*	.59*	1			
4. Sadism.	.29*	.59*	.70*	1		
5. Problematic Sexual Internet Use time.	.15*	.29*	.34*	.34*	1	
6. Problematic Sexual Internet Use. Craving.	.15*	.28*	.33*	.32*	.73*	1
7. Violent pornography. Time spent.	.21*	.32*	.40*	.36*	.64*	.50*

* $p < .001$

The SEM model conducted (Figure 2) demonstrated a good fit of the data ($\chi^2 = 2170.125, DF = 1318, p < .01, RMSEA = .033, SRMR = .075, CFI = .956, GFI = .936, NFI = .894$). This model revealed several significant relationships between the variables. The strongest positive relationship was observed between psychopathy and time spent watching violent pornography ($\beta = 0.55, p < .01$), followed by the relationship between sadism and time spent watching violent pornography ($\beta = 0.50, p < .01$). Machiavellianism and narcissism showed weaker but still significant connections with the time spent watching violent pornography. Weaker connections appeared between

problematic sexual internet use and the time spent watching violent pornography. There was also a strong connection between problematic sexual use of the internet in terms of time spent and time spent watching violent pornography ($\beta = 0.53, p < .01$).

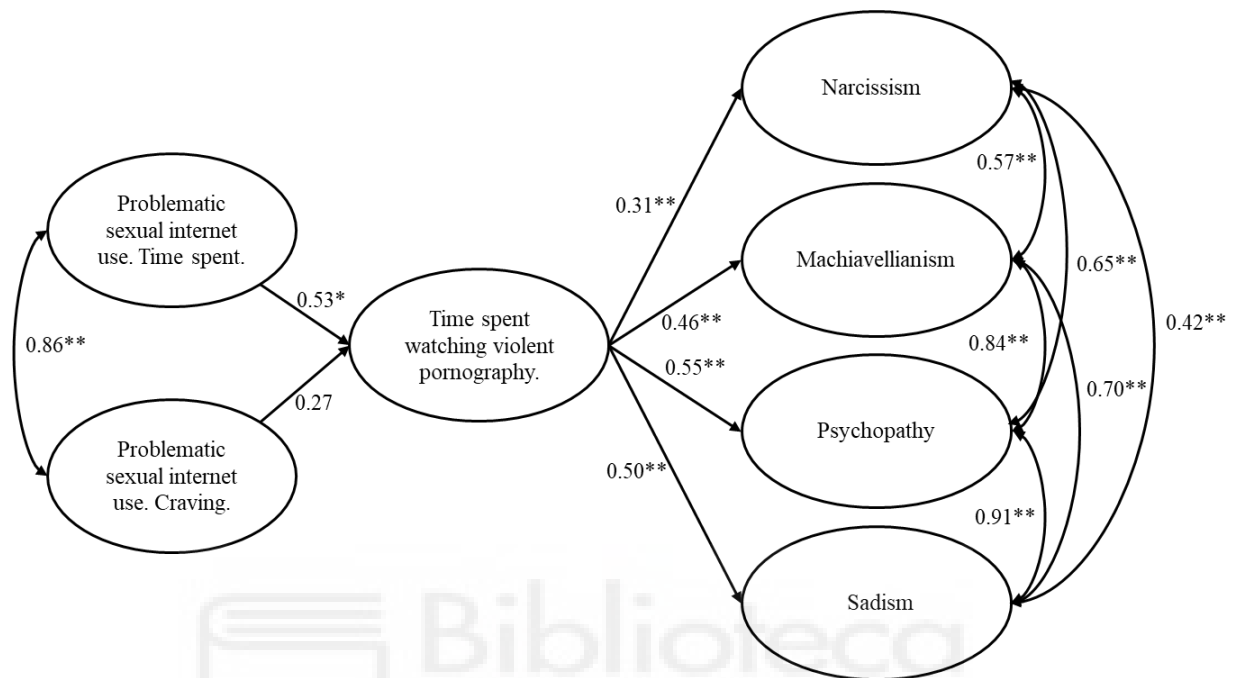


Figure 2. SEM of the relationships among problematic use of the internet, time spent watching violent pornography, and the Dark Tetrad personality traits.

* $p < .05$, ** $p < .01$.

Discussion

The study aimed to explore the relationship between Dark Tetrad personality traits and problematic sexual internet use, with a focus on the consumption of violent pornography. The findings reveal significant associations between these dark traits and variables such as time spent on problematic sexual internet use, associated cravings, and time spent viewing violent pornography. Consistent with our hypotheses, sadism and psychopathy exhibit the strongest links to these variables, particularly with the consumption of violent pornography. These results align with previous research suggesting that individuals with antisocial tendencies are more likely to engage in

excessive and deviant use of pornography, highlighting how these personality traits may relate to patterns of online behavior (Moor & Anderson, 2019; Muris et al., 2020).

The correlational results reveal a significant relationship between dark personality traits and problematic sexual internet use, particularly with time spent and cravings associated with this behavior, as well as time spent consuming violent pornography. Psychopathy and sadism stand out as the traits most strongly linked to these variables, suggesting that individuals high in these traits may be more inclined toward repetitive, potentially addictive online sexual activities that involve violent content. This aligns with previous findings by Chen et al. (2018), which describe a cycle where craving reinforces repetitive sexual internet behaviors, fostering short-term gratification but potentially entrenching long-term problematic patterns. Such patterns may also intensify antisocial tendencies, as seen in our findings, where both psychopathy and sadism exhibit high correlations with time spent on violent pornography consumption (Esteban & Elsner, 2016; Galán et al., 2024).

The results from the model proposed provide interesting insight into how problematic sexual internet use, specifically, the time spent and the consumption of violent pornography may contribute to the reinforcement and expression of Dark Tetrad traits. Attending to this, repeated exposure to violent online content could shape personality tendencies which could be explained by the internalization of behaviors they observe (Allen et al., 1995, Bandura, 1977). In this context, problematic sexual internet use and exposure to violent pornography appear to normalize antisocial behaviors, potentially teaching individuals to view aggression, manipulation, and dominance as acceptable or even rewarding strategies in social interactions (Allen et al., 1995; Rothman, 2021).

The model suggests that spending excessive time on sexually explicit content, especially when it reaches problematic levels, may act as a continuous reinforcer of behaviors and attitudes associated with the Dark Tetrad. Studies indicate that prolonged engagement with arousing content reduces sensitivity to social stimuli and disrupts regular habits, leading to addictive behaviors characterized by craving and withdrawal (Muñoz-Rivas et al., 2010; Schimmenti et al., 2021). This engagement may not only increase arousal but also impair one's sensitivity to social and moral boundaries, which could diminish empathy and tolerance for aggression, and foster manipulative or self-centered traits (Anderson et al., 2010; Moor & Anderson, 2019).

The findings highlight a specific link between time spent watching violent pornography and certain Dark Tetrad traits, particularly psychopathy and sadism. Individuals who habitually consume violent pornography might become desensitized to aggressive behavior, which can have a powerful impact on personality development (Jain et al., 2016). Watching violent sexual content may blur the boundaries between aggression and intimacy, reinforcing some psychopathic tendencies (e.g., callousness, lack of empathy) and fostering a more sadistic outlook, where pleasure is derived from dominance or inflicting suffering on others. Moreover, although weaker, there is a connection suggesting this constant online arousal and detachment can reinforce Machiavellian traits, as individuals may adopt strategies observed in aggressive or coercive online content (Brewer & Abell, 2015; Wilson et al., 1996). Similarly, weaker associations are found with narcissism, suggesting that while problematic sexual online use may reinforce self-centered and validation-seeking behaviors, its impact is less direct compared to the stronger effects observed with psychopathy and sadism (Kaufman et al., 2020; Widman & McNulty, 2010).

Our findings underscore the potential for online environments to reinforce dark personality traits, particularly through the excessive consumption of violent pornography, which can create a reinforcing cycle between these traits and media consumption. This cycle may lead to desensitization to violence, gradually normalizing aggression in both attitudes and behaviors, especially among individuals with pre-existing antisocial tendencies (Galán et al., 2024; Muñoz-Rivas et al., 2010). In this sense, repeated exposure to violent material may encourage individuals to model and internalize aggressive behaviors (Bandura, 1977). In this way, these tendencies observed online could become embedded in their behavioral patterns, further amplifying other antisocial tendencies (Moor & Anderson, 2019).

Limitations

The primary limitations to address involve the sampling method. A convenience sample overrepresented by women was used to recruit participants, which may restrict the generalizability of the findings to the broader population, as it excludes those not engaged on these platforms. Additionally, as this is a cross-sectional study, the findings reveal only correlations, not causation; a longitudinal approach would be needed to establish causal relationships. The study also relies on self-reported data, which may introduce social desirability bias, particularly on sensitive subjects like violent pornography.

Further research should delve more into the role of online settings in personality development and the potential consequences for individual well-being and social behavior. As the current study only investigated correlations between variables, it would be interesting for future research to explore causality and, more explicitly, the direction of these relationships. That is to inform intervention strategies that aim to reduce the

reinforcing effects of problematic internet use on dark personality traits. These insights are crucial for developing targeted approaches to alleviate problematic internet use's psychological and behavioral risks, particularly in vulnerable populations.

Conclusion

This study highlights the intricate relationship between Dark Tetrad personality traits and problematic sexual internet use, particularly with the consumption of violent pornography. The findings indicate that individuals with high levels of psychopathy and sadism are more strongly associated with variables such as time spent on problematic sexual content, cravings for such material, and time spent viewing violent pornography. These results reinforce prior research suggesting the connections between these personality traits and these patterns of internet use. The observed associations also suggest that problematic sexual internet use, especially when involving violent content, may reinforce or intensify behaviors and attitudes tied to the Dark Tetrad traits, pointing the potential psychological impact of this contents. Repeated exposure to violent material could normalize aggression, diminish empathy, and foster manipulative tendencies, aligning with learning theories that emphasize the internalization of observed behaviors. Although psychopathy and sadism show the strongest links, Machiavellianism and narcissism also demonstrate weaker associations, suggesting a complex and multifaceted interaction between personality traits and these online behaviors.

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