MUNI FSS

JOURNAL OF PSYCHOSOCIAL RESEARCH ON CYBERSPACE
CYBERPSYCHOLOGY

Rico-Bordera, P., Galán, M., Pineda, D., & Piqueras, J. A. (2024). Unveiling the depths of Tinder: Decoding the dark tetrad and sociosexuality in motives behind online dating. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace, 18*(5), Article 3. https://doi.org/10.5817/CP2024-5-3

Unveiling the Depths of Tinder: Decoding the Dark Tetrad and Sociosexuality in Motives Behind Online Dating

Pilar Rico-Bordera[1], Manuel Galán[1,2], David Pineda[1], & José A. Piqueras[1]

[1] Forensic Psychology Unit of the Centre for Applied Psychology, Miguel Hernández University of Elche, Elche, Spain
[2] Department of Psychology, Faculty of Medicine, Catholic University of Murcia, Murcia, Spain

Abstract

Given the widespread use of dating apps, it is essential to understand the reasons for their use. Dark Tetrad predict motives for Tinder usage in different ways, but it seems that sexual motives are one of the main reasons why "dark" people use Tinder. So, both dark traits and sociosexual orientation seem to play a relevant role. This study aimed to identify profiles of individuals in terms of their Dark Tetrad traits and their orientation towards unrestricted sex and analyse the differences between them based on the Tinder usage reasons. In 200 participants (M_{age} = 30.78; 67.50% female), an online survey was administered including the Tinder Motives Scale (TMS; validated in Spanish in this study), the Tinder use and outcomes, the Short Dark Triad, the Assessment of Sadistic Personality, and the Sociosexual Orientation Inventory were administered. Results offered a shorter version of the TMS, and three-profiles: Non-dark and non-sociosexual (41.30%), Slightly narcissistic and sociosexual (38.60%), and High-dark and slightly sociosexual (20.10%). There were differences between profiles and Tinder motives. People with less dark traits and sociosexual orientation seem to be more motivated to use Tinder for finding romantic partners, and people most interested in using Tinder for sexual purposes are those with moderate Dark Tetrad and not those with the highest scores. Identifying what motivates those with less sexual restriction and undesirable traits to use Tinder is crucial. This knowledge could help design awareness programs on the misuse of these apps.

Keywords: dark triad; Machiavellianism; psychopathy; sadism; clusters

Editorial Record

First submission received:
July 31, 2023

Revisions received:
June 22, 2024
September 30, 2024

Accepted for publication:
October 21, 2024

Editor in charge:
Alexander P. Schouten

Introduction

Dating Apps, the Rise of Tinder, and Motives to Use These Apps

With the advent of the Internet and smartphones, dating apps have become increasingly popular in recent years, thanks to their ease of use and accessibility, and the ability to quickly connect with others (Anzani et al., 2018; David & Cambre, 2016; Duguay, 2016; Smith, 2016). This new way of connecting with others has revolutionized the way people interact and form romantic relationships, becoming for many people the best option for interaction (Sumter et al., 2017). Therefore, understanding the determinants of the different reasons for using these apps, such as personality or sexuality, is crucial (Castro & Barrada, 2020; Lyons et al., 2022).

Among the various apps available, Tinder has become one of the most widely used and recognized, with millions of active users worldwide choosing it as their app of choice (Duguay, 2016; Iqbal, 2024; Statista, 2023; Sumter & Vandenbosch, 2019). Specifically, prevalence data collected in a recent systematic review indicate that between 40% and 50% of people use or have used a dating app regularly with Tinder being the app of choice in up to 88% of cases (Castro & Barrada, 2020; Sumter & Vandenbosch, 2019). Furthermore, the same review concluded that dating apps are used regardless of gender, age, marital status, sexual orientation, education and income level (Castro & Barrada, 2020).

Tinder is a dating app that allows users to create a profile, swipe through potential matches, and communicate with those who have also expressed interest in them. The app uses a simple, intuitive interface and a unique algorithm that presents users with profiles based on their location, age, and gender preferences. Users swipe right on profiles they find attractive, and left on profiles they are not interested in. When two users swipe right on each other's profiles, they are matched and can begin communicating within the app. Tinder's success is largely attributed to its user-friendly interface and the ability to connect with potential partners quickly and easily, making it a popular choice for individuals seeking romantic relationships or casual encounters (David & Cambre, 2016; Tinder, 2023).

However, despite the fact that all these applications are known as “dating applications”, in recent years their users are also using them for reasons other than meeting someone to establish a romantic relationship (Gudelunas, 2012; Phan et al., 2021; Sumter & Vandenbosch, 2019; Sumter et al., 2017; Timmermans & De Caluwé, 2017a; Van De Wiele & Tong, 2014; Wu & Trottier, 2022). Particularly in relation to the Tinder app, several studies have recorded, in addition to the motive of finding a romantic partner, the following reasons for use: seeking casual sex (e.g., to have sex one night only), the ease of being able to communicate with other people (e.g., because they feel more shy in person), seeking self-esteem validation (e.g., to feel more attractive), because they find it exciting (e.g., they may find it entertaining to use), or for being fashionable (e.g., because everyone around them uses it; Sumter & Vandenbosch, 2019; Sumter et al., 2017). These different motives can be grouped into 13 different categories, namely: social approval, relationship seeking, sexual experience, flirting/social skills, travelling, ex, belongingness, peer pressure, socializing, sexual orientation, pass time/entertainment, distraction, and curiosity. Based on these categories, it has been developed the Tinder Motives Scale (TMS; Timmermans & De Caluwé, 2017a).

What Variables are Associated With Motives for Using Tinder? The Role of Dark Personality and Unrestricted Sex

Personality is one of the most important variables determining the different reasons for using dating apps (Castro & Barrada, 2020). Thus, several studies have tried to analyse the relationship between the Big Five personality traits (Costa & Mccrae, 1992) and the use of, specifically, the Tinder app. The results have shown that each of these traits seems to be related to a different motive for use (Orosz et al., 2018; Timmermans & De Caluwé, 2017b; Timmermans et al., 2018). More specifically, agreeableness and neuroticism seem to be negatively related to sexual motives; conscientiousness is negatively related to distraction motives and positively related to relation seeking; extraversion is positively related to entertainment and travel motives; and openness to experience seems to be positively related to social motives.

However, the personality traits that are being addressed in recent years to analyse the determinants of Tinder usage motives are the Dark Tetrad traits (e.g., Sevi, 2019). This is due to their relationships with a wide variety of antisocial behaviours and negative outcomes, such as social networking sites addiction, bullying and cyberbullying, trolling, sextortion, physical, verbal, and sexual aggression, and other types of crime (e.g., Alsheikh Ali, 2020; Chester et al., 2019; Lee, 2019; Molenda et al., 2022; Moor & Anderson, 2019; Pineda et al., 2022, 2023).

The Dark Tetrad is a set of four malevolent traits (Chabrol et al., 2009; Paulhus & Williams, 2002): (1) narcissism, which is characterized by a mixture of vanity and self-centred admiration of one's own qualities, associated with a feeling of superiority, which in turn leads to a constant search for validation and ego reinforcement; (2) Machiavellianism, which is characterized by a deceptive interpersonal style marked by cynicism, immorality and self-interest and personal gain. These individuals are defined by manipulation, strategic orientation, and forward planning to achieve their own goals; (3) Psychopathy, which is characterized by antisocial behaviour, diminished empathy and remorse for their actions, and disinhibited behaviour associated with impulsivity; and (4) Sadism, which is characterized by deriving pleasure or enjoyment from observing or causing harm to others.

These individuals may intentionally inflict pain and suffering to assert power, dominance or simply for their own pleasure (Paulhus, 2014).

There are different reasons why studies have sought to analyse the relationships between these traits and the use and reasons for use of dating apps. On the one hand, they have found that the use of online dating apps has been associated with an increased likelihood of victimization experiences, such as sexual victimization by adults and peers and cybercrimes (Choi et al., 2018; Kaakinen et al., 2021). This association seems to be explained by the fact that users of such applications are involved in a greater number of risky activities (Kaakinen et al., 2021). On the other hand, the use of these apps has been associated not only with victimization, but also with the perpetration of online antisocial behaviour. Thus, a recent systematic review addressed the different risks that have been associated with this practice and concluded that users of these apps may lie and deceive others to achieve certain goals, may engage in a greater number of risky sexual practices, may cause physical and/or psychological harm to others on purpose, and may engage in cybercrime and bullying behaviour (Phan et al., 2021). As discussed above, some of these risky behaviours have also been associated with Dark Tetrad traits. In addition, several studies have tested the positive relationship between these traits and the perpetration of antisocial behaviour when using dating apps (Duncan & March, 2019; Mayshak et al., 2020).

Although there is limited literature on this topic, studies that have analysed the association between these undesirable traits and the various motives for using the Tinder application have generally found similar relationships. Specifically, the four Dark Tetrad traits appear to be positively related to more sexual motives and social approval, as well as to motives related to distraction and entertainment. In turn, none of the traits have been related to the original motive for which dating apps were designed, i.e., to find a romantic relationship (Freyth & Batinic, 2021; Lyons et al., 2022; Timmermans et al., 2018). This could be because these types of personalities prefer more sporadic relationships and are guided by short-term mating strategies, with little emotional attachment, which is in line with the conceptual description of these traits (Brewer et al., 2018; Jonason et al., 2011, 2014; Jones & Paulhus, 2014; Paulhus & Williams, 2002).

When it comes to predicting motives for using Tinder, more noticeable differences appear among the four traits. A recent study by Lyons et al. (2022) found that sadism did not predict any motive for use, narcissism only negatively predicted the motives of flirting enhancement and social skills, and psychopathy only positively predicted the motive of sexual experience and distraction. In contrast, they found that Machiavellianism was a positive predictor of social approval, enhancement of flirting and social skills, travel, social pressure, and entertainment/time spent. Although these predictions were controlled for gender and trolling, this study was able to conclude that sadism and narcissism appeared to have little relationship with Tinder use motives, that people with high scores on psychopathy might be more motivated by sexuality and distraction, and that people with high scores on Machiavellianism might use Tinder for different utilitarian motives.

In this sense, people with high scores on dark traits seem to use Tinder for reasons related to sexual experience rather than for reasons related to finding a romantic relationship (e.g., Lyons et al., 2022). Thus, an attempt have been made to analyse the relationship between these traits and sociosexual orientation (i.e., orientation towards unrestricted sexuality or, in other words, the general tendency toward more promiscuous behaviour), which is strongly linked to self-control (Burtaverde, 2021; Gailliot & Baumeister, 2007; Lechuga & Jones, 2021; Malesza & Kaczmarek, 2021; Sevi, 2019). Research findings indicate that people who use Tinder appear to score higher on Dark Tetrad traits and seem to display greater inclination towards sexual behaviours.

Sexual strategies theory (Buss & Schmitt, 1993) states that people employ short-term mating strategies and long-term mating strategies, the former referring to frequent and occasional sexual intercourse, a multitude of sexual partners, and less emotional investment in romantic relationships. People with high scores on dark traits tend to favor short-term mating strategies because these traits are associated with impulsivity, a lack of empathy and unkindness, and a focus on self-interest, which makes them less inclined to invest in long-term emotional bonds (Jonason et al., 2011). Likewise, psychodynamic theories of object relations may also provide answers as to why people with high scores on dark traits have a greater sociosexual orientation. For example, attachment theory (Bowlby, 1979) suggests that individuals with fearful or avoidant attachment styles often struggle with intimacy and trust. These attachment styles, common among people with high levels of dark traits, cause them to prefer sporadic and less emotionally committed relationships because they help maintain emotional distance and protect against vulnerability (Brewer et al., 2018; Jonason et al., 2011, 2014). In other words, these types of attachment may contribute to the adoption of selfish and rapid life history strategies and, thus, contribute to a greater salience of these malevolent traits. This is why people with high scores on dark traits prefer these types of

relationships (Jonason et al., 2012, 2014). In short, people with prominence in these antagonistic traits seek more sexual partners and relationships without commitment, seeking pleasure without obtaining costs for investing in long-term relationships; and this is mainly because they are people with higher scores in impulsivity, insensitive manipulation, selfishness and a faster life history strategy (Brewer et al., 2018; Jonason et al., 2010, 2011, 2014; Valentova et al., 2020).

In this sense, both dark traits and sociosexual orientation could reflect adaptive strategies linked to mating, which facilitate accessing a greater number of sexual partners without becoming emotionally involved (Brewer et al., 2018; Jonason et al., 2011, 2014). Dating apps (such as Tinder), as a modern context for interaction, could be a new, easier way than traditional "face-to-face" for these people to carry out their short-term mating strategies (Sevi, 2019).

The Present Study

Given the widespread use of dating apps, and Tinder in particular, it is essential to understand the reasons for their use. Dark Tetrad traits appear to predict motives for Tinder usage in different ways. Therefore, individuals with a higher score in certain traits may exhibit stronger motivation towards specific usage motives compared to others. Understanding these distinctions can provide valuable insights into the diverse motivations that drive individuals to engage with the app (Lyons et al., 2022). Even so, it seems that sexual motives are one of the main reasons why people with high Dark Tetrad scores use Tinder. And on the other pole, the motive of seeking a romantic relationship appears to be less influential in driving individuals to use the app (Freyth & Batinic, 2021; Lyons et al., 2022; Timmermans et al., 2018). Hence, based on the theories discussed in this introduction and previous empirical studies, both dark traits and sociosexual orientation seem to play a relevant role in the study of what motivates people to use apps like Tinder (Lyons et al., 2022; Sevi, 2019). However, no studies have been located that have jointly analysed how these factors interact to influence motives for using Tinder. Therefore, beyond the theoretical and correlational studies that have analysed the relationship between these factors individually, other analyses, such as Latent Profile Analysis (LPA), could reveal more complex interactions that provide more robust results about how people with dark traits and less sexual constraint use Tinder.

LPA, unlike other more classical classification techniques, is an innovative person-centred methodology that allows groups of people to be identified based on their scores on different scales simultaneously to determine the probability that each person belongs to a latent profile. It also considers the differential variation in scores between profiles. Thus, LPA allows individuals to be classified into homogeneous profiles and then examine the differences between them on the basis of other variables of interest (Williams & Kibowski, 2015).

Based on this, the objective of this study was to identify profiles of individuals in terms of their dark traits (i.e., Dark Tetrad) and their orientation towards unrestricted sex (i.e., sociosexual orientation). As a second, and main, objective of this second study, it was proposed to analyse the differences between the profiles found based on the different reasons for using Tinder. To achieve this goal and because of the lack of validated scales in Spanish population to measure Tinder use motives, we validate a short version of the TMS of Timmermans & De Caluwé (2017a) in Spanish sample.

Following the previous literature, the hypotheses that were put forward were the following: (**H1**) It is expected that the study sample does not use Tinder solely for the purpose of finding a romantic relationship or for sexual purposes, i.e., the sample is expected to make use of the 13 different reasons for use; (**H2**) Given that this is the first study that aims to obtain profiles based on the Dark Tetrad traits and sociosexual orientation, it has not been possible to put forward a hypothesis based on previous literature. However, taking into account the relationships found in previous studies between these variables, we expect to find at least two profiles, i.e., one with high scores on dark traits and sexual orientation, and one profile with low scores on both; (**H3**) It is expected to find differences between the profiles and the different motives for using Tinder, with the profile with high scores on dark traits and sexual orientation having more sexual, social approval, and distraction and entertainment motives especially.

Methods

Participants

The sample consisted of 200 participants, aged between 18 and 66 years and with a mean age of 30.78 (*SD* = 7.99). Of these, 67.50% were women. In terms of marital status, most of the participants were single (64.50%), or living with a partner, but without legal recognition (23.50%). A small percentage were married (7%), separated or divorced (3.50%), or widowed (1.50%). In terms of education, most of them, i.e., 35%, had a bachelor's degree, followed by 21% who had a vocational training, and 21% who had a master's degree, a specialization, or a university expert. Finally, regarding their employment status, half of the sample, i.e., 53%, were employed full-time; and 23% were still student. Inclusion criteria for participation in the study were being over 18 years old and being a current or previous user of the dating app Tinder. If they were not current users (had used the app in the past), they were asked to respond to the Tinder scales (use and motives) retrospectively.

To determine the sample size for our main outcome (i.e., the differences between the profiles found in terms of Tinder use motives), we conducted an a priori power analysis using G*Power v3.1.9.7. The analyses indicated that a minimum sample size of *N* = 166 was required for the present study.

Measures

Socio-Demographic Scale Created Ad Hoc

Using two ad hoc items, participants were asked about their age (open numerical field) and sex (male, female, other).

Tinder Motives Scale (TMS)

The TMS (Timmermans & De Caluwé, 2017a) is a 58-item scale that measures motives for using the dating app Tinder. Specifically, it includes 13 variables that refer to 13 different reasons for using the app (Cronbach's alpha coefficients corresponding to the values obtained in the original validation study are indicated in brackets): social approval (e.g., *to see how desirable I am*; 6 items; α = .91), relationship seeking (e.g., *to find someone for a serious relationship*; 5 items; α = .93), sexual experience (e.g., *to find a one-night-stand*; 6 items; α = .91), flirting/social skills (e.g., *because it is hard to talk to people in real life*; 6 items; α = .86), travelling (e.g., *to meet other travellers/locals when in a foreign country*; 5 items; α = .95), ex (e.g., *to think less about my ex;* 3 items; α = .95), belongingness (e.g., *because everyone uses Tinder*; 4 items; α = .74), peer pressure (e.g., *because my friends thought I should use Tinder;* 3 items; α = .70), socializing (e.g., *to make new friends*; 4 items; α = .85), sexual orientation (e.g., *to meet singles with a similar sexual orientation*; 3 items; α = .91), pass time/entertainment (e.g., *for fun*; 7 items; α = .90), distraction (e.g., *as a break at work or during a study period*; 3 items; α = .80), and curiosity (e.g., *to see what the application is about*; 3 items; α = .77). Each of the items is answered on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

Tinder Use and Outcomes (Ad Hoc)

As measured in the original validation study of the TMS (Timmermans & De Caluwé, 2017a), participants were asked about their use of the app. Specifically, they were asked about how often they used Tinder, allowing them to respond on a 7-point Likert-type scale (1 = *almost never*, 2 = *once a month*, 3 = *several times a month*, 4 = *once a week*, 5 = *several times a week*, 6 = *every day*, and 7 = *several times a day*). They were also asked about the number of Tinder users they had met face-to-face, and then asked how many of those people they had met face-to-face (1) had a romantic relationship, (2) kissed, (3) had a sexual interaction, (4) had a casual sexual relationship, (5) and had become friends with. These last questions were answered with an open numerical response option.

Short Dark Triad (SD3)

The SD3 (Jones & Paulhus, 2014) is a 27-item scale that measures the three personality traits of the Dark Triad: narcissism (e.g., *I know I'm special, because everyone tells me I am*), Machiavellianism (e.g., *You should avoid conflicts*

with others, because they can be useful in the future), and psychopathy (e.g., *It is true that I can be cruel to others*). Each trait is assessed with 9 items that are answered on a Likert-type scale from 0 (*strongly disagree)* to 4 (*strongly agree*). In the Spanish validation, acceptable psychometric properties have been obtained, with a α of .73 for Machiavellianism, .61 for narcissism, and .68 for psychopathy (Pineda et al., 2020).

Assessment of Sadistic Personality (ASP)

The ASP (Plouffe et al., 2017) is a brief scale that assess the everyday sadism (e.g.*, I like to make fun of other people in front of their friends*). It contains 9 items that are answered on a Likert-type scale from 0 (*strongly disagree*) to 4 (*strongly agree*). The validation with a Spanish sample obtained adequate internal consistency indices, with a α of .75 (Pineda et al., 2021).

Revised Sociosexual Orientation Inventory (SOI-R)

The SOI-R (Penke & Asendorpf, 2008) is a 9-item scale that assess three dimensions of sociosexuality (with three items per dimension), i.e., orientation towards unrestricted sex: sociosexual behaviour (e.g., *How many different people have you had sex with without being interested in a serious long-term relationship?*), attitudes towards sociosexuality (e.g., *Sex without love is OK*), and desire to have relationships without commitment (e.g., *How often do you have a sexual arousal when you come into contact with a person with whom you are not in a serious romantic relationship?*). The three dimensions are answered on a 9-point Likert-type scale: the first from 0 partners to 20 or more partners, the second from 1 (*strongly disagree*) to 9 (*strongly agree*), and the third from 1 (*Never*) to 9 (*At least once a day).* The validation in the Spanish sample provided good psychometric properties of the scale, with α = .93 for behaviour, α = .82 for attitudes, α = .84 for desire (Barrada et al., 2017).

Procedure

Participants were recruited in May 2022 through the dissemination of the survey (convenience sampling) on different social networks, such as Twitter, Facebook, and Instagram. Their voluntary participation in the study was requested, without offering any compensation for it. The survey was designed using the LimeSurvey platform (https://www.limesurvey.org/es/). To carry out the study, the project received approval from the Miguel Hernández University of Elche (Reference DPS.JPR.02.20) and all participants had to give their consent to participate in the study.

To conducting the validation of the scale and adapt it to the Spanish language, the guidelines of the International Test Commission were followed. Specifically, an iterative translation method was used, consisting, first, of several independent translations and, finally, the revision of both translations by a committee of translators (Muñiz et al., 2013).

Neither the design, sample size, inclusion/exclusion criteria or analyses were pre-registered. The syntax and data of this study are available in the OSF repository by following the link: https://osf.io/34df8/?view_only=1e38d072b9564eaa8466ca4e84295209.

Data Analysis

Firstly, the Confirmatory Factor Analysis (CFA) were performed to obtain a Spanish brief version of the TMS. Diagonally Weighted Least Squares (DWLS) was selected, and to judge the goodness of fit of the model, it was taken into account the chi-square (χ^2), the Normalized Fit Index (NFI), the Comparative Fit Index (CFI), the Goodness of Fit Statistic (GFI), the Standardized Root Mean Residual (SRMR), and the Root Mean Squared Error Approximation (RMSEA; Hu & Bentler, 1999; Kline, 2011). These analyses were performed with the R statistical program (R Core Team).

Secondly, descriptive statistics and internal consistencies, and the Composite Reliability (CR) index of the new briefer version of the TMS were performed. Convergent and discriminant validity were also analysed. For this purpose, the values of the Average Variance Extracted (AVE) and the correlations between the 13 variables were obtained (Cheung & Wang, 2017; Fornell & Larcker, 1981; Netemeyer et al., 2003). Descriptive statistics and internal consistencies for the rest of the study variables were also obtained.

Thirdly, Pearson's bivariate correlations with the Tinder use and outcomes were obtained to investigate the construct validity of the new scale (Timmermans & De Caluwé, 2017a). However, for variables where a standard deviation greater than the mean was obtained, indicating a non-normal distribution, Kendall's Tau-b correlations were obtained to obtain tighter results (Newson, 2002). Pearson's bivariate correlations between the rest of the variables were also calculated (presented in the Appendix; Table A1). For these analyses, the statistical programs SPSS 25 and Jamovi v2.2.5 were employed.

Fourthly, the LPA was run. Specifically, the four Dark Tetrad traits and the three unrestricted sex orientation variables were used to obtain the profiles. To reduce the possible influence of measurement errors, standard scores were obtained for all variables and used to run the LPA (Justice et al., 2011). Models of one to eight profiles were then obtained, fit indices were examined, and the optimal number of profiles was determined based on the best combination of the following criteria: significant values (i.e., $p \leq .05$) on the Likelihood Ratio Test (LRT); smaller values for Log-Likelihood (LL), Akaike Information Criteria (AIC), and Sample Size Adjusted Bayesian Information Criteria (SSA-BIC); entropy values as close to 1 as possible; and no subgroup within each model being represented by less than 5% of participants, as this would indicate that such a subgroup would not be effectively representing a distinct profile (Marsh et al., 2009; Morin et al., 2016).

Fifthly, although not hypothesised in this study, due to the sample size and the over-representation of women obtained after data collection, the probability (i.e., odds ratios) of belonging to one profile or the other according to sex was estimated. For this purpose, a logistic regression analysis was performed using the three-step method (R3STEP function).

Finally, a multivariate analysis of variance (ANOVA) was run to analyses the differences between the profiles obtained with the LPA in terms of Tinder use motives. For this purpose, the thirteen motives for using Tinder were used. The LPA, the logistic regression, and the ANOVA were run using the statistical program MPLUS v8.7. For the ANOVA, the BCH method was used to obtain more adjusted results (Asparouhov & Muthén, 2014).

Results

Validation of the Spanish Tinder Motives Scale-Short Form (39-Items TMS-SF)

The CFA yielded factor loadings for the 58 items comprising the 13 factors. After ordering these loadings from highest to lowest for each trait, following the principle of parsimony (Vandekerckhove et al., 2015), those with the lowest loadings were excluded, leaving only three items per factor, i.e., 39 items in total. Table 1 shows the factor loadings of the 58 items for the long version and the factor loadings of the three items selected with the highest loadings to create the short version of 39 items.

From the CFA of the 58-item TMS, with the thirteen factors, the following fit indices were extracted: $\chi^2 = 3680.536$, $df = 1517$, $p < .001$, NFI = .742, GFI = .646, CFI = .829, SRMR = .086, RMSEA = .079. For the 39-item TMS-SF, from the CFA of this scale and the thirteen traits, the following fit indices were extracted: $\chi^2 = 1211.576$, $df = 624$, $p < .001$, NFI = .864, GFI = .803, CFI = .928, SRMR = .062, RMSEA = .064. These results indicated that the 58-item model does not fit too well since the fit indices are not in acceptable ranges, indicating the existence of a substantial discrepancy between the model and the data. In contrast, in the 39-item model, the fit indices did indicate a good fit.

Table 1. *Factor Structures of the Tinder Motives Scale (58-Items TMS) and the Tinder Motives Scale-Short Form (39-Items TMS-SF) Obtained With Confirmatory Factor Analysis.*

	58-items TMS / 39-items TMS-SF												
	SA	RS	SE	F/SS	T	E	B	PP	S	SO	PT/E	D	C
TM_1	.83/—												
TM_2	.84/—												
TM_3	.87/.90												
TM_4	.88/.86												
TM_5	.89/.91												
TM_6	.79/—												
TM_7		.92/.92											
TM_8		.96/.98											
TM_9		.77/.76											
TM_10		.74/—											
TM_11		.60/—											
TM_12			.70/—										
TM_13			.72/.64										
TM_14			.72/—										
TM_15			.80/.80										
TM_16			.80/.85										
TM_17			.68/—										
TM_18				.80/—									
TM_19				.84/.87									
TM_20				.90/.86									
TM_21				.90/.93									
TM_22				.54/—									
TM_23				.54/—									
TM_24					.65/—								
TM_25					.94/.95								
TM_26					.96/.96								
TM_27					.87/.84								
TM_28					.85/—								
TM_29						.95/.95							
TM_30						.99/.99							
TM_31						.97/.97							
TM_32							.86/—						
TM_33							.94/.93						
TM_34							.97/.98						
TM_35							.81/.81						
TM_36								.90/.90					
TM_37								.91/.91					
TM_38								.59/.59					
TM_39									.83/.90				
TM_40									.78/.82				
TM_41									.78/.72				
TM_42									.64/—				
TM_43										.94/.94			
TM_44										.97/.97			
TM_45										.87/.87			
TM_46											.83/.88		
TM_47											.87/.93		
TM_48											.69/—		
TM_49											.86/.86		
TM_50											.72/—		
TM_51											.82/—		
TM_52											.70/—		
TM_53												.67/.66	
TM_54												.83/.83	
TM_55												.94/.94	
TM_56													.58/.58
TM_57													.95/.94
TM_58													.96/.96

Note. TM = Tinder Motive; SA = Social approval; RS = Relationship seeking; SE = Sexual experience; F/SS = Flirting / social skills; T = Travelling; E = Ex; B = Belongingness; PP = Peer pressure; S = Socializing; SO = Sexual orientation; PT/E = Pass time / entertainment; D = Distraction; C = Curiosity.

Table 2. *Means, Standard Deviations, and Reliability Coefficients for the Tinder Motives Scale-Short Form (39-Items TMS-SF).*

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Social approval	1												
2. Relationship seeking	.14*	1											
3. Sexual experience	.35**	.08	1										
4. Flirting / social skills	.50*	.14*	.39**	1									
5. Travelling	.10	.03	.30**	.14*	1								
6. Ex	.28**	.22**	.27**	.18**	.08	1							
7. Belongingness	.52**	.13	.33**	.43**	.25**	.41**	1						
8. Peer pressure	.28**	.20**	.17**	.37**	.18**	.26**	.53**	1					
9. Socializing	.19**	.16*	.21**	.33**	.49**	.14*	.29**	.24**	1				
10. Sexual orientation	.26**	.22**	.52**	.33**	.25**	.29**	.18**	.14*	.33**	1			
11. Pass time / entertainment	.25**	.13	.26**	.33**	.18**	.20**	.28**	.19**	.39**	.42**	1		
12. Distraction	.48**	.19**	.38**	.49**	.22**	.27**	.44**	.30**	.32**	.35**	.52**	1	
13. Curiosity	.30**	.11	.26**	.38**	.19**	.22**	.32**	.32**	.35**	.34**	.44**	.42**	1
M (*SD*)	2.50 (1.65)	3.65 (1.86)	2.98 (1.68)	2.78 (1.77)	3.14 (1.97)	2.65 (1.88)	1.80 (1.31)	2.41 (1.62)	3.96 (1.86)	3.75 (2.02)	4.05 (1.98)	2.54 (1.62)	4.10 (1.85)
α/ω	.92/ .92	.91/ .92	.80/ .81	.91/ .92	.94/ .94	.98/ .98	.93/ .93	.83/ .86	.84/ .86	.94/ .95	.92/ .92	.84/ .86	.86/ .88
CR	.92	.92	.80	.92	.94	.98	.94	.87	.86	.95	.92	.87	.88
AVE	.79	.80	.58	.79	.85	.94	.81	.69	.67	.86	.79	.67	.72

Note. α = Cronbach's alpha; ω = McDonald's omega; AVE = Average Variance Extracted; CR = Composite Reliability. * $p < 0.05$; ** $p < 0.01$

The descriptive statistics and the reliability coefficients of this brief version of the 58-items TMS (i.e., the 39-items TMS-SF) are presented in Table 2. The highest scores were obtained on the socialization, entertainment, and curiosity variables, so these seem to be the main reasons why the sample uses or used to use tinder. The least frequent reason for use appeared to be "to be belongingness". Regarding reliability indices, high α (between .80 and .98) and ω (between .81 and .98) values were obtained for each of the 13 variables, as well as values above .70 in CR, which indicated that the scale has an adequate internal consistency. In turn, the AVE also showed optimal values, because for all the variables they were higher than .50, which was indicative of a high level of convergent validity. Finally, there were no correlations between variables higher than .70 (all were between .03 and .53), which was indicative of adequate discriminant validity.

Pearson's correlations between the TMS-SF and the Tinder use and outcomes are presented in Table 3. Tinder use correlated significantly and positively ($p < .05$ and $p < .01$) with five of the 13 reasons for Tinder use, that is, with relationship seeking, travelling, socializing, sexual orientation, and pass time/entertainment. In turn, the motives that were significantly and positively associated with the highest number of outcomes were relationship seeking, sexual experience, socializing and sexual orientation ($p < .05$ and $p < .01$). In general, all relations show small magnitudes of association.

Latent Profile Analysis

Table 4 shows the eight models that were obtained (one to eight profiles) to analyses the distribution of participants in terms of their dark traits and sociosexual orientation.

Considering the fitting criteria for selecting the optimal model, the models of five to eight profiles had to be discarded because the *p*-value of the LRT did not reach the significance level ($p > .05$). Furthermore, in these four cases the percentage of the smallest subgroup did not reach the optimal number, i.e., 5% representation.

Following the same criterion, the four-profile model was also discarded for not reaching 5% of participants in the smallest subgroup. Between the two- and three-profile models, the three-profile model was finally selected, considering the combination of the remaining indices, i.e., lower values of LL, AIC, and SSA-BIC, although with a slightly lower entropy.

Table 3. *Bivariate Correlations Between the Tinder Motives Scale-Short Form (39-Items TMS-SF) and the Tinder Use and Outcomes.*

TMS factor	Tinder use	Tinder Meet Ups	Tinder Relationship	Tinder Kiss	Tinder Sex	Tinder Sexual Relationship	Tinder Friends
SA	−.01	.01	.11*	.03	.03	.07	.06
RS	.15*	.12*	.27**	.11*	.11*	.04	.08
SE	.09	.15**	.06	.20**	.20**	.28**	.03
F/SS	.05	.02	.04	.03	.03	.08	−.01
T	.13*	.13**	.06	.08	.04	.04	.16**
E	−.02	.05	.10	.06	.07	.08	.04
B	−.08	−.06	−.05	−.06	−.07	−.01	−.02
PP	−.05	−.07	−.02	−.06	−.05	−.04	−.02
S	.20**	.19**	.13*	.12*	.09	.10	.25**
SO	.17*	.19**	.21**	.22**	.21**	.24**	.05
PT/E	.13*	.09*	.07	.06	.05	.07	.04
D	.09	.05	.10	.04	.03	.06	.05
C	−.01	−.02	−.01	−.01	−.02	−.02	.04
M	3.03	5.55	1.08	3.16	2.47	2.08	1.57
SD	2.10	8.73	2.41	4.90	4.11	4.23	2.69

Note. TM = Tinder Motive; SA = Social approval; RS = Relationship seeking; SE = Sexual experience; F/SS = Flirting / social skills; T = Travelling; E = Ex; B = Belongingness; PP = Peer pressure; S = Socializing; SO = Sexual orientation; PT/E = Pass time / entertainment; D = Distraction; C = Curiosity; $^{*}p < 0.05$; $^{**}p < 0.01$; Pearson correlation for Tinder use and Kendall's Tau-b for all other variables.

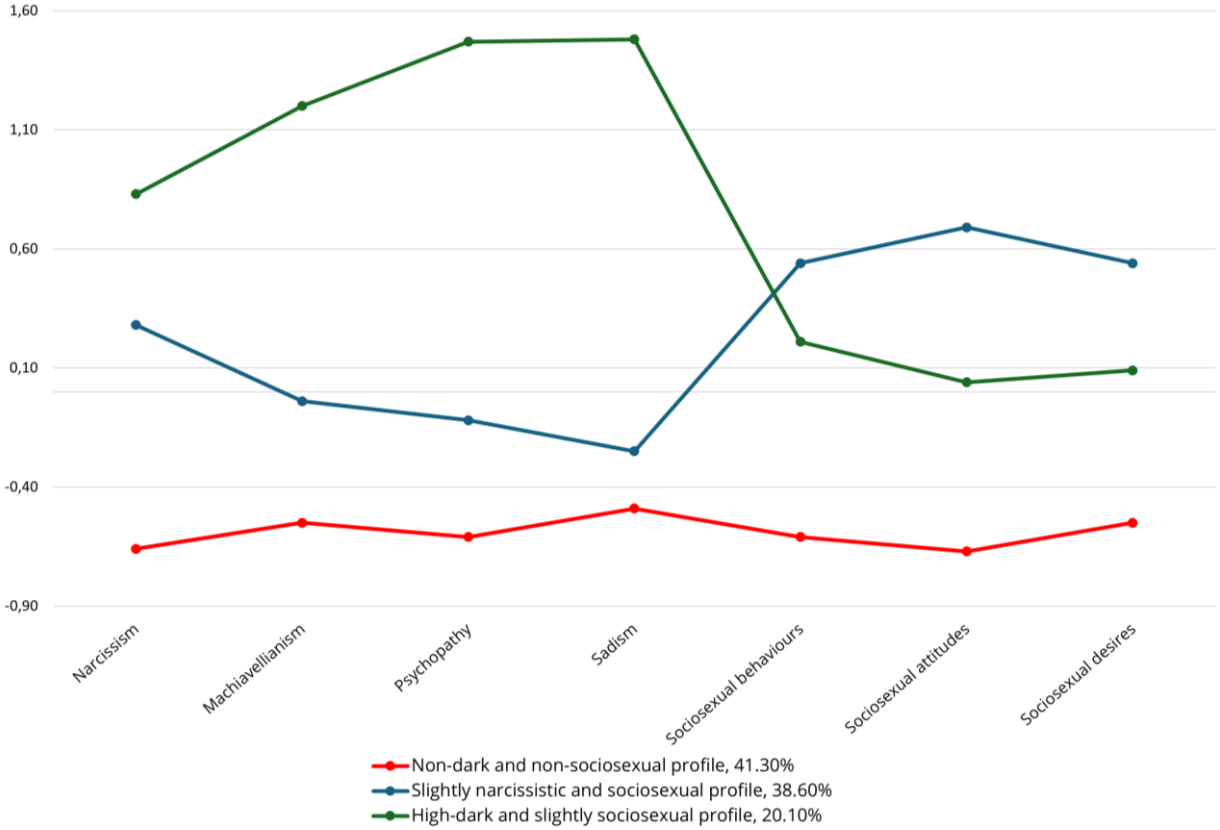
Table 4. *Model Fit Indices for 1-Through 8-Profile Solutions.*

Profiles	Parameters	LL	AIC	SSA-BIC	LRT *p*	Entropy	% smallest group
1	14	—	3951.442	3953.265	—	—	—
2	22	−1961.721	3683.442	3686.307	.0116	.894	24.75%
3	30	−1819.721	3575.744	3579.650	.0154	.813	20.06%
4	38	−1757.872	3500.761	3505.709	.0102	.858	4.13%
5	46	−1712.380	3468.909	3474.899	.2320	.873	4.20%
6	54	−1688.455	3453.814	3460.846	.3878	.835	4.17%
7	62	−1672.907	3453.285	3461.359	.9375	.844	3.96%
8	70	−1659.264	3441.279	3450.394	.5622	.861	3.06%

Note. LL = Log-Likelihood; AIC = Akaike Information Criteria; SSA-BIC = Sample Size Adjusted Bayesian Information Criteria; LRT = Likelihood Ratio Test.

As a result of the selection of the three-profile model, the following distribution was obtained: 1- A profile of participants characterized by having medium-low scores on the dark traits levels and on the sociosexuality orientation, hereafter referred to as the Non-dark and non-sociosexual profile (41.30% of the sample); 2- A profile characterized by having medium scores on the Machiavellianism and psychopathy levels, but slightly medium-high scores on narcissism and slightly medium-low scores on sadism, and medium-high scores on sociosexuality (being the profile with the highest scores on sociosexuality), hereafter referred to as the Slightly narcissistic and sociosexual profile (38.60% of the sample); 3- A profile characterized by having high scores on the dark traits levels (being the profile with the highest scores on the Dark Tetrad, especially on psychopathy and sadism) and medium scores on the sociosexuality, although slightly medium-high scores on sociosexual behaviour, hereafter referred to as the High-dark and slightly sociosexual profile (20.10% of the sample). This distribution is shown in Figure 1 and its descriptive statistics can be found in Table 5.

Figure 1. *Profiles of Dark Tetrad and Sociosexual Orientation.*



Due to the high percentage of women in the study (67.50%), the probability of belonging to one profile or the other was estimated as a function of gender. Odds ratios (OR) were only significant when comparing the High-dark and slightly sociosexual profile with the Non-dark and non-sociosexual profile, showing that being male could be a qualifying condition in the profile with higher scores on the Dark Tetrad and medium scores on sociosexuality compared to the profile with low scores on both constructs. Specifically, an *OR* = 3.27, 95% CI [1.35, −7.91] was obtained, so that men would be up to 3.27 times more likely to belong to the High-dark and slightly sociosexual profile.

Table 5. *Means and Standard Errors (z Scores) for the 3-Latent Profile Analysis.*

	Profiles					
	Non-dark and non-sociosexual (*N* = 80)		Slightly narcissistic and sociosexual (*N* = 79)		High-dark and slightly sociosexual (*N* = 41)	
	Mean	*SE*	*Mean*	*SE*	*Mean*	*SE*
Machiavellianism	−0.55	0.09	−0.04	0.16	1.20	0.18
Narcissism	−0.66	0.09	0.28	0.19	0.83	0.15
Psychopathy	−0.61	0.08	−0.12	0.15	1.47	0.18
Sadism	−0.49	0.06	−0.25	0.10	1.48	0.25
Sociosexual behaviour	−0.61	0.11	0.54	0.19	0.21	0.20
Sociosexual attitude	−0.67	0.25	0.69	0.08	0.04	0.19
Sociosexual desire	−0.55	0.15	0.54	0.15	0.09	0.19

Differences Between the Profiles in Terms of Tinder Use Motives (ANOVA)

Regarding the differences between the latent profiles and the Tinder use motives, analysis showed statistically significant differences. Specifically, significant differences were found for all reasons for use, except for relationship seeking and curiosity. Although there were no differences between the three profiles for any of the eleven variables at the same time, there were differences between at least two of them for these variables. The Non-dark and non-sociosexual profile and the High-dark and slightly sociosexual profile differed the most in terms

of reasons for using the app, with fewer differences found between the Slightly narcissistic and sociosexual profile and the High-dark and slightly sociosexual profile (Table 6).

These results revealed that for the respondents of the Slightly narcissistic and sociosexual profile, the main reason for using Tinder is sex, although they also seem to be motivated by more social issues, such as making new friends or travelling. In contrast, for users of the High-dark and slightly sociosexual profile, the main reasons for using Tinder are more related to social approval, being fashionable, decreasing social pressure and improving social skills, although other reasons include distraction and entertainment, and getting over an ex-partner. Finally, although the differences were not significant, compared to the Slightly narcissistic and sociosexual profile and the High-dark and slightly sociosexual profile, the main reason for using Tinder for people in the Non-dark and non-sociosexual profile seems to be the search for romantic relationships.

Table 6. *Means and Standard Errors for Motives for Tinder Use Across Latent Profiles.*

Variables	Profiles								
	1. Non-dark and non-sociosexual (*N* = 80)	2. Slightly narcissistic and sociosexual (*N* = 79)	3. High-dark and slightly sociosexual (*N* = 41)	1 vs. 2		1 vs. 3		2 vs. 3	
	M (SE)	*M (SE)*	*M (SE)*	χ^2	*p*	χ^2	*p*	χ^2	*p*
Social approval	−0.18 (0.12)	−0.13 (0.11)	0.62 (0.18)	0.07	.788	**14.20**	< .001	**11.94**	.001
Relationship seeking	0.06 (0.13)	−0.01 (0.13)	−0.11 (0.15)	0.12	.730	0.69	.408	0.23	.632
Sexual experience	−0.55 (0.11)	0.42 (0.13)	0.23 (0.15)	**30.70**	< .001	**22.41**	< .001	0.24	.627
Flirting / social skills	−0.18 (0.11)	0.01 (0.13)	0.36 (0.16)	1.10	.295	**7.33**	.007	2.46	.117
Travelling	−0.23 (0.12)	0.18 (0.13)	0.12 (0.15)	**4.49**	.034	3.22	.073	0.08	.782
Ex	−0.22 (0.11)	−0.02 (0.13)	0.49 (0.16)	1.13	.288	**13.61**	< .001	**5.78**	.016
Belongingness	−0.24 (0.10)	−0.14 (0.11)	0.76 (0.21)	0.44	.507	**19.36**	< .001	**13.63**	< .001
Peer pressure	−0.11 (0.12)	−0.08 (0.13)	0.39 (0.16)	0.03	.872	**6.42**	.011	**5.03**	.025
Socializing	−0.24 (0.13)	0.24 (0.12)	0.02 (0.15)	**6.32**	.012	1.65	.199	1.27	.260
Sexual orientation	−0.37 (0.12)	0.30 (0.13)	0.17 (0.15)	**12.65**	< .001	**8.39**	.004	0.41	.522
Pass time / entertainment	−0.28 (0.13)	0.17 (0.12)	0.25 (0.15)	**5.38**	.020	**7.35**	.007	0.16	.685
Distraction	−0.35 (0.11)	0.15 (0.13)	0.42 (0.16)	**7.27**	.007	**16.05**	< .001	1.50	.221
Curiosity	−0.19 (0.12)	0.14 (0.13)	0.12 (0.14)	2.88	.090	2.73	.099	0.01	.929

Note. *M* = Mean; *SE* = Standard error; χ^2 = chi-square value; Bold χ^2 values refers to groups significantly different.

Discussion

The aim of this study was to identify profiles of individuals in terms of their dark traits (i.e., Dark Tetrad) and their sociosexual orientation (i.e., unrestricted sex) to subsequently analyse the differences between the profiles found based on the different reasons for using Tinder.

Firstly, due to the lack of validated scales in Spanish population to measure Tinder usage motives, it was necessary to validate a Spanish version. As a result, a shorter version of the original version of the TMS was obtained, the TMS-SF. Specifically, the 13 different reasons for using Tinder were maintained, but 19 items were eliminated. In fact, the model of the full version of the scale, i.e., the one with 58 items, did not fit well in the Spanish sample, which allowed us to shorten the scale while improving the fit of the factor structure of the model. Given the widespread use and popularity of dating apps, and particularly Tinder, it is essential to know and study the types of uses that people make of these apps, as well as how they relate to others through them (Anzani et al., 2018; Duguay, 2016; Sumter et al., 2017). For this, it is important to have valid and reliable instruments.

In line with previous literature, Tinder users do not use this application solely for the purpose of finding a romantic relationship or having a casual sexual encounter (Gudelunas, 2012; Phan et al., 2021; Sumter & Vandenbosch, 2019; Sumter et al., 2017; Timmermans & De Caluwé, 2017a; Van De Wiele & Tong, 2014; Wu & Trottier, 2022). The participants in this study seem to be motivated by the 13 different reasons for use, present in the TMS-SF (H1 is

accepted; Timmermans & De Caluwé, 2017a). Many of these individuals use the app for other purposes, such as socializing, entertainment, or simple curiosity. Studying the different reasons for use can help to understand the behaviours and outcomes of Tinder use, as well as to better understand the characteristics of those who use these apps (Timmermans & De Caluwé, 2017a). Ultimately, knowing how and why people use these apps is essential to understand and anticipate possible consequences of their use (Castro & Barrada, 2020).

Second, based on the idea that dark personality and sociosexual orientation may guide motivations to use apps such as Tinder (Lyons et al., 2022; Sevi, 2019; Sumter & Vandenbosch, 2019; Timmermans et al., 2018), as a first objective, the present study sought to identify profiles of individuals based on Dark Tetrad traits and unrestricted sexuality. As a result, contrary to expectations, the LPA yielded a three-profile model (H2 is rejected). Although this is the first study that aims to identify profiles based on these variables, in line with previous results that have obtained positive relationships between both variables, we did obtain a profile characterised by low scores on both the Dark Tetrad and sociosexual orientation (the Non-dark and non-sociosexual profile). Previous studies have already concluded that people with higher scores on dark traits tend to have many sexual partners and, in turn, prefer more superficial and sporadic relationships (e.g., Burtaverde, 2021; Sevi, 2019). This fact could be explained by psychodynamic theories of object relations, such as Bowlby's Attachment Theory (1979), which suggests that the fearful or avoidant attachment styles characteristic of people with dark traits influence these people to prefer this type of relationships (Brewer et al., 2018; Jonason et al., 2014). Likewise, the Sexual Strategies Theory (Buss & Schmitt, 1993) suggests that people with these characteristics prefer short-term mating strategies because these traits are associated with impulsivity, lack of empathy and unkindness, and focus on self-interest, making them less likely to invest in long-term affective bonds (Jonason et al., 2011). In line with this, both dark traits and unrestricted sociosexuality may represent adaptive strategies oriented towards mating, allowing individuals to gain access to more sexual partners without forming emotional ties (Brewer et al., 2018; Jonason et al., 2011, 2014).

However, despite this theoretical basis, we did not obtain an opposite classification, i.e., a group with high scores on both constructs (Burtaverde, 2021; Lechuga & Jones, 2021; Malesza & Kaczmarek, 2021; Sevi, 2019). Instead, we found an unexpected profile with the highest scores in the Dark Tetrad, especially in psychopathy and sadism traits, but with average scores in sociosexual orientation, although slightly elevated in sociosexual behaviour (the High-dark and slightly sociosexual profile; Burtaverde, 2021; Lechuga & Jones, 2021; Malesza & Kaczmarek, 2021; Sevi, 2019). Consistent with what was commented in the first profile (the Non-dark and non-sociosexual profile), it was expected that the profile of people with more narcissistic, Machiavellian, psychopathic and sadistic traits would present a less restrictive sociosexual orientation (Bowlby, 1979; Brewer et al., 2018; Buss & Schmitt, 1993; Jonason et al., 2011, 2014), but this was not the result.

In the same way, in contrast to what was expected, a profile was obtained with average scores on the Dark Tetrad, although slightly high on narcissism and slightly low on sadism, and with the highest scores on sociosexual orientation (the Slightly narcissistic and sociosexual profile). It seems that the profile of people with a less restrictive sociosexual orientation (i.e., who allow themselves to have a greater number of uncommitted sexual relationships, for short periods of time and with different people) do not seem to be the people with a greater presence of dark traits, although they do seem to be slightly narcissistic. Prior research has consistently found psychopathy to have the strongest association with sociosexuality, followed by Machiavellianism (Burtaverde, 2021; Lechuga & Jones, 2021; Malesza & Kaczmarek, 2021; Sevi, 2019). However, the finding that narcissism is the most prominent dark trait associated with sociosexuality aligns with studies such as Lechuga and Jones (2021), where narcissistic men were rated as more attractive by women with higher sociosexuality on Tinder, suggesting a specific link between narcissism and unrestricted sociosexual behaviour. This is further supported by studies showing that narcissism is linked to fast life-history strategies, which include exploitative behaviours and a preference for short-term mating (Jonason et al., 2009; Schmitt et al., 2017; Valentova et al., 2020). Narcissism's association with mating effort and entitlement/exploitativeness (McDonald et al., 2012; Jonason et al., 2017) may explain why individuals with higher narcissistic traits, but not necessarily other dark traits, engage more frequently in sociosexual behaviours. The LPA, therefore, has allowed us to obtain results on how dark traits and sociosexual orientation interact to form profiles of individuals, offering more specific results than those offered by theory and by previous correlational studies.

Third, as the second objective, the present study aimed to analyse differences between the obtained profiles based on the different reasons for using Tinder, that is, to analyse how the interaction between dark traits and sociosexuality predict the different motives for using Tinder. To this end, the starting point was the idea that previous studies have found higher scores on dark traits in Tinder users than in non-users (Freyth & Batinic, 2021;

Sevi, 2019). However, the results of this study have shown that there does appear to be a group of Tinder users who have low scores on dark traits and sociosexuality. This profile is also the most represented by the study participants (41.30%). In line with our predictions, this profile seems to be the least motivated to use Tinder for sexual, social approval, distraction, and entertainment purposes (H3 is accepted). Consistent with prior research, sexual motives were expected to be one of the main reasons why people with high scores on the Dark Tetrad use Tinder, but search for a romantic relationship was not (Freyth & Batinic, 2021; Lyons et al., 2022; Timmermans et al., 2018). This is in line with this type preferring short-term mating strategies, with more sporadic sexual relationships and less emotional bonding, which is in line with the conceptual definition of these traits (Brewer et al., 2018; Jonason et al., 2011, 2014; Jones & Paulhus, 2014; Paulhus & Williams, 2002). While the variations between profiles were not statistically significant regarding the search for a romantic relationship variable, it is noteworthy that this profile displayed the highest mean. Consequently, it appears that seeking a romantic relationship remains the primary motivation for using Tinder among these individuals.

Of the two additional profiles, the Slightly narcissistic and sociosexual profile displayed the highest scores on unrestricted sociosexual orientation, which aligns with prior research indicating that both dark personality traits and sociosexuality play a significant role in Tinder use for sexual purposes (e.g., Sevi, 2019). However, our LPA results suggest that sociosexuality, more than dark personality traits, emerges as a stronger predictor of using the app for sexual motives, particularly casual encounters. This profile, characterized by higher sociosexuality, was primarily motivated by the desire for casual sex with multiple partners.

In contrast, the High-dark and slightly sociosexual profile exhibited a distinct pattern, showing higher motivations related to social approval, staying fashionable, reducing social pressure, improving social skills, and using the app for distraction or to move on from a previous relationship. This aligns with Lyons et al. (2022), who found that Machiavellianism significantly predicted these motives. Our findings are consistent with previous research (Freyth & Batinic, 2021; Lyons et al., 2022; Timmermans et al., 2018) that links Dark Tetrad traits to non-romantic motives, such as entertainment, distraction, and social approval. As expected, individuals with dark traits in our sample were more likely to use Tinder for these reasons, likely due to their opportunistic and strategic personality (Jonason et al., 2011; Timmermans et al., 2018), rather than for romantic relationship seeking.

This study also showed that being male could be a classification condition in the High-dark and slightly sociosexual profile, i.e., males are more likely to belong to this group compared to the Non-dark and non-sociosexual profile. Since OR played no role in the differentiation between the Slightly narcissistic and sociosexual profile and the High-dark and slightly sociosexual profile (where differences between scores on the Dark Tetrad and sociosexuality are apparent), it could be expected that these results are because men generally score higher on the Dark Tetrad traits (Chabrol et al., 2009; Muris et al., 2017). In line with these results, Sevi (2019) examined the possible moderating effect of sex on differences in Dark Triad traits and sociosexuality between Tinder users and non-users and found no significant effect.

In this study, an innovative methodology was used to identify groups of people on the basis of their scores on the different scales simultaneously (Williams & Kibowski, 2015). We obtained profiles that allowed us to see a different distribution of participants and to see how these profiles are motivated by different purposes when using the Tinder application. In sum, the results of this study have allowed us to observe that people with less dark traits and less sociosexual orientation seem to be the least motivated to use Tinder for a purpose other than finding a romantic partner; that people with slightly high scores on dark traits and high scores on sociosexual orientation will be the most motivated to use Tinder for sexual purposes; and that people with the highest scores on dark traits and slightly high scores on sexual orientation will be the most motivated to use Tinder for a variety of utilitarian purposes, such as gaining social approval, improving their social and flirting skills, reducing social pressure and being fashionable, entertainment, and getting over an ex-partner. It seems, therefore, that the people most interested in using Tinder for sexual purposes are those with moderate scores on the Dark Tetrad traits and not those with the highest scores. These findings align with the definition of Dark Tetrad traits, particularly due to their shared underlying element of insensitive manipulation. Furthermore, as noted by Jonason et al. (2013) in their study, people with these personality traits are characterised by volatile relationships with others and may actively seek sporadic romantic/sexual relationships. As a result, these motives can prove to be highly relevant and informative in this context (Paulhus, 2014; Paulhus & Williams, 2002).

Limitations and Future Lines of Research

Concerning the limitations of the study, it is worth mentioning those relating to the sample size, the over-representation of women, the type of sample and the cross-sectional design, which hinder the generalizability of the results. In addition, the internal consistency index of the narcissism subscale is low, which is a limitation of the study and could be due to the small sample size. As a future line of research, it is proposed to replicate this study with a larger sample size and a longitudinal design to obtain more evidence of the results obtained (and, for example, to confirm the LPA), as well as to replicate it in different countries and cultures to analyse the extent of the generalizability of these results. It is also expected to replicate the study using scales with higher reliability.

Furthermore, although a recent systematic review indicated that dating apps are used regardless of gender, age, marital status, sexual orientation, education and income level (Castro & Barrada, 2020), some studies have found differences between men and women in the reasons for using Tinder (e.g., Lyons et al., 2022). Therefore, it would be interesting to replicate the LPA with a larger sample size to obtain a model of profiles for women and another for men and thus allow us to analyse possible differences between them in terms of reasons for use.

Finally, it is worth mentioning that some of the respondents answered the Tinder scales (use and motives) retrospectively since they were not current users of the app but had used it in the past. This could have led to recall problems and, therefore, slightly biased results.

Conclusions

Dating apps have increased in use and popularity in recent years, changing the way people interact, meet and establish new romantic relationships (Anzani et al., 2018; Duguay, 2016; Sumter et al., 2017). Tinder seems to be one of the most consumed apps by the population, but it does not seem to be used solely for the purpose of finding a romantic partner. Its users have used it for other motivations, such as casual sex, making new friends, gaining social approval, distraction, or entertainment, in addition to other reasons (Gudelunas, 2012; Phan et al., 2021; Sumter & Vandenbosch, 2019; Sumter et al., 2017; Timmermans & De Caluwé, 2017a; Van De Wiele & Tong, 2014; Wu & Trottier, 2022).

Understanding the different reasons why people use dating apps, as well as the characteristics of these people (such as their personality), is relevant for analysing the positive and negative effects of their use. This is the first study that attempts to identify profiles of individuals in terms of their dark traits (i.e., Dark Tetrad) and their sociosexual orientation (i.e., unrestricted sex) and that analyses the differences between the profiles found based on the different reasons for using Tinder. Results provided a three-profile solution: the Non-dark and non-sociosexual profile, the Slightly narcissistic and sociosexual profile, and the High-dark and slightly sociosexual profile. In addition, they showed that people with less dark traits and sociosexual orientation seem to be more motivated to use Tinder for finding romantic partners, and people most interested in using Tinder for sexual purposes are those with moderate Dark Tetrad and not those with the highest scores.

These apps can have advantages, such as easy access to a multitude of potential partners and ease of meeting people, but also disadvantages, such as loss of intimacy and privacy; moreover, they can also present risks, such as sexual victimisation (Castro & Barrada, 2020). Taking into consideration the positive relationship between Dark Tetrad traits and a wide range of antisocial behaviours, such as sexual aggression, it seems crucial to know what motivates people who are less sexually restricted and display more undesirable personality traits to use Tinder. Understanding these motivations can help design more targeted programs to prevent misuse of these apps. In this sense, awareness programs can be tailored to educate users about the risks of interacting with people they do not know, knowing that these apps are not used solely for the purpose of finding a romantic partner. Thus, awareness of the different profiles that employ Tinder can empower users to make more informed decisions when interacting with potential partners, thus mitigating unknown or inappropriate use of dating apps.

In terms of future research, the results of this study open several avenues for further exploration. First, the profiles identified in this research can serve as a basis for investigating how these personality traits interact with other psychosocial variables, such as emotional regulation, impulsivity or interpersonal trust, in the context of online dating. Additionally, future studies could examine how these profiles evolve over time with repeated app usage, or how these traits interact with users' self-presentation and behaviour on dating platforms. Second, the lack of a profile with high levels of both dark traits and sociosexuality raises questions about the boundaries of these constructs. Further exploration could focus on the situational or contextual factors that might influence the

manifestation of dark traits in sociosexual behaviour within dating apps. Lastly, given the fast-paced evolution of online dating technologies, it would be relevant to examine whether similar profiles are found in newer or niche dating platforms and how these profiles could shape emerging theories about human mating strategies in digital contexts.

Conflict of Interest

The authors have no conflicts of interest to declare.

Authors' Contribution

Pilar Rico-Bordera: conceptualization, data curation, formal analysis, investigation, visualization, writing—original draft. **Manuel Galán:** data curation, investigation, writing—review and editing. **David Pineda:** conceptualization, methodology, formal analysis, investigation, validation, writing—review and editing. **José A. Piqueras:** conceptualization, investigation, project administration, supervision, writing—review and editing.

Acknowledgement

The authors disclose the receipt of the following financial support for the research, authorship, and publication of this article: This work was supported by the Spanish Ministry of Universities [Training of University Teaching Staff, FPU19/02233].

The authors thank Irene del Rocío Muñoz Ruiz for her participation the sample collection, and Elisabeth Timmermans and Elien De Caluwé for giving us permission to translate the Tinder Motives Scale (TMS). This work has been carried out within the framework of the doctoral thesis of the first author entitled "New approach to the assessment of the dark personality tetrad: Indirect and objective measurement".

References

Alsheikh Ali, A. S. (2020). Delinquency as predicted by Dark Triad factors and demographic variables. *International Journal of Adolescence and Youth*, *25*(1), 661–675. https://doi.org/10.1080/02673843.2020.1711784

Anzani, A., Di Sarno, M., & Prunas, A. (2018). Using smartphone apps to find sexual partners: A review of the literature. *Sexologies*, *27*(3), e61–e65. https://doi.org/10.1016/j.sexol.2018.05.001

Asparouhov, T., & Muthén, B. (2014). Auxiliary variables in mixture modeling: Three-step approaches using Mplus. *Structural Equation Modeling: A Multidisciplinary Journal*, *21*(3), 329–341. https://doi.org/10.1080/10705511.2014.915181

Barrada, J. R., Castro, Á., Correa, A. B., & Ruiz-Gómez, P. (2017). The tridimensional structure of sociosexuality: Spanish validation of the revised sociosexual orientation inventory. *Journal of Sex & Marital Therapy*, *44*(2), 149–158. https://doi.org/10.1080/0092623X.2017.1335665

Bowlby, J. (1979). The Bowlby-Ainsworth attachment theory. *Behavioral and Brain Sciences, 2*(4), 637–638. https://doi.org/10.1017/s0140525x00064955

Brewer, G., Bennett, C., Davidson, L., Ireen, A., Phipps, A., Stewart-Wilkes, D., & Wilson, B. (2018). Dark triad traits and romantic relationship attachment, accommodation, and control. *Personality and Individual Differences, 120*, 202–208. https://doi.org/10.1016/j.paid.2017.09.008

Burtaverde, V. (2021). Women high on the dark triad traits are more attracted to narcissistic males if they are oriented to long term mating and had fewer experiences with unfaithful men. *Personality and Individual Differences*, *173*, Article 110627. https://doi.org/10.1016/j.paid.2021.110627

Buss, D. M., & Schmitt, D. P. (1993). Sexual strategies theory: An evolutionary perspective on human mating. *Psychological Review, 100*(2), 204–232. https://doi.org/10.1037/0033-295x.100.2.204

Castro, Á., & Barrada, J. R. (2020). Dating apps and their sociodemographic and psychosocial correlates: A systematic review. *International Journal of Environmental Research and Public Health*, *17*(18), Article 6500. https://doi.org/10.3390/ijerph17186500

Chabrol, H., Van Leeuwen, N., Rodgers, R., & Séjourné, N. (2009). Contributions of psychopathic, narcissistic, Machiavellian, and sadistic personality traits to juvenile delinquency. *Personality and Individual Differences, 47*(7), 734–739. https://doi.org/10.1016/J.PAID.2009.06.020

Chester, D. S., DeWall, C. N., & Enjaian, B. (2019). Sadism and aggressive behavior: Inflicting pain to feel pleasure. *Personality and Social Psychology Bulletin*, *45*(8), 1252–1268. https://doi.org/10.1177/0146167218816327

Cheung, G. W., & Wang, C. (2017). Current approaches for assessing convergent and discriminant validity with SEM: Issues and solutions. *Academy of Management Proceedings*, *2017*(1), Article 12706. https://doi.org/10.5465/AMBPP.2017.12706abstract

Choi, E. P. H., Wong, J. Y. H., & Fong, D. Y. T. (2018). An emerging risk factor of sexual abuse: The use of smartphone dating applications. *Sexual Abuse: A Journal of Research and Treatment*, *30*(4), 343–366. https://doi.org/10.1177/1079063216672168

Costa, P., & Mccrae, R. (1992). *Neo PI-R professional manual.* Psychological Assessment Resources.

David, G., & Cambre, C. (2016). Screened intimacies: Tinder and the swipe logic. *Social Media + Society*, *2*(2). https://doi.org/10.1177/2056305116641976

Duguay, S. (2016). Dressing up Tinderella: Interrogating authenticity claims on the mobile dating app Tinder. *Information, Communication & Society*, *20*(3), 351–367. https://doi.org/10.1080/1369118X.2016.1168471

Duncan, Z., & March, E. (2019). Using Tinder® to start a fire: Predicting antisocial use of Tinder® with gender and the dark tetrad. *Personality and Individual Differences*, *145*, 9–14. https://doi.org/10.1016/j.paid.2019.03.014

Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research*, *18*(3), 382–388. https://doi.org/10.1177/002224378101800313

Freyth, L., & Batinic, B. (2021). How bright and dark personality traits predict dating app behavior. *Personality and Individual Differences*, *168*, Article 110316. https://doi.org/10.1016/j.paid.2020.110316

Gailliot, M. T., & Baumeister, R. F. (2007). Self-regulation and sexual restraint: Dispositionally and temporarily poor self-regulatory abilities contribute to failures at restraining sexual behavior. *Personality and Social Psychology Bulletin*, *33*(2), 173–186. https://doi.org/10.1177/0146167206293472

Gudelunas, D. (2012). There's an app for that: The uses and gratifications of online social networks for gay men. *Sexuality & Culture: An Interdisciplinary Quarterly*, *16*(4), 347–365. https://doi.org/10.1007/s12119-012-9127-4

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Iqbal, M. (2024). *Tinder revenue and usage statistics (2023).* Business of Apps. https://www.businessofapps.com/data/tinder-statistics/

Jonason, P. K., Foster, J. D., Egorova, M. S., Parshikova, O., Csathó, Á., Oshio, A., & Gouveia, V. V. (2017). The dark triad traits from a life history perspective in six countries. *Frontiers in Psychology, 8*, Article 1476. https://doi.org/10.3389/fpsyg.2017.01476

Jonason, P. K., Koenig, B. L., & Tost, J. (2010). Living a fast life: The dark triad and life history theory. *Human Nature, 21*(4), 428–442. https://doi.org/10.1007/s12110-010-9102-4

Jonason, P. K., Li, N. P., & Czarna, A. Z. (2013). Quick and dirty: Some psychosocial costs associated with the dark triad in three countries. *Evolutionary Psychology*, *11*(1), 172–185. https://doi.org/10.1177/147470491301100116

Jonason, P. K., Li, N. P., Webster, G. D., & Schmitt, D. P. (2009). The dark triad: Facilitating a short-term mating strategy in men. *European Journal of Personality, 23*(1), 5–18. https://doi.org/10.1002/per.698

Jonason, P. K., Lyons, M., & Bethell, E. (2014). The making of Darth Vader: Parent–child care and the dark triad. *Personality and Individual Differences, 67*, 30–34. https://doi.org/10.1016/j.paid.2013.10.006

Jonason, P. K., Valentine, K. A., Li, N. P., & Harbeson, C. L. (2011). Mate-selection and the dark triad: Facilitating a short-term mating strategy and creating a volatile environment. *Personality and Individual Differences, 51*(6), 759–763. https://doi.org/10.1016/j.paid.2011.06.025

Jonason, P. K., Webster, G. D., Schmitt, D. P., Li, N. P., & Crysel, L. (2012). The antihero in popular culture: Life history theory and the dark triad personality traits. *Review of General Psychology, 16*(2), 192–199. https://doi.org/10.1037/a0027914

Jones, D. N., & Paulhus, D. L. (2014). Introducing the Short Dark Triad (SD3): A brief measure of dark personality traits. *Assessment*, *21*(1), 28–41. https://doi.org/10.1177/1073191113514105

Justice, L. M., Petscher, Y., Schatschneider, C., & Mashburn, A. (2011). Peer effects in preschool classrooms: Is children's language growth associated with their classmates' skills? *Child Development*, *82*(6), 1768–1777. https://doi.org/10.1111/j.1467-8624.2011.01665.x

Kaakinen, M., Koivula, A., Savolainen, I., Sirola, A., Mikkola, M., Zych, I., Paek, H.-J., & Oksanen, A. (2021). Online dating applications and risk of youth victimization: A lifestyle exposure perspective. *Aggressive Behavior*, *47*(5), 530–543. https://doi.org/10.1002/ab.21968

Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed). Guilford Press.

Lechuga, J., & Jones, D. N. (2021). Emophilia and other predictors of attraction to individuals with dark triad traits. *Personality and Individual Differences*, *168*, Article 110318. https://doi.org/10.1016/j.paid.2020.110318

Lee, S. L. (2019). Predicting SNS addiction with the big five and the dark triad. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, *13*(1), Article 3. https://doi.org/10.5817/CP2019-1-3

Lyons, M., Messenger, A., Perry, R., & Brewer, G. (2022). The dark tetrad in Tinder: Hook-up app for high psychopathy individuals, and a diverse utilitarian tool for Machiavellians? *Current Psychology*, *41*(2), 659–666. https://doi.org/10.1007/s12144-019-00589-z

Malesza, M., & Kaczmarek, M. C. (2021). Dark side of health-predicting health behaviors and diseases with the dark triad traits. *Journal of Public Health*, *29*(2), 275–284. https://doi.org/10.1007/s10389-019-01129-6

Marsh, H. W., Lüdtke, O., Trautwein, U., & Morin, A. J. S. (2009). Classical latent profile analysis of academic self-concept dimensions: Synergy of person- and variable-centered approaches to theoretical models of self-concept. *Structural Equation Modeling: A Multidisciplinary Journal*, *16*(2), 191–225. https://doi.org/10.1080/10705510902751010

Mayshak, R., King, R. M., Chandler, B., & Hannah, M. (2020). To swipe or not to swipe: The dark tetrad and risks associated with mobile dating app use. *Personality and Individual Differences*, *163*, Article 110099. https://doi.org/10.1016/j.paid.2020.110099

McDonald, M. M., Donnellan, M. B., & Navarrete, C. D. (2012). A life history approach to understanding the dark triad. *Personality and individual differences, 52*(5), 601–605. https://doi.org/10.1016/j.paid.2011.12.003

Molenda, Z. A., Marchlewska, M., Rogoza, M., Michalski, P., Górska, P., Szczepańska, D., & Cislak, A. (2022). What makes an Internet troll? On the relationships between temperament (BIS/BAS), dark triad, and Internet trolling. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, *16*(5), Article 11. https://doi.org/10.5817/CP2022-5-11

Moor, L., & Anderson, J. R. (2019). A systematic literature review of the relationship between dark personality traits and antisocial online behaviours. *Personality and Individual Differences*, *144*, 40–55. https://doi.org/10.1016/j.paid.2019.02.027

Morin, A. J. S., Meyer, J. P., Creusier, J., & Biétry, F. (2016). Multiple-group analysis of similarity in latent profile solutions. *Organizational Research Methods*, *19*(2), 231–254. https://doi.org/10.1177/1094428115621148

Muñiz, J., Elosua, P., & Hambleton, R. K. (2013). Directrices para la traducción y adaptación de los tests: Segunda edición [Guidelines for translation and adaptation of tests: Second edition]. *Psicothema*, *25*(2), 151–157. https://doi.org/10.7334/psicothema2013.24

Muris, P., Merckelbach, H., Otgaar, H., & Meijer, E. (2017). The malevolent side of human nature: A meta-analysis and critical review of the literature on the dark triad (narcissism, Machiavellianism, and psychopathy). *Perspectives on Psychological Science*, *12*(2), 183–204. https://doi.org/10.1177/1745691616666070

Netemeyer, R. G., Bearden, W. O., & Sharma, S. (2003). *Scaling procedures: Issues and applications.* Sage Publications.

Newson, R. (2002). Parameters behind "nonparametric" statistics: Kendall's tau, Somers' D and median differences. *The Stata Journal*, *2*(1), 45–65. https://doi.org/10.1177/1536867X0200200103

Orosz, G., Benyó, M., Berkes, B., Nikoletti, E., Gál, É., Tóth-Király, I., & Bőthe, B. (2018). The personality, motivational, and need-based background of problematic Tinder use. *Journal of Behavioral Addictions*, *7*(2), 301–316. https://doi.org/10.1556/2006.7.2018.21

Paulhus, D. L. (2014). Toward a taxonomy of dark personalities. *Current Directions in Psychological Science*, *23*(6), 421–426. https://doi.org/10.1177/0963721414547737

Paulhus, D. L., & Williams, K. M. (2002). The dark triad of personality: Narcissism, Machiavellianism, and psychopathy. *Journal of Research in Personality*, *36*(6), 556–563. https://doi.org/10.1016/S0092-6566(02)00505-6

Penke, L., & Asendorpf, J. B. (2008). Beyond global sociosexual orientations: A more differentiated look at sociosexuality and its effects on courtship and romantic relationships. *Journal of Personality and Social Psychology*, *95*(5), 1113–1135. https://doi.org/10.1037/0022-3514.95.5.1113

Phan, A., Seigfried-Spellar, K., & Choo, K.-K. R. (2021). Threaten me softly: A review of potential dating app risks. *Computers in Human Behavior Reports*, *3*, Article 100055. https://doi.org/10.1016/j.chbr.2021.100055

Pineda, D., Martínez-Martínez, A., Galán, M., Rico-Bordera, P., & Piqueras, J. A. (2023). The dark tetrad and online sexual victimization: Enjoying in the distance. *Computers in Human Behavior*, *142*, Article 107659. https://doi.org/10.1016/j.chb.2023.107659

Pineda, D., Piqueras, J. A., Galán, M., & Martínez-Martínez, A. (2021). Everyday sadism: Psychometric properties of three Spanish versions for assessing the construct. *Current Psychology: A Journal for Diverse Perspectives on Diverse Psychological Issues, 42*(2), 1137–1145. https://doi.org/10.1007/s12144-021-01434-y

Pineda, D., Rico-Bordera, P., Martínez-Martínez, A., Galán, M., & Piqueras, J. A. (2022). Dark tetrad personality traits also play a role in bullying victimization. *Frontiers in Psychology*, *13*, Article 984744. https://doi.org/10.3389/fpsyg.2022.984744

Pineda, D., Sandín, B., & Muris, P. (2020). Psychometrics properties of the Spanish version of two dark triad scales: The Dirty Dozen and the Short Dark Triad. *Current Psychology, 39*(5), 1873–1881. https://doi.org/10.1007/S12144-018-9888-5

Plouffe, R. A., Saklofske, D. H., & Smith, M. M. (2017). The assessment of sadistic personality: Preliminary psychometric evidence for a new measure. *Personality and Individual Differences*, *104*, 166–171. https://doi.org/10.1016/j.paid.2016.07.043

Schmitt, D. P., Alcalay, L., Allik, J., Alves, I. C. B., Anderson, C. A., Angelini, A. L., Asendorpf, J. B., Austers, I., Balaguer, I., Baptista, A., Bender, S. S., Bennett, K., Bianchi, G., Birashk, B., Bleske-Rechek, A., Boholst, F. A., Boothroyd, L., Borja, T., Bos, A., . . . Kökény, T. (2017). Narcissism and the strategic pursuit of short-term mating: Universal links across 11 world regions of the International Sexuality Description Project-2. *Psychological Topics, 26*(1), 89–137. https://doi.org/10.31820/pt.26.1.5

Sevi, B. (2019). The dark side of Tinder: The dark triad of personality as correlates of Tinder use. *Journal of Individual Differences*, *40*(4), 242–246. https://doi.org/10.1027/1614-0001/a000297

Smith, A. (2016, February 29). *5 facts about online dating*. https://internet.psych.wisc.edu/wp-content/uploads/532-Master/532-UnitPages/Unit-06/Smith_Pew_OnlineDating_2016a.pdf

Statista (2023). *Most popular dating apps worldwide in 2023, by downloads.* https://www.statista.com/statistics/1359417/most-downloaded-dating-apps-worldwide/

Sumter, S. R., & Vandenbosch, L. (2019). Dating gone mobile: Demographic and personality-based correlates of using smartphone-based dating applications among emerging adults. *New Media & Society*, *21*(3), 655–673. https://doi.org/10.1177/1461444818804773

Sumter, S. R., Vandenbosch, L., & Ligtenberg, L. (2017). Love me Tinder: Untangling emerging adults' motivations for using the dating application Tinder. *Telematics and Informatics*, *34*(1), 67–78. https://doi.org/10.1016/j.tele.2016.04.009

Timmermans, E., & De Caluwé, E. (2017a). Development and validation of the Tinder Motives Scale (TMS). *Computers in Human Behavior*, *70*, 341–350. https://doi.org/10.1016/j.chb.2017.01.028

Timmermans, E., & De Caluwé, E. (2017b). To Tinder or not to Tinder, that's the question: An individual differences perspective to Tinder use and motives. *Personality and Individual Differences*, *110*, 74–79. https://doi.org/10.1016/j.paid.2017.01.026

Timmermans, E., De Caluwé, E., & Alexopoulos, C. (2018). Why are you cheating on Tinder? Exploring users' motives and (dark) personality traits. *Computers in Human Behavior*, *89*, 129–139. https://doi.org/10.1016/j.chb.2018.07.040

Tinder (2023). *Tinder. https://tinder.com*

Valentova, J. V., Junior, F. P. M., Štěrbová, Z., Varella, M. A. C., & Fisher, M. L. (2020). The association between dark triad traits and sociosexuality with mating and parenting efforts: A cross-cultural study. *Personality and Individual Differences, 154*, Article 109613. https://doi.org/10.1016/j.paid.2019.109613

Van De Wiele, C., & Tong, S. T. (2014). Breaking boundaries: The uses & gratifications of Grindr. *Proceedings of the 2014 ACM International Joint Conference on Pervasive and Ubiquitous Computing*, 619–630. https://doi.org/10.1145/2632048.2636070

Vandekerckhove, J., Matzke, D., & Wagenmakers, E.-J. (2015). Model comparison and the principle of parsimony. In J. R. Busemeyer, Z. Wang, J. T. Townsend, & A. Eidels (Eds.), *The Oxford handbook of computational and mathematical psychology* (pp. 300–319). Oxford University Press.

Williams, G. A., & Kibowski, F. (2015). Latent class analysis and latent profile analysis. In L. A. Jason & D. S. Glenwick (Eds.), *Handbook of methodological approaches to community-based research: Qualitative, quantitative, and mixed methods* (pp. 143–152). Oxford University Press. https://doi.org/10.1093/med:psych/9780190243654.003.0015

Wu, S., & Trottier, D. (2022). Dating apps: A literature review. *Annals of the International Communication Association*, *46*(2), 91–115. https://doi.org/10.1080/23808985.2022.2069046

Appendix

Table A1. *Descriptive Statistics, Reliability Indices, and Correlations Among Variables.*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1																			
2	.48**	1																		
3	.51**	.54**	1																	
4	.40**	.51**	.79**	1																
5	.28**	.19**	.25**	.12	1															
6	.21**	.20**	.16*	.04	.50**	1														
7	.25**	.18*	.12	.02	.36**	.48**	1													
8	.16*	.20*	.26**	.18*	.10	.00	.11	1												
9	−.05	.01	−.03	.00	−.12	−.14	−.04	.15*	1											
10	.28**	.23**	.22**	.16*	.32**	.36**	.37**	.37**	.12	1										
11	.12	.17*	.22**	.16*	.02	.10	.15*	.50**	.17*	.38**	1									
12	.19**	.05	.02	−.04	.15*	.11	.07	.08	.05	.29**	.10	1								
13	.16*	.29**	.19**	.12	.04	.05	−.01	.31**	.26**	.26**	.18**	.08	1							
14	.25**	.27**	.29**	.25**	−.04	−.03	.05	.57**	.15*	.33**	.45**	.24**	.43**	1						
15	.23**	.20**	.16*	.14	−.11	−.06	.09	.30**	.18**	.19**	.38**	.19**	.30**	.54**	1					
16	.14*	.05	−.01	−.05	.08	.14	.15*	.19**	.16*	.22**	.31**	.46**	.17*	.30**	.24**	1				
17	.19**	.24**	.06	.05	.24**	.28**	.20**	.24**	.25**	.53**	.33**	.23**	.30**	.20**	.15*	.30**	1			
18	.02	.20**	.11	.11	.14	.14	.07	.25**	.13	.29**	.37**	.17*	.20**	.30**	.21**	.37**	.39**	1		
19	.16*	.16*	.27**	.21**	.17*	.15*	.11	.50**	.22**	.40**	.57**	.21**	.29**	.47**	.30**	.32**	.33**	.49**	1	
20	.12	.11	.02	.05	−.04	.08	−.05	.30**	.15*	.26**	.39**	.16*	.22**	.35**	.36**	.33**	.31**	.40**	.39**	1
M	12.57	11.85	7.66	4.54	13.95	18.07	10.75	7.38	10.99	8.89	8.33	9.60	7.93	5.50	7.29	12.19	11.36	12.25	7.42	12.33
SD	5.06	6.62	5.30	5.05	7.03	6.85	5.83	4.89	5.55	5.15	5.37	5.96	5.60	4.05	4.91	5.64	6.12	5.94	4.82	5.62
α	.49	.77	.66	.78	.88	.76	.89	.92	.91	.80	.92	.94	.98	.92	.83	.85	.94	.92	.83	.86
ω	.58	.79	.74	.85	.89	.76	.89	.92	.91	.81	.92	.94	.98	.93	.85	.85	.95	.92	.85	.88

Note. 1 = Narcissism; 2 = Machiavellianism; 3 = Psychopathy; 4 = Sadism; 5 = Sociosexual behaviour; 6 = Sociosexual attitude; 7 = Sociosexual desire; 8 = Social approval; 9 = Relationship seeking; 10 = Sexual experience; 11 = Flirting/social skills; 12 = Travelling; 13 = Ex; 14 = Belongingness; 15 = Peer pressure; 16 = Socializing; 17 = Sexual orientation; 18 = Pass time/entertainment; 19 = Distraction; 20 = Curiosity; α = Cronbach's alpha; ω = McDonald's Omega; * $p < .05$. ** $p < .01$.

About Authors

Pilar Rico-Bordera, Ph.D. with a postdoctoral contract (funded by the Spanish Ministry of Universities) at the Miguel Hernández University of Elche. Her research focuses on personality analysis and, more specifically, on the objective and indirect assessment of negative personality traits.

https://orcid.org/0000-0002-2157-2468

Manuel Galán is a Ph.D. student at University Miguel Hernández of Elche. MSc in Law and Forensic Psychology and a professor at the Catholic University of Murcia. His research interests focus on forensic psychology, more specifically on Dark Personality and its relationship with everyday behaviours that can lead to a variety of antisocial outcomes.

https://orcid.org/0000-0003-4730-0695

David Pineda, Ph.D., is Assistant Professor in the Department of Health Psychology at Miguel Hernandez University of Elche and at National Distance Education University. He serves as faculty in the Psychology and Criminology degrees and several post graduate courses. He received his PhD in Psychology from the National Distance Education University. His main research interest is on dark personalities and forensic psychology.

https://orcid.org/0000-0001-5710-1636

Jose A. Piqueras, Ph.D., is Professor in the Department of Health Psychology at Miguel Hernandez University. He teaches in the degree of Psychology and in different masters of the UMH. He received his Ph.D. in Psychology from the University of Murcia. His primary areas of research are Psychological Assessment of Emotional Disorders & Suicide; Mental Health Continuum, and Emotional Intelligence in children, adolescents and young adults.

https://orcid.org/0000-0002-3604-5441

✉ **Correspondence to**
David Pineda, associate lecturer; Miguel Hernández University of Elche, Avenida de la Universidad, s/n, 3202, Alicante, Spain; dpineda@umh.es