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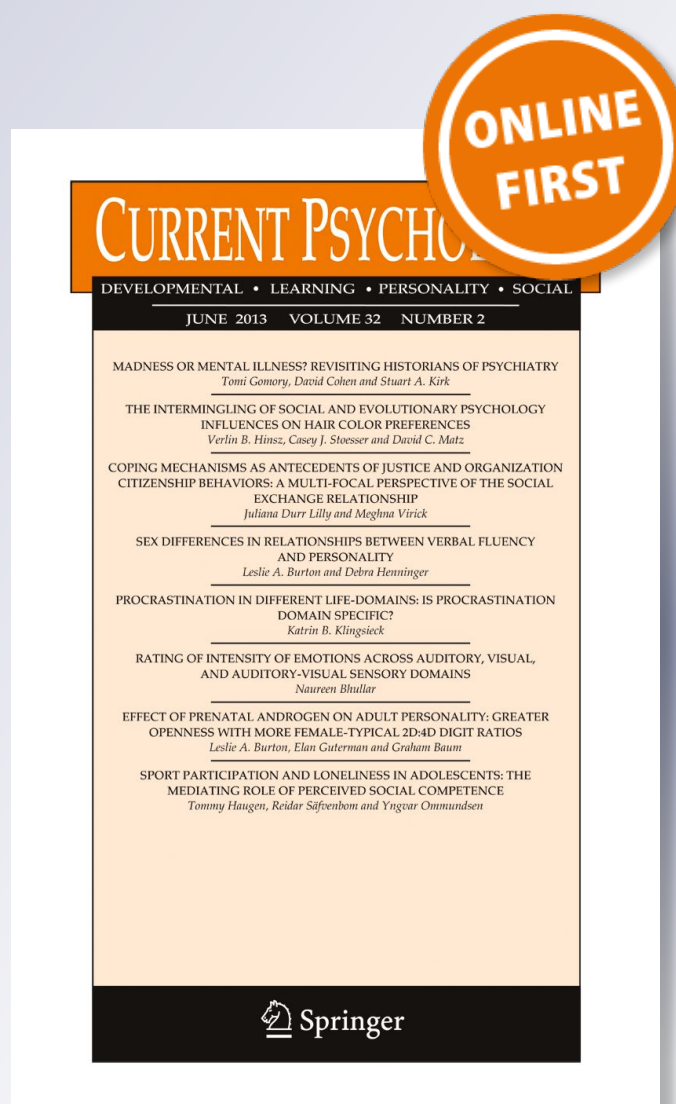
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# Psychometrics properties of the Spanish version of two Dark Triad scales: The Dirty Dozen and the Short Dark Triad

David Pineda<sup>1</sup> · Bonifacio Sandín<sup>1</sup> · Peter Muris<sup>2</sup>

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## Abstract

The Dark Triad refers to three malevolent personality traits, namely narcissism, Machiavellianism, and psychopathy. The Dirty Dozen (DD) and Short Dark Triad (SD3) have been developed as concise scales for measuring these traits. This study examined the psychometrics properties of the Spanish version of the DD and SD3 in a non-clinical population recruited via the internet ( $N=454$ ). For both scales, we found (1) an adequate fit for the hypothesized factor structure with three separate but correlated malevolent traits; (2) mostly moderate to good reliability coefficients; (3) significant gender differences with males scoring higher on Dark Triad traits than females; (4) theoretically meaningful links with Eysenck's personality supertraits; (5) positive correlations with externalizing and – albeit to a lesser extent – internalizing psychiatric symptoms; and (6) that most Dark Triad traits were positively associated with a socially desirable response tendency. It can be concluded that the Spanish DD and SD3 display highly similar psychometric qualities as the original scales and other translations of these measures.

**Keywords** Dark Triad · Dirty Dozen · Short Dark Triad · Validation · Narcissism · Machiavellianism · Psychopathy

## Introduction

The Dark Triad (DT) has been conceptualized as a set of three malevolent personality traits that are present in the general population, namely (1) narcissism, which is defined as a blend of vanity and egocentric admiration of one's own qualities that negatively impacts relationships with other people, (2) Machiavellianism, which refers to a duplicitous interpersonal style characterized by a cynical disregard for morality and a focus on self-interest and personal gain, and (3) psychopathy,

which is concerned with antisocial behavior, diminished empathy and remorse, and disinhibited and bold behavior, sometimes covered by a veil of superficial charm (Paulhus and Williams 2002).

Researchers investigating the DT have relied on separate self-report scales for measuring this set of 'malevolent' traits. The Narcissistic Personality Inventory (NPI; Raskin and Hall 1979) is commonly used for measuring narcissism, the Mach-IV (Christie and Geis 1970) is the most widely employed scale for assessing Machiavellianism, while the Self-Report of Psychopathy (SRP; Hare 1985) is frequently administered for tapping the trait of psychopathy. Although there is good evidence for the reliability and validity of these scales, each of them contains quite a large number of items and so their joint administration for assessing the full Dark Triad construct requires a substantial amount of time. To deal with this problem, the Dirty Dozen (DD) was developed as a concise measure of the Dark Triad (Jonason and Webster 2010). However, containing only 12 items, it is not surprising that the DD barely covers all the aspects of the three traits as measured by the original scales. Therefore, Jones and Paulhus (2014) developed their more extended 27-item Short Dark Triad (SD3), which appears to perform better in this regard (Maples et al. 2014).

Research on the Dark Triad has flourished during the past decade, and the DD and SD3 have certainly made their

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contribution. A number of key findings of this literature can be summarized as follows (see for a review: Muris et al. 2017). First, although each Dark Triad trait has its own unique features, they appear to be strongly inter-correlated and thus can best be considered as “evil allies of personality” (Paulhus and Williams 2002). Second, the Dark Triad traits are more prominent in males than in females. Third, the Dark Triad represents the evil side of human nature and covers a set of characteristics that are only partly present in traditional models of personality. For example, research has shown that all Dark Triad traits correlate most substantially (negatively) with the agreeableness factor of the Big Five (Paulhus and Williams 2002) and the honesty-humility factor of the HEXACO model (Lee and Ashton 2014). Fourth and finally, a host of studies has been conducted examining the psychosocial correlates of the Dark Triad traits. In general, this research has indicated that the traits (although Machiavellianism and psychopathy stronger than narcissism) are positively associated with various problems of an externalizing nature (e.g., lack of empathy and morality, aggression, anger, sexual harassment; Muris et al. 2017).

An issue that needs to be further investigated concerns the relation between the Dark Triad traits and social desirability (Jonason and Webster 2010; Muris et al. 2017). On the one hand, there is clear evidence that these malevolent traits, and in particular psychopathy (Ray et al. 2013; Verschuere et al. 2014), are negatively related to socially desirable responding, which can be explained by the fact that individuals high on these traits do not really value the opinion of others, reflecting characteristic features such as egocentrism, grandiosity, and bravado (Gamache et al. 2018). On the other hand, it has also been noted that the Dark Triad is associated with a lack of honesty and sincerity (Hodson et al. 2018), on the basis of which one might expect a positive relation between these malevolent traits and social desirability.

In recent years, measures like the DD and SD3 have become available in multiple languages (i.e., Dutch: Muris et al. 2013; Farzi: Atari and Chegeni 2016; French: Gamache et al. 2018; Savard et al. 2017; German: Malesza et al. 2017; Japanese: Shimotsukasa and Oshio 2016; Polish: Czarna et al. 2016; Russian: Egorova et al. 2016; Turkish: Özsoy et al. 2017), which makes it possible to examine the Dark Triad in various countries across the world and to conduct cross-cultural comparisons. A Spanish version of these instruments would provide access to a substantial research potential because this language is spoken in large parts of the world (besides Spain almost the whole of South- and Central-America). With this in mind, the main purpose of the present study was to examine the following psychometrics of the Spanish DD and SD3: (1) the hypothesized factor structure with narcissism, Machiavellianism, and psychopathy items loading on three separate but correlated traits;

although there is some recent evidence that a bifactor model would even provide a better fit for the structure of the DD and SD3 (e.g., McLarnon and Tarraf 2017), we preferred to test the more common correlated three factor model to facilitate comparison with previous factor analytic studies of these Dark Triad scales, (2) the internal consistency reliability, and (3) the validity as indicated by (a) the commonly found gender difference of Dark Triad traits being somewhat more prominent in males than in females; (b) the relations with normal personality traits and psychosocial problems. With regard to the latter aspect of validity, it is important to note that previous studies on the Dark Triad trait have primarily investigated relations to the personality factors described by the Big Five model (O’Boyle et al. 2015) and externalizing problems (Muris et al. 2017). The current research therefore focuses on a different model of personality, namely Eysenck’s Big Three model – which besides neuroticism and extraversion includes the supertrait of psychoticism (i.e., a personality pattern typified by aggressiveness and interpersonal hostility; Eysenck and Eysenck 1987) that may be especially relevant within the context of the Dark Triad and thus positively related to all three dark traits. In addition, the present study included the Symptom Assessment-45 (Davison et al. 1997), which besides externalizing problems (e.g., hostility, paranoid ideation) also includes a variety of internalizing symptoms (e.g., anxiety, depression, and somatization). It was hypothesized that the Dark Triad traits would be positively associated with externalizing but also – albeit to a lesser extent – to internalizing problems (e.g., Jonason et al. 2015). Finally, (c) we also assessed participants’ level of social desirability, which refers to the tendency to under-report ‘bad behavior’. As noted earlier, our predictions regarding the relation between the Dark Triad traits and social desirability were less clear as there are plausible arguments for a negative (Gamache et al. 2018; Ray et al. 2013) as well as for a positive association (Hodson et al. 2018).

## Method

### Participants and Procedure

The sample consisted of 454 participants (353 females, 77.8%) who were recruited via the Internet and completed an online survey. The research was publicized via Facebook, Twitter, and some other social media. All were Spanish-language speakers of whom the majority (79.7%) was born in Spain and the rest originated from other countries. The mean age was 34.64 years ( $SD = 11.06$ , range 18–75 years). Most respondents were married or lived together with a partner (60%). In terms of educational levels, 21 of them had finished high school (4.6%), 101 had a pre-

bachelor degree (22.2%), 241 were graduated as bachelor (53.1%), and 91 had a master degree or higher (20.0%). The average time that the participants needed to complete the online survey was 17 min and 28 s.

## Measures

### Dark Triad Scales

As noted in the introduction, the DD (Jonason and Webster 2010) and the SD-3 (Jones and Paulhus 2014) are respectively 12- and 27-item self-report questionnaires for measuring the Dark Triad traits of narcissism, Machiavellianism, and psychopathy. Both scales were translated into Spanish following a translation–back-translation procedure. The first author translated the items of the original English versions of the DD and SD-3 into Spanish, while an independent, licensed, bilingual translator conducted the back-translation.

### Abbreviated form of the Revised Eysenck Personality Questionnaire (EPQR-A)

The Spanish version of the Abbreviated form of the Revised Eysenck Personality Questionnaire (EPQR-A; Francis et al. 1992; Sandin et al. 2002) measures the Big Three supertraits of personality as described in Eysenck's model, namely neuroticism, extraversion, and psychoticism. Reliability coefficients were good for neuroticism and extraversion (with alphas and omegas ranging between .75 and .87), but somewhat low for psychoticism (alpha = .48, omega = .51), a finding that has also been reported by others (e.g., Eysenck et al. 1985).

### Symptom Assessment–45 (SA-45)

The Symptom Assessment–45 (SA-45) is a brief questionnaire for measuring psychiatric symptomatology (Davison et al. 1997; Spanish version by Sandin et al. 2008). It covers symptoms of both an internalizing (e.g., anxiety, depression, somatization) and an externalizing (e.g., hostility, paranoid ideation) nature. SA-45 scales displayed good internal consistency in this study, with all alphas/omegas ranging between .70 and .96.

### Marlowe-Crowne Social Desirability Scale (SDS)

The Spanish version of the Marlowe-Crowne Social Desirability Scale (SDS; (Crowne and Marlowe 1960; Ferrando and Chico 2000) is a 33-item scale for measuring the tendency of to respond to questions in a manner that will be viewed favorably by others. In this study, the reliability of the SDS total score was sufficient with a Cronbach's alpha of .68 and a McDonald's omega of .69.

## Results

### Confirmatory Factor Analysis of DD and SD3

Using the lavaan package (Rosseel 2012) in R (R Core Team 2016), confirmatory factor analyses (using a Diagonally Weighted Least Squares (DWLS) estimation procedure) were conducted in which individual items of the DD and the SD3 loaded on their intended factors and the three latent factors were allowed to correlate. The fit indices for both the DD and the SD3 indicated that the data were well in keeping with the hypothesized model. For the DD, the goodness-of-fit indices were:  $\chi^2(51) = 131.58, p < .001; \chi^2/df = 2.58; CFI = .96; GFI = .98; RMSEA = .06$  (90% CI: .05, .07); SRMR = .07. For the SD3, these indices were:  $\chi^2(321) = 574.83, p < .001; \chi^2/df = 1.85; CFI = .93; GFI = .95; RMSEA = .04$  (90% CI: .04, .05); SRMR = .07. The standardized factor loadings of the models of both the DD and SD3 are shown in Figs. 1 and 2 respectively. As can be seen, with few exceptions the majority of the items loaded convincingly on their hypothesized factor. Note also that the correlations among the three Dark Triad traits were quite substantial.

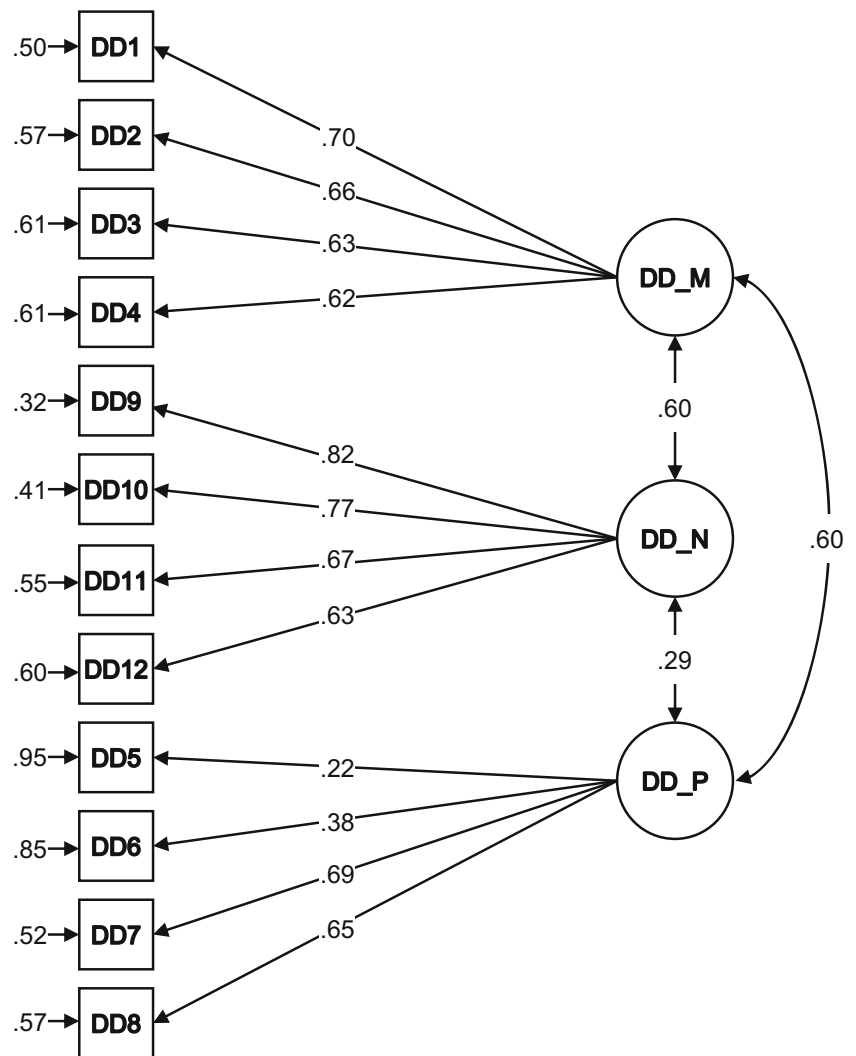
### Reliability of DD and SD3

To assess the reliability (internal consistency) of the DD and SD3 scales, Cronbach's alpha and McDonald's omega coefficients were calculated. As we can see in Table 1, the reliability of the Spanish translations of both scales was acceptable. That is, the alpha values ranged between .60 and .81 for the DD and between .61 and .80 for the SD3. The omega coefficients were generally in the similar range, with the only exception being the psychopathy scale of the DD, which produced a value of .47.

### Validity I: Gender Differences

A series of *t*-tests were conducted to evaluate gender differences for the DD and SD3 scores. As expected, males generally displayed higher levels of Dark Triad traits than females: for the DD total score, means were respectively 16.50, *SD* = 7.87 versus 14.75, *SD* = 6.78,  $t(452) = 2.51, p = .012$ , Hedges' *g* = 0.28, and for the SD3, these means were 41.97, *SD* = 13.67 versus 36.21, *SD* = 10.61,  $t(452) = 4.31, p < .001$ , Hedges' *g* = 0.50. For the separate Dark Triad traits, statistically significant differences were found for psychopathy [for the DD, means were 3.99, *SD* = 3.14 versus 2.72, *SD* = 2.35,  $t(452) = 4.84, p < .001$ , Hedges' *g* = 0.55; and for the SD3, means were 10.05, *SD* = 5.48 versus 6.94, *SD* = 4.43,  $t(452) = 4.84, p < .001$ , Hedges' *g* = 0.68] and Machiavellianism [only for the SD3, means were 16.20, *SD* = 6.48 versus 14.68, *SD* = 5.26,  $t(452) = 2.34, p = .020$ , Hedges' *g* = 0.27].

**Fig. 1** Factor structure of the Spanish version of the DD as obtained with confirmatory factor analysis



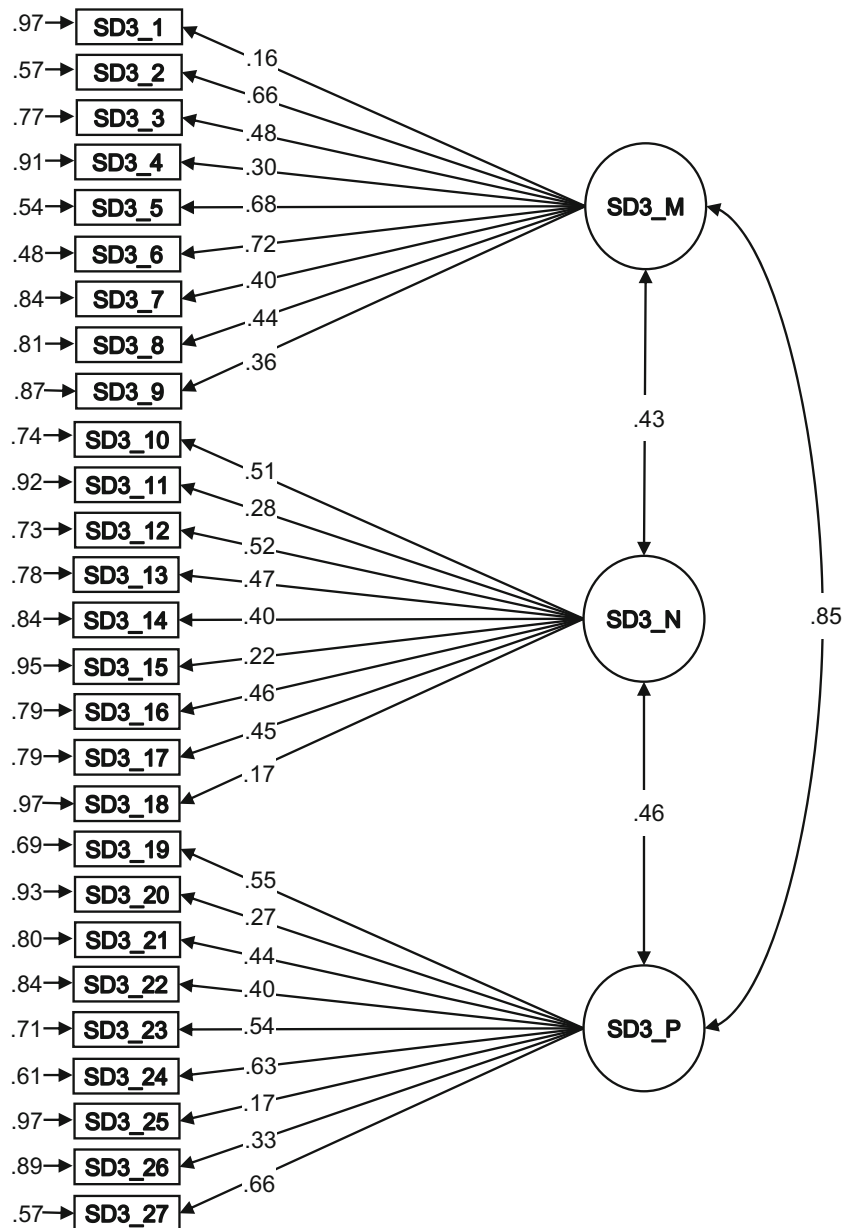
### Validity II: Correlations with Personality Traits, Psychiatric Symptoms, and Social Desirability

Correlations (corrected for gender) between the Dark Triad traits and personality supertraits, psychiatric symptoms, and social desirability are displayed in Table 2. Correlations between total scores on Dark Triad measures and EPQR-A supertraits revealed that the DD total score was significantly, positively related to neuroticism and psychoticism ( $r$ 's being .24 and .19), while the SD3 was only significantly, positively associated with psychoticism ( $r = .28$ ). When looking at the correlations with individual Dark Triad members and personality supertraits, it was found that DD and SD3 Machiavellianism and DD narcissism were significantly and positively associated with neuroticism (all  $r$ 's being .23). Narcissism was positively correlated with extraversion, but only when assessed with the SD3 ( $r = .35$ ). DD and SD3 Psychopathy were both significantly, positively associated with psychoticism ( $r$ 's being .25 and .32).

There were significant and positive correlations between the Dark Triad total scores and psychiatric symptomatology as assessed with SA-45 total score ( $r$ 's being .33 and .26 for the DD and SD3, respectively). For the DD, Machiavellianism and narcissism appeared positively associated with total symptoms ( $r$ 's being .33 and .27), whereas for the SD3, Machiavellianism and psychopathy were the Dark Triad scales positively linked to total symptoms ( $r$ 's being .30 and .28). Note that significant correlations involved externalizing as well as internalizing symptoms and that in general these links were in the small to modest range. The most robust links were noted for paranoid ideation and hostility (all  $r$ 's with DD and SD3 total scores in the .30 to .40 range).

The Dark Triad traits were found to be positively correlated with social desirability ( $r$ 's with DD and SD3 total scores being .38 and .29). DD Psychopathy ( $r = .13$ ) and SD3 narcissism ( $r = -.01$ ) did not show this significant positive link with social desirability.

**Fig. 2** Factor structure of the Spanish version of the SD3 as obtained with confirmatory factor analysis



**Validity III: Additional Analysis**

A series of hierarchical regression analyses was conducted with the Dark Triad traits of either the DD or the SD3 being the predictors and psychiatric symptoms as the dependent variables. All analyses controlled for gender on step 1 and the stepwise method on step 2 was used to find the strongest Dark Triad predictor. The regression analyses showed that – for both the DD and the SD3 – Machiavellianism was the strongest, positive predictor of psychiatric symptoms as measured with the SA-45 total score, accounting for respectively 11 and 9% of the variance. Similar results were found when Dark Triad features were analyzed as predictors of different types of symptoms. For the DD, Machiavellianism emerged as most

powerful predictor for 8 of 9 SA-45 subscales [explaining between 2% (phobias) to 14% (hostility) of the variance], while narcissism emerged as best predictor of anxiety (5%). For the SD3, Machiavellianism was the most predictive trait for 6 out of 9 SA-45 subscales [explaining between 2% (phobias) and 16% (paranoid ideation) of the variance], whereas psychopathy was found to be the best predictor of hostility (10%), psychotic symptoms (3%), and somatization (3%).

When controlling for social desirability, the results of the regression analyses demonstrated similar results, although the contributions of the DD and SD3 traits clearly attenuated. For example, in the analyses with psychiatric symptomatology as indexed by the SA-45 total score as the dependent variable,

**Table 1** Means (standard deviations), gender differences, and reliability coefficients (Cronbach's alphas and McDonald's omegas) for the DD, SD3, and the other questionnaires

	Total group ( <i>N</i> = 454)	Women ( <i>n</i> = 353)	Men ( <i>n</i> = 101)	$\alpha$	$\omega$
<b>DD</b>					
Total score	15.13 (7.06)	14.75 (6.78)	16.50 (7.87)	.80	.84
Machiavellianism	5.12 (3.23)	5.10 (3.11)	5.19 (3.64)	.74	.74
Narcissism	7.01 (3.58)	6.92 (3.51)	7.21 (3.82)	.81	.82
Psychopathy	3.00 (2.59)	2.72 (2.35)	3.99 (3.14)	.60	.47
<b>SD3</b>					
Total score	37.46 (11.57)	36.21 (10.61)	41.97 (13.67)	.80	.83
Machiavellianism	15.01 (5.58)	14.68 (5.26)	16.20 (6.48)	.73	.69
Narcissism	14.83 (4.63)	14.59 (4.47)	15.72 (5.11)	.61	.60
Psychopathy	7.61 (4.84)	6.94 (4.43)	10.05 (5.48)	.68	.65
<b>EPQR-A</b>					
Neuroticism	9.42 (1.93)	9.26 (1.96)	10.00 (1.68)	.75	.76
Extraversion	8.61 (1.01)	8.64 (1.00)	8.51 (1.05)	.86	.87
Psychoticism	9.59 (0.98)	9.66 (0.95)	9.36 (1.03)	.48	.51
<b>SA-45</b>					
Total symptoms	34.10 (27.32)	35.82 (27.94)	27.89 (24.09)	.96	.96
Anxiety	4.82 (4.32)	5.27 (4.44)	3.19 (3.40)	.87	.89
Depression	5.19 (4.89)	5.59 (5.00)	3.78 (4.19)	.90	.90
Hostility	2.57 (3.35)	2.61 (3.38)	2.40 (3.25)	.82	.79
Interpersonal sensitivity	4.44 (4.21)	4.60 (4.25)	3.84 (4.06)	.84	.84
Obsessive-compulsive	4.71 (3.95)	4.92 (4.02)	3.98 (3.61)	.79	.77
Paranoid ideation	4.24 (3.75)	4.23 (3.68)	4.28 (3.99)	.76	.76
Phobic anxiety	1.71 (2.97)	1.88 (3.089)	1.10 (2.41)	.84	.84
Psychoticism	1.51 (2.65)	1.53 (2.70)	1.44 (2.46)	.71	.70
Somatization	4.89 (4.26)	5.18 (4.37)	3.85 (3.64)	.84	.84
<b>SDS</b>					
Social desirability	8.07 (3.17)	8.02 (3.13)	8.24 (3.33)	.68	.69

*SD3* Short Dark Triad (Jones and Paulhus 2014), *DD* Dirty Dozen Scale (Jonason and Webster 2010), *EPQR-A* Revised Eysenck Personality Questionnaire-Abbreviated (Francis et al. 1992), *SA-45* The Symptom Assessment-45 Questionnaire (Davison et al. 1997), *SDS* Marlowe-Crowne Social Desirability Scale (Crowne and Marlowe 1960),  $\alpha$  Cronbach's alpha,  $\omega$  McDonald's omega

Machiavellianism remained the strongest predictor, although its explanatory power was reduced to 4% (DD) and 3% (SD3).

## Discussion

Confirmatory factor analysis of the Spanish versions of the DD and SD3 demonstrated that a model in which individual items loaded on three distinct, but correlated factors (i.e., the three hypothesized Dark Triad traits) provided a good fit for the data of both measures, which means that the factor structure of the Spanish scales is equivalent to that of the original scales (Jonason and Webster 2010; Jones and Paulhus 2014). Admittedly, the factor loadings of six items (one in the DD and five in the SD3) were rather low ( $< .30$ ). Nevertheless, it

would be our advice to retain these items in both scales in order to facilitate cross-cultural comparisons.

In general, the internal consistency of the Spanish DD and SD3 was in the sufficient to good range, which is in keeping with reliability coefficients of the original scales (Jonason and Webster 2010; Jones and Paulhus 2014) and their translations in other languages (e.g., Atari and Chegeni 2016; Czarna et al. 2016; Egorova et al. 2016; Malesza et al. 2017; Savard et al. 2017; Shimotsukasa and Oshio 2016; Özsoy et al. 2017). The one exception was the psychopathy scale of the DD, which had an unsatisfactory omega value of only .47. Other studies have also reported internal consistency coefficients for this subscale (Czarna et al. 2016; Jonason and Webster 2010; Savard et al. 2017). A possible explanation for this common finding might be that psychopathy is a more complex trait than the other Dark Triad members (e.g., Cleckley 1950), which



**Table 2** Correlations (corrected for gender) between the Dark Triad traits of Machiavellianism (M), narcissism (N), and psychopathy (P) as indexed by the Spanish DD and SD3 on the one hand, and scales

measuring personality supertraits (EPQR-A), psychiatric symptomatology (SA-45), and social desirability (SDS) on the other hand

	DD				SD3			
	Total	M	N	P	Total	M	N	P
<b>EPQR-A</b>								
Neuroticism	.24*	.23*	.23*	.05	.17	.23*	-.03	.16
Extraversion	.05	.05	.14	-.12	.08	-.08	.35*	-.05
Psychoticism	.19*	.16	.06	.25*	.28*	.18*	.14	.32*
<b>SA-45</b>								
Total symptoms	.33*	.33*	.27*	.10	.26*	.30*	.01	.28*
Anxiety	.21*	.21*	.22*	.01	.14	.18*	-.02	.13
Depression	.29*	.27*	.25*	.10	.21*	.26*	-.03	.23*
Hostility	.35*	.37*	.26*	.14	.30*	.23*	.14	.32*
Interpersonal sensitivity	.29*	.30*	.26*	.07	.22*	.31*	-.09	.24*
Obsessive-compulsive	.20*	.21*	.18*	.03	.18*	.22*	-.04	.21*
Paranoid ideation	.40*	.36*	.34*	.16	.38*	.41*	.11	.33*
Phobic anxiety	.15	.17	.06	.11	.10	.16	-.09	.15
Psychoticism	.25*	.26*	.24*	.02	.21*	.18*	.09	.19*
Somatization	.20*	.21*	.13	.10	.15	.13	.04	.17*
<b>SDS</b>								
Social desirability	.38*	.37*	.33*	.13	.29*	.33*	-.01	.33*

*N* = 406. *EPQR-A* Abbreviated form of the Revised Eysenck Personality Questionnaire, *SA-45* The Symptom Assessment-45, *SDS* Marlowe-Crowne Social Desirability Scale. \**p* < .001

makes it difficult to measure it as a univocal construct (see Lilienfeld and Andrews 1996).

In line with previous findings, gender differences were documented for various Dark Triad traits, with males generally displaying higher levels of these malevolent traits as compared to females. This gender effect was most evident for psychopathy: that is, on both the DD and SD3, males scored significantly higher on this trait than females, which is in line with Muris et al.'s (2017; p.190) conclusion that "psychopathy appears to be the strongest male-linked trait".

With regard to the relations between Dark Triad and the Big Three personality supertraits, it was first of all found that DD narcissism was positively related to neuroticism, while SD3 narcissism was positively related to extraversion. This indicates that both scales operationalize this Dark Triad member in a slightly different way, with the DD tapping more vulnerable features of narcissism and the SD3 measuring the more gregarious and assertive characteristics of this trait. Further, DD and SD3 Machiavellianism were both positively related to neuroticism. On first sight, it seems difficult to reconcile the manipulative, cynical, egoistic features of Machiavellianism with the emotional sensitivity of a neurotic personality, but the literature is quite mixed on this point. Recently, Czibor et al. (2017) have made an attempt to clarify the controversial findings by pointing at

the role of gender differences. In fact, these researchers found that in males Machiavellianism was predominantly associated with risk taking, self-confidence and opportunism, whereas in females this Dark Triad member was primarily linked to neurotic features such as hypersensitivity and vulnerability. Given that the sample of the current study mainly consisted of females, it is not surprising that the female face of Machiavellianism was found.

Finally, psychopathy as assessed with both the DD and the SD3 were positively correlated with the personality trait of psychoticism, which is not surprising given its status of most antisocial trait of the Dark Triad (Muris et al. 2017) and as such relates positively to a personality pattern typified by aggressiveness and interpersonal hostility.

The Dark Triad traits generally showed small to moderate correlations with psychiatric symptomatology. As predicted, the links with symptoms of an externalizing nature such as hostility and paranoid ideation were most substantial, but there were also significant correlations with internalizing symptoms such as depression and interpersonal sensitivity. These findings are in line with Jonason et al. (2015) who also noted that Dark Triad traits are accompanied with a broad range of mental health problems. Machiavellianism was the trait that was most consistently associated with psychiatric symptoms (see also Geng et al. 2016), which of course fits

with the finding that in the present (predominantly female) sample this trait was positively linked to a general emotional susceptibility. Narcissism and psychopathy were also correlated with psychiatric symptoms, but this was dependent on the scale used to assess these traits. When using the DD, narcissism correlated with symptoms while psychopathy did not, whereas the reverse was true when employing the SD3. Again, this suggests that the validity of these Dark Triad subscales differs across both measures. However, this does not seem to be a specific problem of the Spanish version of the DD and SD3. In a previous study by Maples et al. (2014; p.326) also concluded that “the SD3 narcissism scale appears to assess primarily the grandiose aspects of this construct, whereas the DD captures both vulnerable and grandiose features of narcissism”, which refers to a difference between both narcissism subscales that could account for their differential links with symptoms. The similar seems true for the assessment of psychopathy. For example, in an evaluation of the psychopathy subscale of the DD, Miller et al. (2012; p.1048) noted that “important variance related to the interpersonal antagonism and disinhibition is not assessed by the DD”, and there is evidence that the SD3 is clearly better in this regard (Maples et al. 2014).

In general, the Dark Triad was positively correlated with social desirability, and this was especially true for Machiavellianism. Thus, especially individuals high on Machiavellianism are more inclined to present a better picture of themselves, which fits well with the manipulative, deceitful features of this Dark Triad trait. For narcissism and psychopathy, the relation with social desirability was less clear: for these traits also positive correlations were noted but this depended on the Dark Triad measure that was used (the DD for narcissism and the SD3 for psychopathy). Again this suggests that there are slight variations in the way these Dark Triad members are assessed by both scales. In contrast with the results of previous studies (Gamache et al. 2018; Ray et al. 2013), no evidence was found for a negative relation between the Dark Triad traits and social desirability. Thus, in this non-clinical sample, individuals scoring high on this Dark Triad member are *not less* (Verschuere et al. 2014) but in general somewhat *more* concerned with making a positive impression on others. Finally, our findings indicate that correcting for the socially desirable tendency associated with Dark Triad certainly had an impact on the strength of the correlations between the traits and psychiatric symptoms (Muris et al. 2017), although the general pattern of these links remained unchanged.

Altogether, the results of the present study indicate that the psychometric properties of the Spanish version of the DD and the SD3 are generally well in line with what has been noted for the original version of these scales (as well as their translations in other countries). By means of these measures, it becomes possible to conduct research on the Dark Triad in Spanish

speaking populations. Future studies should try to include more males, which would make it possible to further explore gender-specific links between these malevolent traits, especially Machiavellianism, and psychiatric symptomatology.

## Compliance with Ethical Standards

**Ethical Approval** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed Consent** Informed consent was obtained from all individual participants included in the study.

**Conflict of Interest** All the three authors declares that they have no conflict of interest.

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