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GOOD LOOKS, MATE VALUE, FLIRTING CAPACITY, AND CHOOSINESS: EXPLORING ADDITIONAL PATHWAYS TO SINGLEHOOD

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ABSTRACT

Many individuals are single because they encounter difficulties in attracting an intimate partner. Various factors, such as flirting capacity and self-esteem, could potentially predict singlehood. However, these factors are interconnected and have indirect associations with singlehood. The current study has attempted to identify these associations by analyzing a database derived from a sample of 1,432 Greek-speaking participants. Our analysis examined singlehood in general as well as involuntary singlehood, separately for men and women. Specifically, we have identified four pathways for women: 1) Higher mate value was associated with greater self-esteem, which, in turn, was associated with an increased flirting capacity. This was correlated with a higher probability of being in an intimate relationship rather than being single. 2) Furthermore, higher mate value was associated with increased self-esteem, which, in turn, was associated with greater choosiness. This was linked to a lower probability of being in an intimate relationship than being involuntarily single. 3) Additionally, higher scores in self-perceived good looks were associated with higher mate value, which, in turn, was associated with an enhanced flirting capacity. This was connected to a higher probability of being in an intimate relationship rather than being single. 4) Finally, higher scores in self-perceived good looks were associated with higher mate value, which, in turn, was associated with greater choosiness. This was associated with a lower probability of being in an intimate relationship than being single. On the other hand, no significant pathways were found for men.

KEYWORDS

singlehood; involuntary singlehood; self-esteem; flirting capacity; good looks

INTRODUCTION

Many individuals in contemporary post-industrial societies are single, meaning they do not have an intimate partner (Kislev, 2019; Klinenberg, 2012). For instance, a recent study utilized a sample of 7,181 participants from 14 post-industrial nations and found that approximately 38% indicated that they were single (i.e., they did not have an intimate partner) (Apostolou et al., 2023). A different study conducted by the Pew Research Center in the USA found that three-in-ten adults were single, meaning they were not married, living with a partner, or in a committed romantic relationship (source <https://www.pewresearch.org/short-reads/2023/02/08/for-valentines-day-5-facts-about-single-americans>). The phenomenon of singlehood is complex, with various interconnected factors explaining it (Apostolou & Michaelidou, 2023). Recent research has attempted to identify the different pathways by which these factors are associated with singlehood. For example, Apostolou and Michaelidou (2023) have found that higher self-esteem was associated with a better flirting capacity (i.e., how good people are in approaching others persuading them to become their intimate partners), which in turn, was associated with a decreased probability to be involuntarily single. The present study aims to contribute to this emerging literature by examining additional pathways to singlehood in general, as well as to involuntary singlehood, by reanalyzing data from the Apostolou and Michaelidou (2023) study. The pathways are not the same for each sex, so we examined each sex separately. Understanding the cause of singlehood is an important endeavor, and it can lead to better understanding of other phenomena such as poor mental health and misogyny is observed in groups of involuntarily single men (Costello et al., 2022; Grunau et al., 2022).

FLIRTING CAPACITY AND SELF-ESTEEM

It has been argued that one main reason explaining the relatively high occurrence of singlehood in general, and involuntary singlehood in particular, is the mismatch problem (Apostolou, 2015). More specifically, the mechanisms or adaptations that people carry with them today constitute the product of selection pressures working on humans over many generations. This simply means that these mechanisms have adapted reasonably well to the ancestral human conditions but may not be able to deal very effectively with the demands of the contemporary environment if it is considerably different from the ancestral one, a concept known as the mismatch problem (Crawford, 1998; Li et al., 2017; Tooby & Cosmides, 1990). With respect to mating, several lines of evidence indicate that there was a significant mismatch between ancestral and modern conditions.

To begin with, anthropological, historical, and phylogenetic evidence indicates that in the pre-industrial context, the typical form of long-term mating was arranged marriage, where parents chose spouses for their children (Broude & Green, 1983; Coontz, 2006; Walker et al., 2011). For instance, one study examined the mating patterns of a sample of 190 hunting and gathering societies and found that in about 70% of the cases, marriages were arranged, while only in about 4% of the cases were based on free mate choice (Apostolou, 2007). In addition, anthropological, historical, and physiological evidence indicates that in the pre-industrial context, men frequently monopolized access to women by force, typically by forming alliances to fight other men (Puts, 2010). Anthropological evidence further indicates that, in this setting, both men and women could exercise mate choice in extra-marital relationships, in divorce, and in later marriages (Apostolou, 2017).

Existing evidence strongly suggests that in the pre-industrial context, and thus in ancestral human societies, mating was predominantly arranged or forced, but individuals could still exercise some mate choice. This contrasts with the contemporary post-industrial context, where mate choice is freely exercised. Adaptations involved in mating, which evolved to enable mating success

in a context where marriages were arranged or forced, would likely not be effective in dealing with the demands of a modern context where mating is freely exercised (Apostolou, 2015; Goetz et al., 2019). It has been argued that the mechanisms giving rise to flirting capacity have been especially susceptible to the mismatch problem (Apostolou, 2021). In particular, in a context where mating is freely exercised, both men and women need to approach people they usually do not know and attempt to persuade them to become their mates, a process known as flirting. Flirting is cognitively demanding, as it requires people to empathize and choose the right words while avoiding the wrong ones. However, in a context where marriages are arranged or mating is forced, possessing good flirting capacity is not necessary for securing mates. This means that, in ancestral human societies, the selection pressures on developing good flirting skills were rather weak. Consequently, this leads to the prediction that several people today may have a flirting capacity that is inadequate for a context of free mate choice, making them more likely to be single.

Supporting this hypothesis, studies have found that poor flirting skills are a primary reason for being single (Apostolou, 2019, 2021; see also Costello et al. 2023). For instance, in a recent study, Apostolou and Michaelidou (2023) used a sample of 1,432 Greek-speaking participants to examine the effects of 17 possible predictors of singlehood, including flirting capacity. They found that when all other factors were statistically controlled, flirting capacity had a significant effect on relationship status, with lower flirting capacity being associated with a higher probability of being single rather than in an intimate relationship. They also found that self-esteem, defined as one's perceived worthiness as a person (Baumeister, 1993), was an important predictor of flirting capacity. Accordingly, it was also found that higher self-esteem was associated with a decreased probability of being involuntarily single rather than in an intimate relationship, as it was linked to higher flirting capacity.

This is not the end of the story, however, because self-esteem is not a fixed trait but responds to one's capacities. In particular, it has been argued that self-esteem constitutes an evolved mechanism providing individuals with adaptively relevant feedback about their position in the social world (Barkow, 1980; Kenrick et al., 2010; Leary, 1999). In the domain of mating, we expect that self-esteem would adjust to people's mate value, informing them about their worthiness as potential mates (Brase & Dillon, 2022; Schmitt & Jonason, 2019). This being the case, mate value would be indirectly associated with singlehood through self-esteem and flirting capacity. In particular, we predict that lower perceived mate value would be associated with lower self-esteem, which, in turn, would be associated with poorer flirting capacity and an increased probability of being single rather than in an intimate relationship (H_1).

Furthermore, mate value is predicted by traits that people consider desirable in a mate, such as good looks (Edlund & Sagarin, 2014). Thus, we predict further the desirable trait of good looks would be indirectly associated with singlehood through mate value, self-esteem, and flirting capacity. In particular, low scores in perceived good looks would be associated with lower scores in perceived mate value, which would, in turn, be associated with lower scores in perceived self-esteem, and ultimately with lower scores in flirting capacity, resulting in a higher probability of being single rather than in an intimate relationship (H_2).

SELF-ESTEEM AND CHOOSINESS

Choosiness constitutes another predictor of singlehood. For instance, one study has found that the more choosy women indicated to be the more likely they were to prefer to be single than to be in an intimate relationship (Apostolou, 2021). Apostolou and Michaelidou (2023) attempted to examine the effect of choosiness on relationship status, and they have identified an additional pathway to singlehood for women. In particular, women who reported higher self-esteem also reported higher levels of choosiness, and were more likely to be involuntarily single than in an intimate relationship. The interpretation here is that women want to be in an intimate relationship, but due

to higher choosiness fueled by high self-esteem, face difficulties in attracting mates. As discussed earlier, this is not the end of the story, as self-esteem is expected to respond to one's own perceived mate value. Accordingly, we predict that higher scores in perceived mate value would be associated with higher scores in self-esteem, which would be associated with higher choosiness that would be associated with an increased probability of being single rather than in an intimate relationship (H_3).

One factor affecting mate value is physical attractiveness, so we predict further that higher scores in perceived good looks would be associated with higher perceived mate value, which would, in turn, be associated with higher self-esteem, ultimately resulting in an increased probability of being single rather than in an intimate relationship (H_4). This pathway would mean that individuals who possess high mate value, due to having traits highly desirable in the mating market such as good looks, would also have higher self-esteem, making them choosier. This increased choosiness would inevitably result in more time spent as being single.

THE CURRENT STUDY

In their original study, Apostolou and Michaelidou (2023) examined direct and indirect effects of 17 variables on involuntary singlehood. Among other things, they found that for both men and women, self-esteem was associated with flirting capacity, which in turn was associated with relationship status. They also found that self-esteem was associated with choosiness which was associated with relationship status. However, as discussed above, self-esteem is not a constant trait but it can respond to other traits such as one's looks. This being the case, other traits can have indirect effects on singlehood through self-esteem, and the current study aimed to identify these effects.

In particular, the present study aims to further analyze the dataset of Apostolou and Michaelidou (2023) in order to identify additional pathways to singlehood. Specifically, we aimed to test the following predictions: 1) Lower perceived mate value would be associated with lower self-esteem, which would, in turn, be associated with poorer flirting capacity, resulting in an increased probability of being single rather than in an intimate relationship (H_1). 2) Lower scores in perceived good looks would be associated with lower scores in perceived mate value, which would, in turn, be associated with lower self-esteem and lower flirting capacity, ultimately resulting in a higher probability of being single rather than in an intimate relationship (H_2). 3) Additionally, we predict that higher scores in perceived mate value would be associated with higher scores in self-esteem, which would be associated with higher choosiness, leading to an increased probability of being single rather than in an intimate relationship (H_3). 4) Finally, higher scores in perceived good looks would be associated with higher perceived mate value, which would, in turn, be associated with higher self-esteem, ultimately resulting in a higher probability of being single rather than in an intimate relationship (H_4).

Apostolou and Michaelidou (2023) examined the effects of different variables on involuntary singlehood versus being in an intimate relationship status. Still, variables such as self-esteem may also affect other types of singlehood. For example, people with low self-esteem may give up trying to find a mate and may choose to be voluntarily single. Therefore, in the current study, we examined different pathways to involuntary singlehood versus being in an intimate relationship, as well as singlehood (inclusive of all types of singlehood) versus being in an intimate relationship. Additionally, in the original study, significant interactions were found between sex and the different predictors of singlehood, indicating that they affect each sex differently. Accordingly, in the present research, we examined each sex separately. Finally, we examined whether these pathways were significant for years being single.

METHODS

PARTICIPANTS

For our analysis, we employed the dataset of Apostolou and Michaelidou (2023), which included 1,432 (734 women and 698 men) Greek-speaking participants. The mean age of women was 34.8 ($SD = 10.4$) and the mean age of men was 38.7 ($SD = 11.7$). Moreover, 27.6% of the participants were “In a relationship,” 21.3% were “Involuntarily single,” 20.8% were “Married,” 15.8% were “Single between relationships,” 8.7% “Prefer to be single,” and 5.8% “Other.”

MATERIALS

The original study coded for 17 different variables, namely mating effort, sexual functioning, self-perceived mate value, self-esteem, flirting capacity, capacity to perceive signals of romantic interest, shyness, choosiness, BMI, self-perceived good looks, openness, conscientiousness, extraversion, agreeableness, neuroticism, sexual orientation, and having children from previous relationships. In the current study, we focused on good looks, self-esteem, mate-value, choosiness, and flirting capacity, with the rest of the variables entering as co-variates. Self-esteem was measured using the Rosenberg Self-Esteem Scale, which consisted of 10 items (Rosenberg, 1965). Total scores ranged from 10 to 40, with a higher score indicating higher self-esteem. Flirting capacity was measured using a seven-item instrument developed by Apostolou et al. (2019). Mean scores could range from “1” to “5,” with a higher score indicating higher flirting capacity. Perceived mate value was measured using a four-item instrument that participants had to rate in a seven-point scale (Edlund & Sagarin, 2014). A higher mean score indicated a higher mate value. Furthermore, choosiness was measured using a three-item instrument developed by Apostolou et al. (2018). Mean scores could range from “1” to “5,” with a higher score indicating being more selective in mate choice. In addition, self-perceived looks were measured using a five-item instrument that was developed for this purpose. More specifically, participants were asked to rate themselves in the following traits: “good looking,” “beautiful face,” “beautiful body,” “beautiful eyes” and “charming,” using the following scale: 1 – Strongly disagree, 5 – Strongly agree. Cronbach’s alpha for this measure was .82. A higher mean score indicated higher self-perceived looks.

DATA ANALYSIS

To identify indirect association, we conducted serial mediation analysis using SPSS version 28 and the PROCESS version 4.2 macro. Specifically, we performed a serial mediation analysis (Mediation 1) where self-esteem and flirting capacity served as the mediators, and mate value was the predictor (see Figure 1). Furthermore, we conducted a serial mediation analysis where self-esteem and choosiness acted as the mediators, and mate value was the predictor (see Figure 2). Self-perceived good looks was not included in this analysis as it closely correlates with mate value. The remaining variables were entered as covariates, including mating effort, the capacity to perceive signals of romantic interest, shyness, choosiness, BMI, openness, conscientiousness, extraversion, agreeableness, neuroticism, sexual orientation, and having children from previous relationships. The analysis was performed with two sets of dependent variables, namely single (combining all categories of singles) versus in an intimate relationship (combining „in a relationship” and „married” categories), and involuntarily single versus in an intimate relationship. The original research has found that

the included variables predicted relationship status differently for men and women (Apostolou & Michaelidou, 2023). Consequently, we conducted the analysis separately for each sex.

In addition, we conducted a serial mediation analysis (Mediation 2) with mate value, self-esteem, and flirting capacity as the mediators, and self-perceived good looks as the predictor (see Figure 3). As opposed to Mediation 1, Mediation 2 allows us to examine the effect of good looks on relationship status, when the mate value also enters in the model. Similarly, we performed a serial mediation analysis with mate value, self-esteem, and choosiness as the mediators, and self-perceived good looks as the predictor (see Figure 4). As mentioned earlier, additional variables were included as covariates. The analysis was repeated with the same set of dependent variables (single vs. in an intimate relationship and involuntarily single vs. in an intimate relationship) separately for each sex. In all instances, unstandardized indirect effects were calculated for each of the 10,000 bootstrapped samples, and the 95% confidence interval was computed by determining the indirect effects at the 2.5th and 97.5th.

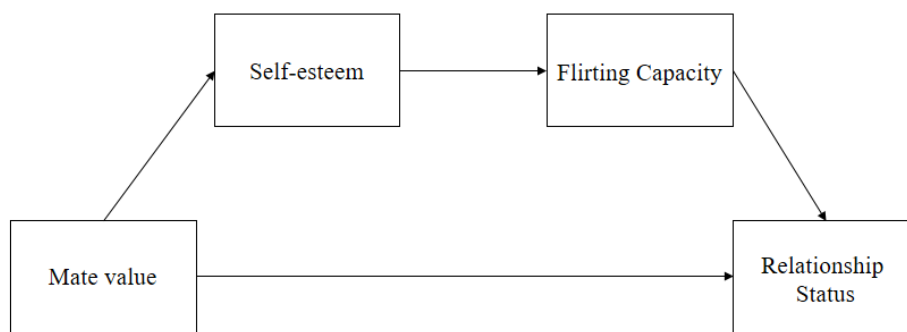


Figure 1. The figure above depicts the direct and indirect pathways that mate value is associated with relationship status through self-esteem, and flirting capacity

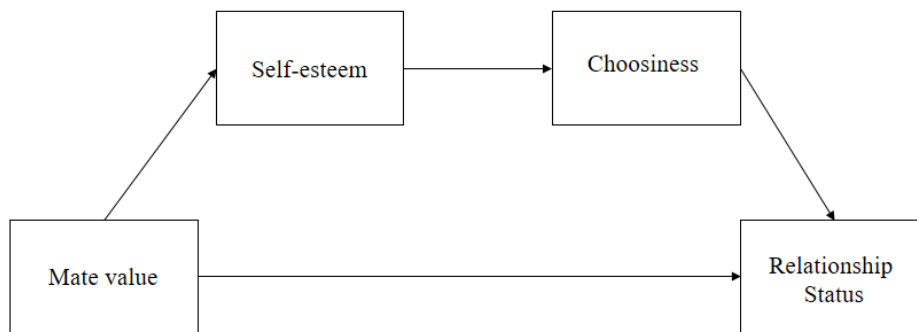


Figure 2. The figure above depicts the direct and indirect pathways that mate value is associated with relationship status through self-esteem, and choosiness

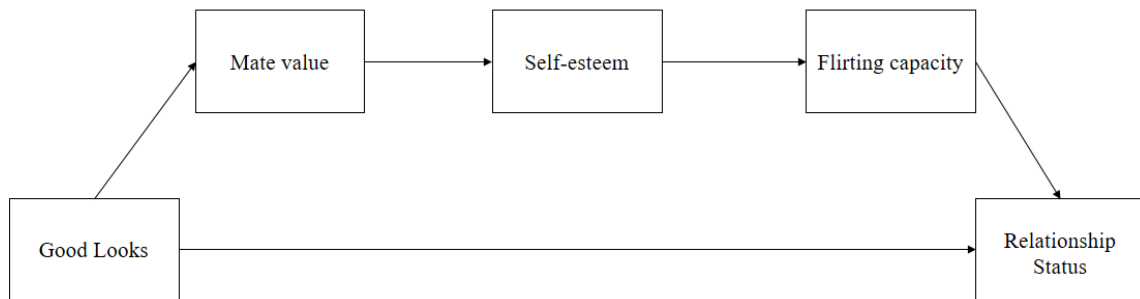


Figure 3. The figure above depicts the direct and indirect pathways that good looks is associated with relationship status through mate value, self-esteem, and flirting capacity

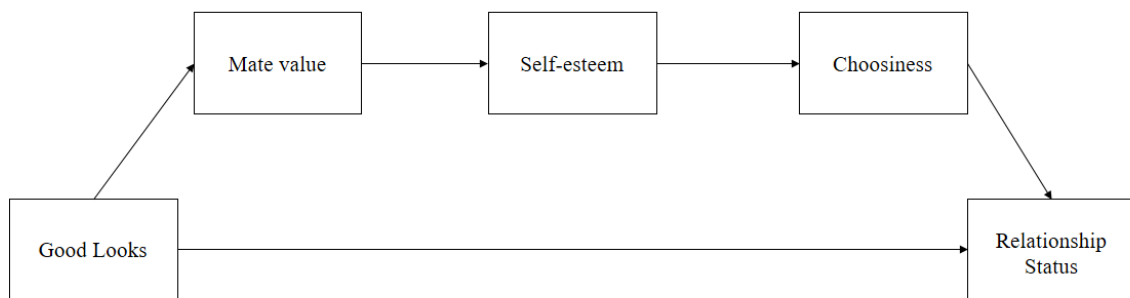


Figure 4. The figure above depicts the direct and indirect pathways that good looks is associated with relationship status through mate value, self-esteem, and choosiness

MEDIATION 1

The results of the first mediation analysis are presented in Table 1. We can see that, for men, higher self-reported mate value was associated with increased probability to be in an intimate relationship than involuntarily single. In the rest of the cases, there was no direct effect of mate value on relationship status. For single vs. in an intimate relationship and involuntarily single vs. in an intimate relationship, there was an indirect association between perceived mate value and relationship status. In particular, one unit increase in mate value was associated with a 2% $[(1.02-1)*100]$ increase in the probability of being in an intimate relationship versus being involuntarily single by being associated with higher self-esteem, which in turn, was associated with better flirting capacity. For men, this association was not significant.

With respect to choosiness, there was a significant indirect effect of perceived mate value, but only with respect to involuntary singlehood for women. In particular, one unit increase in perceived mate value was associated with a 5% $[(1 - 0.95) * 100]$ decrease in the probability to be in an intimate relationship than involuntarily single, by being associated with higher self-esteem, which in turn was associated with higher choosiness. Additionally, with respect to years single, no significant associations were produced.

Table 1. The direct and indirect effect on the relationship status of perceived mate value and perceived good looks.

	Women		Men	
	Single (Aggregate)	Involuntarily	Single (Aggregate)	Involuntarily
Mediation 1				
Direct effect mate value	0.81 (0.62 – 1.06)	0.90 (0.57 – 1.42)	1.09 (0.84 – 1.43)	1.97* (1.23 – 3.13)
Mate value * Self-esteem * Flirting capacity	1.02* (1.00 – 1.04)	1.05 (0.99 – 1.15)	1.01 (0.99 – 1.04)	1.03 (0.97 – 1.11)
Mate value * Self-esteem * Choosiness	0.99 (0.97 – 1.00)	0.95* (0.90 – 0.99)	0.99 (0.97 – 1.00)	0.98 (0.93 – 1.02)
Mediation 2				
Direct effect good looks	0.70 (.47 – 1.00)	0.62 (0.35 – 1.11)	0.74 (0.52 – 1.05)	1.00 (0.57 – 1.77)
Good looks * Mate value * Self-esteem * Flirting capacity	1.01* (1.00 – 1.02)	1.02* (1.00 – 1.06)	1.01 (0.96 – 1.00)	1.02 (0.98 – 1.07)
Good looks * Mate value * Self-esteem * Choosiness	0.99 (0.99 – 1.00)	0.98* (0.96 – 0.99)	0.99 (0.98 – 1.00)	0.99 (0.96 – 1.01)

* Significant at .05.

Note. The values depict above refer to Odds Ratios (OR). Thus, our analysis examined how specific variables affect the odds to be single versus being in a relationship, and the odds of being involuntarily single versus being in an intimate relationship.

MEDIATION 2

The results of the second mediation analysis are presented in Table 1, where we can see that there was no direct effect of good looks on relationship status neither for men nor for women. On the other hand, there was an indirect association between good looks and relationship status through mate value, self-esteem, and flirting capacity for both single vs. in an intimate relationship and involuntarily single vs. in an intimate relationship. For instance, one unit increases in self-perceived looks was associated with a 2% increase in the probability to be in an intimate relationship than involuntarily single by being associated with higher perceived mate value, which was associated with higher self-esteem, which was associated with better flirting capacity. This association was not found for male participants. Furthermore, no significant associations were produced for years single.

With respect to choosiness, for women there was a significant indirect association but only for the case of involuntarily singlehood. In particular, one unit increase in self-perceived looks was associated with a 2% decrease in the probability to be in an intimate relationship than involuntarily single by being associated with higher perceived mate value, which was associated with higher self-esteem, which was associated with higher choosiness. This association was not significant for male participants. In addition, only for female participants the path mate value – self-esteem – choosiness – years single was significant at the 5% level [0.06 (CI95: 0.01 – 0.13)]. Also, the path good looks – mate value – self-esteem – choosiness – years single was significant at the 5% level [0.03 (CI95: 0.00 – 0.07)]. Here, one unit increase in perceived good looks was associated with a 0.03 years increase in the years being single.

DISCUSSION

In the current study, we found that, for women, higher perceived mate value was associated with higher self-esteem, which, in turn, was associated with greater flirting capacity. This increased flirting capacity was then associated with a higher probability of being in an intimate relationship rather than single (H_1). Additionally, higher perceived mate value was associated with higher self-esteem, which, in turn, was associated with increased choosiness. This heightened choosiness was associated with a lower probability of being in an intimate relationship than involuntarily single (H_3). Furthermore, higher scores in perceived good looks were associated with higher perceived

mate value, which, in turn, was associated with increased flirting capacity, leading to a higher probability of being in an intimate relationship rather than being single (H_2). Finally, higher scores in perceived good looks was associated with higher perceived mate value, which, in turn, was associated with increased choosiness, resulting in a lower probability of being in an intimate relationship than being involuntarily single (H_4). Yet, no significant pathways were found for male participants.

Our findings can be interpreted to mean that, for women, having better looks increases their mate value, and higher mate value increases their self-esteem, which, in turn, increases their flirting capacity, consequently increasing the likelihood of being in an intimate relationship than being single. However, better looks have the opposite effect through a different pathway: Women who have better looks have higher mate value and, therefore, higher self-esteem, making them choosier and more likely to be involuntarily single than in an intimate relationship. In simpler terms, women with better looks are better at flirting, making them more likely to attract an intimate partner, but they are also more choosy, which makes them less likely to settle on an intimate partner.

Although these two indirect effects seem to counteract each other, this does not necessarily mean that these pathways are not significant in the context of singlehood. Specifically, for some women, self-esteem may have a stronger effect on their flirting capacity and a weaker effect on their choosiness. In such a scenario, better looks would be associated with a reduced likelihood of being involuntarily single. For other women, self-esteem may have a weaker effect on their flirting capacity and a stronger effect on their choosiness. In this scenario, women with better looks would be more likely to be involuntarily single than in an intimate relationship. Moreover, the good looks – mate value – self-esteem – flirting capacity pathway could be interpreted as “negative” in the sense that issues with physical attractiveness could hinder women from obtaining an intimate partner. On the other hand, the good looks – mate value – self-esteem – choosiness pathway could be interpreted as “positive” in the sense that it would be advantageous for women with desirable qualities such as good looks to remain without an intimate partner for some time in order to find a good one.

We also need to note that the indirect associations we have identified were small, indicating that the pathways we identified explain only a small portion of the variation in relationship status. Furthermore, it is unclear why these pathways were not significant for men. We would expect that higher mate value in men would be associated with higher self-esteem, which, in turn, would be associated with higher flirting capacity and a reduced probability of being single. One possibility is that this association is present for men but weaker than in women, and our study may not have had enough statistical power to detect it. Consistent with this interpretation, the Odds Ratios were in the predicted direction. Nonetheless, even if this was the case, it remains unclear why the indirect association is weaker in men. Given that, at least in the Greek cultural context, men are expected to take the initiative in flirting, we might expect the opposite to be true – that is, the indirect effect to be stronger in men than in women. Future studies should further explore the observed sex differences.

Our study demonstrates the complexity of mating in general and singlehood in particular. Our choice to study specific pathways was informed by the evolutionary framework, and our study demonstrates its usefulness in guiding research when studying complex phenomena such as singlehood. It further emphasizes the importance of examining both direct and indirect effects. Consistent with previous research (Apostolou & Philippou, 2024), we found that good looks have no direct effect on relationship status, which, in itself, may sound counterintuitive. However, as we found here for women, good looks exhibit two opposite-direction indirect effects. Thus, researchers in this field should not confine themselves solely to direct effects but should also investigate indirect pathways. Interestingly, the pathways we identified for women were not significant for men, suggesting that different factors may affect the relationship status of men and women differently. Therefore, research in this area should separately examine these effects rather than combining data from both sexes. Moreover, our study points to directions for future research in the area, that would aim to address how self-rated good looks and mate value compare with objective ratings (e.g., facial symmetry measures, peer ratings), examine in more depth how choosiness affects involuntary

singlehood (e.g., identify the traits relate to choosiness), and examine the weight carried by self-rated good looks, possibly over and above self-rated mate value, self-esteem, and flirting capacity. Our findings also have practical implications for therapists and counselors. By understanding the various paths to singlehood, they can better assist their clients in their mating domain. For instance, if a female client exhibits poor flirting capacity, therapists can trace this back to low self-esteem, which may, in turn, be linked to looks. Interventions aimed at enhancing appearance could potentially lead to improved flirting skills and a higher likelihood of attracting a mate.

One important limitation of the present study is that the dataset is derived from a cross-sectional design, meaning that causal relationships cannot be definitively established. For example, we have argued that self-esteem responds to mate value, but it is also possible that mate value may respond to self-esteem. We believe that both effects are at play here, and future studies should attempt to distinguish between these different effects, perhaps by using longitudinal designs. Moreover, mate value is predicted by several traits desirable in prospective mates, such as social status and control of wealth (Edlund & Sagarin, 2014). However, in the current study, we only examined the effect of good looks, and future studies should investigate the effects of other desirable traits. Additionally, we used self-report measures, where participants indicated how they perceived their own mate value and looks, and future studies could attempt to replicate our findings using more objective measures.

Singlehood is a complex phenomenon with many interacting factors at play. The current research has found that, for women, good looks and mate value are indirectly associated with singlehood through self-esteem, flirting capacity, and choosiness. More research is required, however, to identify additional pathways to relationship status.

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“ARE DARKER INDIVIDUALS IN CONTROL?”: A PATH MODEL OF THE DARK TRIAD, EMOTIONAL REGULATION AND LOCUS OF CONTROL

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ABSTRACT

Among the socially aversive personality traits, the Dark Triad (i.e., Machiavellianism, narcissism, and psychopathy) is one of the most prominent. It is known that there is an association between these traits and emotional regulation and control strategies. However, further empirical support is needed to understand how these traits simultaneously influence each other. Thus, this study aimed to investigate the relationship between the Dark Triad, emotion dysregulation strategies, and locus of control using a predictive model. The participants consisted of 305 individuals aged 18 to 59 years ($M = 32.5$; $SD = 12.05$) who responded to the Dirty Dozen (DD), the Emotional Dysregulation Scale (EDEA), the Locus of Control Scale (ELOCUS), and the Baptist Depression Scale (EBADEP). Our results suggest positive associations of Machiavellianism, psychopathy, and narcissism with maladaptive emotional dysregulation strategies, and these strategies predicted external locus of control. Therefore, individuals with darker traits tend to employ dysfunctional emotion regulation strategies and consequently attribute external events as the cause of such outcomes.

KEYWORDS

Dark Traits; Dirty Dozen; Internal-External Control; Emotional Regulation

INTRODUCTION

The so-called Dark Triad comprises three personality traits classified as socially undesirable: Machiavellianism, subclinical narcissism, and subclinical psychopathy (Paulhus & Williams, 2002). Machiavellianism originates from the original works of the philosopher Machiavelli and encompasses manipulative and cynical individuals. Narcissism reflects grandiosity, a sense of entitlement, dominance, and superiority. Psychopathy refers to high impulsivity, sensation-seeking, and low empathy behaviors (Paulhus & Williams, 2002). Higher levels of these traits are present in various contexts in the general population and are usually associated with dysfunctional outcomes (Koehn et al., 2019). One characteristic shared by all three components of the Dark Triad is limited empathy (Jonason et al., 2013), which tends to be associated with a greater number of adverse outcomes for individuals, particularly in terms of emotion dysregulation. Zeigler-Hill and Vonk (2015) noted a complex relationship, as specific facets of these traits showed both positive and negative correlations with emotion regulation strategies, generally indicating positive associations between such traits and dysregulation strategies.

A recent study examined levels of emotional dysregulation and their associations with Dark Triad traits in two groups: offenders and non-offenders (Rogier et al., 2021). The criminals were men who committed violent crimes and were imprisoned in central and northern Italy, and the non-offenders were men from the general Italian population. The results showed no correlations between narcissism and emotional dysregulation in either group. Machiavellianism and dysregulation positively correlated in both emotional samples with weak magnitudes, and psychopathy was positively associated with emotional dysregulation only in the offender group.

Emotional dysregulation is a characteristic of individuals with dark personality traits and is also associated with various negative consequences, including a higher prevalence of psychopathologies. The interplay between emotional dysregulation and adverse experiences is responsible for 50% of the variance in depressive traits (Abravanel & Sinha, 2015). Non-adaptive strategies associated with emotional dysregulation, such as rumination, avoidance, and difficulties with reappraisal, are linked to depression (Aldao et al., 2010). Emotion dysregulation also predicts depressive symptomatology and serves as a mediator between attachment type and generalized anxiety disorder (Marganska et al., 2013).

Gómez-Leal et al. (2019) emphasized the importance of investigating the potential consequences of Dark Triad traits for individuals. These authors, along with others (Papageorgiou et al., 2019; Shih et al., 2019), highlighted that one of these consequences may be an increased presence of depression indicators. Specifically, all three dark traits could predict an increase in depressive symptoms, with Machiavellianism predicting an increase in interpersonal indicators of depression, narcissism predicting an increase in cognitive and emotional dimensions, and psychopathy predicting an increase in cognitive dimensions.

Thus, the present research aims to expand on this relationship by investigating how the Dark Triad of personality and emotion dysregulation strategies predict different types of locus of control, using a structural equation model to understand the predictive validity of this relationship. Locus of control has been extensively studied (Rotter, 1966; 1990) in terms of external (i.e., perceiving consequences as luck, chance, fate, or other forces) and internal dimensions (i.e., perceiving consequences as resulting from one's behavior). During the COVID-19 pandemic, a study found that individuals who believed they had more internal control over their health also exhibited greater regulation of their emotions (Mehta & Narayanan, 2021). The way coping strategies, such as emotional regulation, are utilized may also be associated with the most adaptive locus of control for different situations (Groth et al., 2019). The literature has extensively explored the relationship between personality traits and the use of coping strategies (i.e., adaptive vs. maladaptive; Mojsa-Kaja et al., 2021), and certain dark traits, such as Machiavellianism, have been associated with locus of control (Aldousari & Ickes, 2021).

Based on the constructs presented thus far, there seems to be a consensus that emotional dysregulation precedes locus of control (Mehta & Narayanan, 2021) and depression (Abravanel & Sinha, 2015; Marganska et al., 2013; Aldao et al., 2010). Regarding locus of control and depression symptoms, a higher belief in external locus of control is associated with a greater likelihood of increased indicators of depression (Benassi et al., 1988; Cheng et al., 2013; Hovenkamp-Hermelink et al., 2019; Kurtović et al., 2018). As for the Dark Triad and locus of control, Bonfá-Araujo et al. (2020) noted that Machiavellianism was negatively explained by externality and powerful others, as individuals with Machiavellian traits tend to manipulate people in positions of power to gain advantages over others. Narcissism and psychopathy significantly explained the internality dimension, with narcissism having a negative association and psychopathy having a positive association. In a second study by Bonfá-Araujo et al. (2021a), individuals with higher scores in the Dark Triad also exhibited an increased tendency for external control locus.

Considering the state-of-the-art, emotional dysregulation is a characteristic of individuals with dark personality traits and is also linked to the development of various psychopathologies, such as depression. By examining the relationships between the Dark Triad, emotion dysregulation, and locus of control, this research can contribute to identifying potential risk factors and pathways for the development of psychopathology or an increase in darker traits in individuals when faced with challenging situations. Additionally, coping strategies play a crucial role in individuals' ability to manage stress and adapt to such circumstances. Investigating how coping strategies, particularly those associated with emotion regulation and the Dark Triad traits, can provide insights into maladaptive coping patterns and their consequences, offering a deeper understanding of how individuals with darker traits display emotional control and perceive the outcomes of different situations.

In the existing research literature, there are studies, as previously mentioned, that have measured these constructs. However, no research proposing a structural equation model to examine the predictive capacity of dark personality traits on locus of control was found, to the best of our knowledge. Hence, this study aims to investigate the predictive capacity of the Dark Triad on emotion regulation and locus of control, specifically analyzing the association between the darker variables and the process of emotion dysregulation and depression, as well as examining the association between emotion dysregulation strategies, depression, and locus of control variables.

METHOD

PARTICIPANTS

Participants were 305 Brazilians aged from 18 to 59 years, with a majority of women (73.77%). The mean age was 32.5 years ($SD = 12.05$), 95.1% were from the southeastern region of Brazil, 30.5% of the sample had up to 13 years of schooling, and the others had more than 13 years of schooling. Regarding marital status, the majority were married (48.9%) or single (43%). Concerning clinical data, 31.9% of the participants reported having been diagnosed with depression by a health professional at some point in their lives, among which 11.8% are current. Other mental disorders were also reported by the participants (14.7%), most of which related to anxiety (17.4%). Finally, 6.6% of the sample reported having suicidal ideation at the time of data collection. Such higher rates of mental disorders have been shown before despite Brazil's ongoing efforts to tackle these numbers (Araújo & Torrenté, 2023).

INSTRUMENTS

Dark Triad Dirty Dozen (DTDD; Jonason & Webster, 2010). The scale has 12 items that measure the components of the Dark Triad, with four statements for each trait: narcissism, psychopathy, and Machiavellianism. The statements have five response options, ranging from 1 “strongly disagree” to 5 “strongly agree.” Gouveia et al. (2016) adapted the scale for the Brazilian context, and their study provided acceptable validity evidence and reliability for the measure. Some examples of items are “I tend to manipulate others to get my way” and “I tend to want others to pay attention to me”.

Emotional Dysregulation Scale – Adults (EDEA). The scale used to measure emotional dysregulation, improved by Baptista et al. (2022) from the Emotional Self-Regulation Scale (EARE-AD), was developed by Noronha et al. (2019). The EDEA contains 15 items that evaluate an individual’s response to sad situations. These items are measured using a Likert-type scale, on which 0 represents “none of the time/never” and 3 “always”. The 15 items are subdivided into four factors: adequate emotional strategies, aggressiveness externalization, pessimism, and paralysis. Some examples of items are “I mistreat other people” and “I cannot think straight”.

Control Locus Scale (ELOCUS; Couto et al., 2022). The ELOCUS measures how well people perceive their lives to be controlled or how well they control their lives. It contains 29 statements, answered on a Likert scale. The statements are divided into internal and external items. The scale obtained satisfactory evidence regarding the content of the items. Some examples of items are “I think my destiny is already predetermined” and “It is through my ability that I can complete my tasks”.

Baptist Depression Scale (Adult Version) – EBADEP – A - Short. The scale aims to measure indicators of depression. The EBADEP-A-Short has 15 pairs of (opposite) statements and is answered based on a Likert scale. The instrument has psychometric studies regarding diagnostic accuracy (Baptista & Carvalho, 2018) and regarding the exploration of latent traits and control for extreme response bias (Valentini et al., 2021). Some examples of items are “I’ve been feeling like crying” and “I no longer have the desire to do things I used to like”.

PROCEDURES AND DATA ANALYSIS

After receiving approval from the Ethics Committee (40347820.6.0000.5514), the instruments were implemented on the Google Forms platform. The participants completed the survey online without receiving any monetary compensation. The survey was distributed digitally, and the snowball technique was employed as a methodological approach to reach a wider audience.

Regarding the analysis procedure, Pearson’s correlation was initially calculated to examine the relationships between the dimensions of all the instruments. Subsequently, a path analysis model was constructed using the AMOS software (Arbuckle, 2014). In this model, locus of control was predicted by the Dark Triad and mediated by emotional dysregulation and depressive symptomatology. The model was evaluated using the Maximum Likelihood Robust (MLR) estimator, and the Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA) were utilized as indicators of model fit. Acceptable values for the CFI and TLI should exceed .90, while the RMSEA should be below .08 (Brown, 2015).

RESULTS

Correlations are presented in Table 1, indicating mostly small associations, as expected. The darker traits exhibited correlations with external locus of control and aggressive emotional strategies. Notably, four moderate-sized correlations were observed: the pessimism factor (emotional

dysregulation) with external locus and depressive symptomatology, as well as the paralysis factor (also emotional dysregulation) with external locus and depressive symptomatology.

Table 1. Correlation of the Dark Triad, Emotional Dysregulation, Locus of Control and Depression

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Machiavellianism	w = .72									
2. Psychopathy	.47**	w = .60								
3. Narcissism	.53**	.32**	w = .86							
4. Adequate Emotional Strategies	.04	-.01	.01	w = .74						
5. Aggressiveness Externalization	.21**	.21**	.27**	-.04	w = .47					
6. Pessimism	.25**	.09	.27**	-.28**	.37**	w = .83				
7. Paralysis	.19**	.10	.26**	-.22**	.39**	.73**	w = .84			
8. Internal Locus	-.10	-.01	-.09	.34**	-.14*	-.33**	-.28**	w = .94		
9. External Locus	.32**	.24**	.31**	-.09	.37**	.46**	.47**	-.32**	w = .83	
10. Depression	.15**	.12*	.18**	-.37**	.28**	.61**	.69**	-.38**	.36**	w = .91

A path analysis was conducted and is illustrated in Figure 1. All paths depicted in the figure were statistically significant, with beta values ranging from small to medium ($\beta = .13$ to $\beta = .26$). Figure 1 demonstrates that all personality traits, particularly narcissism, predicted nearly all factors of emotional dysregulation, except for adequate emotional strategies, along with depressive symptomatology. Machiavellianism predicted the pessimism factor of emotional dysregulation, while psychopathy predicted the externalizing aggressiveness of the same construct, with all predictions being positive. Additionally, the factors of emotional dysregulation and depression symptoms predicted the two dimensions of locus of control. Pessimism and depression predicted the internal locus negatively, whereas adequate strategies showed a positive association. The external locus was positively predicted by externalizing aggressiveness, pessimism, and paralysis, i.e., all factors of emotional dysregulation.

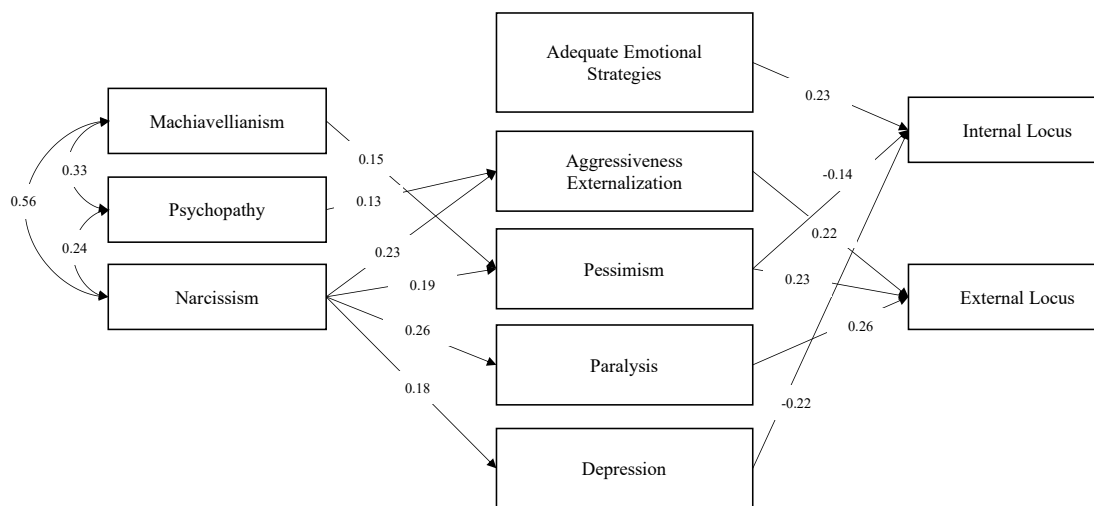


Figure 1. Path Analysis Model

Notes. Model results $\chi^2(33) = 628.939$, CFI = 1.00, TLI = 1.00, RMSEA = 0.00.

DISCUSSION

This study aimed to investigate the predictive capacity of the Dark Triad personality traits over emotional dysregulation and locus of control, considering emotional dysregulation strategies and depression as mediators. A structural equation model was carried out to understand the investigated relations. As pre-established, the three characteristics comprising the Dark Triad were related to aversive outcomes such as dysregulation strategies (i.e., aggressiveness, pessimism, and paralysis) and depressive symptomatology. Furthermore, significant correlations were found only for the external control locus, indicating that darker individuals tend to understand events as controlled by external events (Bonfá-Araujo et al., 2021a; Guo et al., 2021). Our study has two main results.

The first result presents the positive association between the darker variables and the emotion regulation process. Concerning narcissism, it positively predicted paralysis, aggression, and pessimism, although it seems controversial (Di Pierro et al., 2017; Zeigler-Hill & Vonk, 2015), in which grandiose narcissism is usually associated negatively with emotional dysregulation. This result can be explained by the duality in the facets that make up grandiose narcissism (i.e., the first related to aspects of leadership and self-promotion and the second associated with aversive features such as exploitation and a sense of worthiness, the latter being primarily measured in the Dirty Dozen instrument; Cheshure et al., 2020). Therefore, individuals with high narcissism scores may use aggressive strategies or even feel paralyzed and pessimistic when facing events. Regarding the positive association of depressive symptomatology, new investigations are still needed since previous results have been inconsistent and are possibly associated with the tools used to measure it (Bonfá-Araujo et al., 2021b; Gómez-Leal et al., 2019).

For Machiavellianism, the only predictive relationship found was with the dysregulation strategy of pessimism. Individuals with high levels of Machiavellianism tend to perceive relationships only in a utilitarian way, seeing other people as a means to an end. Machiavellians are also characterized by high emotional instability if they do not get what they want, also they tend to experience events in a more aversive and pessimistic manner (Szijarto & Bereczkei, 2015; Zeigler-Hill & Vonk, 2015). Nevertheless, further evidence is needed to understand how the influence of emotional instability occurs. Finally, psychopathy positively predicted externalizing aggression. This result is congruent with the literature, given that men and women with high levels of psychopathy tend to behave aggressively (Long et al., 2014; Maxwell et al., 2017). Such results signal that psychopathic people have low emotional self-regulation skills and make use of more aggressive strategies. Such behaviors occur due to the impulsivity associated with this trait.

The second main result concerns the association between emotion dysregulation strategies and depression on the locus of control variables. The found associations suggest that poorly fitting strategies, such as aggression or paralysis, are associated with the external locus, i.e., the perception that others are responsible for such events, particularly for individuals with high scores on dark personality traits (Galvin et al., 2018). Furthermore, depressive symptomatology and pessimism were negatively associated with the internal control locus, again reinforcing previous findings. Individuals with higher levels of internal loci tend to have higher perceived self-control and are also more capable of emotionally self-regulating (Hovenkamp-Hermelink et al., 2019).

Regardless of the results found, this study has some limitations. The first concerns the use of self-report instruments with low measurement of nuances or facets, especially for the Dark Triad, since different facets may present different relationships regarding the emotion regulation process. However, as previously indicated, the Dirty Dozen has adequate psychometric properties and presents itself as a stable instrument in different regions of the world, with W.E.I.R.D. and non-W.E.I.R.D. individuals (Rogoza et al., 2020). The second corresponds to the higher number of women participants, given that men tend to have higher mean scores in dark personality traits (Furnham et al., 2013). Thus, the replication process of this study is likely to find even more extreme results if the sample is mainly composed of men. Finally, it should be noted that, despite

using the Dark Triad to predict the other variables, there is a possibility of depressive symptoms also contributing to the presence of aversive behaviors. Thus, future studies should consider testing which variables may be influencing each other.

Despite these limitations, the study showed how the dark personality could make use of dysfunctional emotion regulation strategies by behaving aggressively or ignoring problems, thus culminating in aversive consequences, and possibly blaming external circumstances. It is suggested that further studies should investigate how individuals with dark personality traits can use emotional regulation strategies to harm others, in addition to investigating the relationship between the Dark Triad and the internal locus of control, as only relationships with the external locus of control have been found (Bonfá-Araujo et al., 2021a; Rapp-Ricciardi et al., 2018).

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TEST-RETEST RELIABILITY OF THE POLITICAL ELITES AVERSIVE PERSONALITY SCALE (PEAPS)

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ABSTRACT

Although aversive (“dark”) personality characteristics of politicians have increasingly become a focus of research, a suitable self-assessment inventory for political elites has only recently been introduced. This article examines the test-retest reliability of the Political Elites Aversive Personality Scale (PEAPS) in a unique natural setting using a panel study of candidates running for the 2021 Berlin state election *and* the 2023 Berlin repeated election ($N = 106$, 37.7% female). The average age was 47.5 (2021) and 49.5 years (2023), respectively ($SD = 14.7$ years). 14.2% of the participants ran for the Green Party (Bündnis 90/Die Grünen), 11.3% for the Liberal Party (FDP), 8.5% for the Social Democrats (SPD), 7.5% for the Alternative for Germany (AfD), 6.6% for the Christian Democrats (CDU), 4.7% for the Left Party (Die Linke), and 48.1% for smaller parties not represented in the parliament. Across various methods, we find moderate to high levels of reliability. Especially in the light of the relatively long time lag between the measurement occasions, results thus support using PEAPS for self-assessment of aversive personality of politicians. Given that PEAPS comprises six items only, it appears to be suitable for measuring aversive personality in situations in which time or cost prevent the use of more comprehensive personality measures. We also suggest that future research might aim to test the usefulness of PEAPS for other elites (e.g., corporate leaders).

KEYWORDS

aversive personality; self-assessment; political elites; test-retest reliability; Germany

INTRODUCTION

Especially since the presidency of Donald Trump, the role of personality traits in the actions of political elites has increasingly become the focus of social and behavioral science research. According to existing studies, politicians' personality correlates with their communication behavior, their electoral success and, once in office, with their political performance, including their likelihood of unethical behavior and their tendency to foster democratic backsliding (e.g., Joly et al., 2019; Nai & Maier, 2024; Watts et al., 2013). Outside the political context, it has been shown that in particular aversive (or "dark") personality traits are associated with aggressive or antisocial behavior more broadly (e.g., Du et al., 2022; Zhu & Jin, 2021). This also applies to politicians who, for example, are more likely to "go negative" on their political opponents or to use populist rhetoric (e.g., Nai & Martínez i Coma, 2019), or to "spice up" their communication with additional confrontative elements such as incivility (e.g., Nai & Maier, 2020).

Measuring the personality of political elites is anything but trivial in practice, specifically when it comes to aversive characteristics. First, available inventories aimed at assessing aversive characteristics are often too long to present them to politicians or to request assessments from others (e.g., experts, voters) on many politicians. Second, available inventories often include items that are (apparently perceived as be) too self-incriminating to be used for self-reporting by political elites, thus increasing the risks of selection bias and dropout. As a consequence, to the best of our knowledge, available inventories have typically been administered as observer reports (e.g., Nai, 2019). However, limiting the inventories to expert or voter ratings restricts research to the study of top politicians, because it is difficult to provide observer-ratings of the lesser known politicians. Moreover, assessments of experts and voters are likely to be affected by media reports, because these raters usually do not know the politicians personally, at least not in depth (for a critical review of expert assessments of politicians' personality see, e.g., Nai & Maier, 2024).

Tackling these limitations, the Political Elites Aversive Personality Scale (PEAPS) was introduced recently (Maier et al., 2023). PEAPS was developed in line with the conceptualization of the Dark Factor of Personality (D) (e.g., Moshagen et al., 2018, 2020). D was conceptualized based on the idea as well as increasing empirical evidence (see, e.g., McLarnon & Tarraf, 2017; Schreiber & Marcus, 2020) that there is a common core of all aversive traits, which comprises all aversive personality characteristics. D is sought to represent this common core, defined as "the general tendency to maximize one's individual utility—disregarding, accepting, or malevolently provoking disutility for others—, accompanied by beliefs that serve as justifications" (Moshagen et al., 2018, p. 657). Individual aversive traits such as the components of the Dark Triad (Paulhus & Williams, 2002), Amoralism (e.g., Knežević, 2003), Sadism (e.g., O'Meara et al., 2011), or Spitefulness (e.g., Marcus et al., 2014), in turn, are considered to be flavored manifestations of D. Flavored refers to the facts that individual aversive traits (i) can represent the different aspects of D to a different degree (e.g., emphasizing maximizing one's individual utility rather than holding certain beliefs, or vice versa) and (ii) can comprise further, essentially non-aversive personality characteristics (e.g., disinhibition in the case of psychopathy; Bader et al., 2023). In line with its conceptualization, D has been found to predict a large set of behavioral and self-reported criteria representing own utility maximization at the cost of others (e.g., Hilbig et al., 2023; Zettler et al., 2022).

Importantly, similar to the "g factor" in the intelligence domain, D is conceptualized as a fluid construct expressis verbis: "the fluid nature of D implies that the indicators to assess D are ultimately interchangeable, so that any dark trait measure (with sound psychometric properties and sufficient breadth in content) is generally suited to indicate D" (Moshagen et al., 2020, p. 192). Following this conceptualization of D – and aiming to assess the essence of politician's aversive personality (not mingled with rather non-aversive personality characteristics) – thus allowed to (i) develop an ultra-short inventory that (ii) contains not too extremely worded items, (iii) suitable for politicians' self-reports of their aversive personality.

PEAPS comprises six items, originally referring to four aversive personality traits (namely, Machiavellianism, Narcissism, Psychopathy, and Spitefulness). Although first results indicate a high level of reliability and validity (Maier et al., 2023), PEAPS has still not demonstrated its test-retest reliability, i.e., the “consistency, reproducibility, and agreement among two or more measurements of the same individual” (Aldridge et al., 2016, p. 208). Showing the general stability of a trait measurement is important to foster that observed changes are due to changes in the individual and not because the measurement is inaccurate (e.g., Gnambs, 2014).

Whereas test-retest reliability is an important ingredient of trait measures scale developments, the chances of repeatedly question political elites about their aversive personality characteristics are rather low, because it is often not possible to study such a group twice. However, the repeated election in Berlin (Germany) in 2023 provided us with a unique opportunity to test the test-retest reliability of PEAPS by re-assessing the *same* politicians who ran for parliament in 2021. Apart from the fact that we are not aware of any scale than PEAPS that is particularly tailored to ask political elites to self-assess their aversive personality, we are also not aware of any study in which politicians are asked about their (basic or more specific) personality traits more than once.

METHODS

In November 2022, the Constitutional Court of Berlin decided that the 2021 state election was invalid due to several irregularities. Therefore, the election had to be repeated, which meant that voters in 2023 again decided on the candidates who had already run for election in 2021; no new candidates or parties were allowed.

Our analysis is based on post-election surveys of candidates competing in the 2021 and the 2023 Berlin state election. Data was collected in a mixed-mode design using online as well as a regular paper-and-pencil questionnaires to maximize response rates. All candidates that provided an email address in their professional contact details online during the campaign were invited to participate via an online link to our survey (2021: 56.6%; 2023: 45.5%). All candidates without online contact details were invited by mail including a paper-and-pencil questionnaire and a stamped return envelope. Candidates invited by mail were also provided with a personalized link if they preferred to answer the survey online. IRB approval was obtained prior to data collection (GESIS ethics committee, reference number 2020-6). Since our data contain sensitive, non-anonymized information from candidates, the data can be only made available to other researchers on request following data sharing agreements.

Data collection began the day after Election Day and ended two months later. All candidates, including candidates running for smaller parties, were asked to participate in the surveys. We explicitly asked candidates in the invitation letter to fill out the questionnaire themselves. From the initially 1,116 (2021) respectively 1,057 (2023) contacted candidates, 35.0% (2021) respectively 22.1% (2023) participated in the study. For our analyses, we excluded 4 (2021) respectively 2 (2023) candidates who rushed through the online survey by employing the procedure to filter out speeders (Leiner, 2019). This leaves us with 386 (2021) respectively 231 (2023) valid cases. 147 candidates have participated in 2021 *and* 2023, which means that candidates filled out the second questionnaire about 17 months after the first questionnaire. Even though optimal time span for assessing test-retest reliability seems to be controversial, the gap between the two measurement occasions of our study is rather large.

For the following analyses we only use candidates who provided valid answers for all items of the PEAPS, which leaves us with N=106 candidates. 37.7% candidates were female. Average age was 47.5 (2021) respectively 49.5 (2023) (SD: 14.7) years. Data for gender and age was based on the information of the State Returning Officer (“Landeswahlleiter”). The IRB approval covers linking candidates’ survey responses with external sources; these linking possibilities were explicitly

mentioned to the candidates in the informed consent form. 14.2% of the candidates in our sample ran for the Green Party (Bündnis 90/Die Grünen), 11.3% for the Liberal Party (FDP), 8.5% for the Social Democrats (SPD), 7.5% for the Alternative for Germany (AfD), 6.6% for the Christian Democrats (CDU), 4.7% for the Left Party (Die Linke), and 48.1% for smaller parties not represented in the parliament.

PEAPS was measured with the following six items (in parentheses: aversive trait for which the item was originally conceptualized; for the German wording of the items see OMITTED): “*There have been times when I was willing to suffer some small harm so that I could punish someone else who deserved it*” (Spitefulness), “*It’s wise to keep track of information that you can use against people later*” (Machiavellianism), “*There are things you should hide from other people to preserve your reputation*” (Machiavellianism), “*I insist on getting the respect I deserve*” (Narcissism), “*I want my rivals to fail*” (Narcissism-Rivalry-Supremacy), “*People who mess with me always regret it*” (Psychopathy). All items were measured on a 5-point scale from 1 (“do not agree at all”) to 5 (“fully agree”). The items were each combined into a total score by computing the average score across all answers. A high (low) score on the final scale reflects a high (low) level of aversive personality. The script of our data analyses is stored in the following Open Science Foundation (OSF) repository: https://osf.io/jmxt8/?view_only=bc98954c91af4c22bcc35198fb39fe80

RESULTS

Test-retest reliability can be assessed with different measures (for a discussion see, e.g., Aldridge et al., 2017). A classic indicator is Pearson’s r , showing the correlation between the two measurement occasions. With $r(105)=0.615$, $p<0.001$, the correlation between the two measurement occasions can be considered moderate with regard to the question of test-retest reliability.

Another classic method to analyze test-retest reliability is the paired t -test, which focuses on agreement. The result shows no significant difference between the candidates’ self-reported aversive personality in 2021 ($M=2.54$, $SD=0.72$) and in 2023 ($M=2.61$, $SD=0.62$), $t(105)=1.252$, $p=0.213$, which indicates a high level of agreement.

In addition to r and paired t -test, the Bland-Altman plot has been recommended to analyze test-retest reliability. Following this method, we have plotted the average score of the 2021 and 2023 PEAPS measurements ($M=2.57$, $SD=0.60$) against the difference between the 2023 and the 2021 PEAPS measurements ($M=0.07$, $SD=0.59$). Figure 1 indicates that the large majority (i.e., >90 %) of the data points fall within the Limits of Agreement (i.e., the 95% CI of the mean difference). In addition, candidates are randomly scattered around the mean difference, suggesting “that there is little systematic bias between the measurements and no obvious data heterogeneity” (Aldridge et al., 2017, p. 214). In a nutshell, the Bland-Altman plot suggests an acceptable level of test-retest reliability.

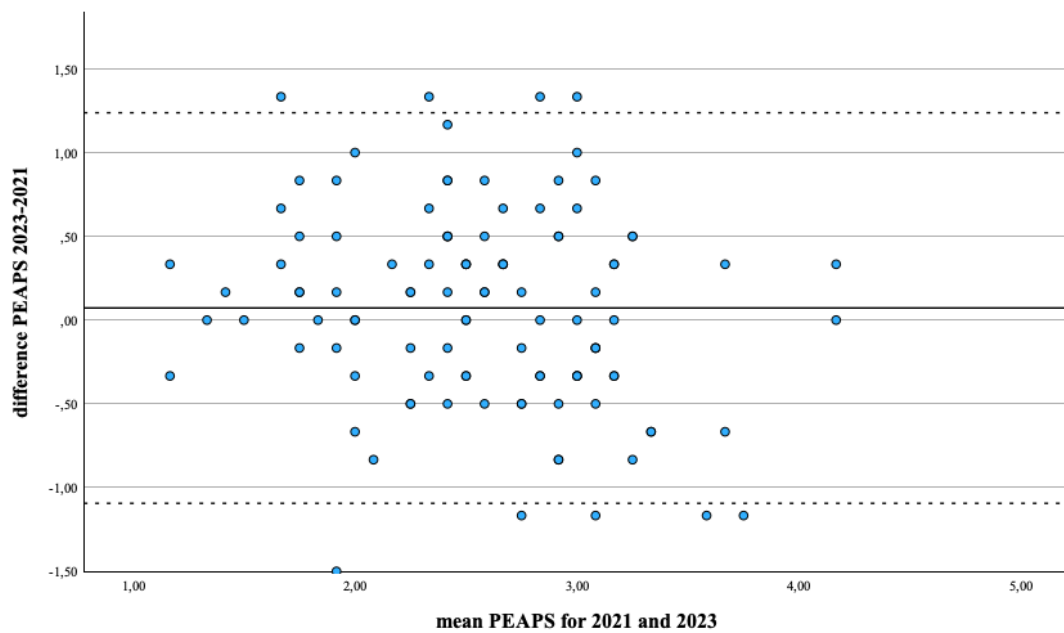


Figure 1. Bland-Altman plot for PEAPS in 2021 and 2023.

Note. Bland-Altman plot for intra-rater agreement ($N=106$). Mean difference is shown as solid line, limits of agreement (i.e., 95 % CI of the mean difference) are shown as dotted lines.

Finally, Intraclass Correlation Coefficient (ICC) is calculated to simultaneously account for both correlation and agreement between measurements. Following the suggestions of Koo and Li (2016), we estimate the ICC and its 95% confident intervals with a mean-rating ($k=6$), absolute-agreement, 2-way mixed-effects model: $ICC=0.755$, with 95% $CI=0.641-0.833$. Based on the ICC, we conclude that the test-retest reliability of the PEAPS scale is “substantial” to “almost perfect” (Landis & Koch, 1977, p. 165; see also Fleiss et al., 2003, p. 619).

DISCUSSION

“Recent years have seen the rise of political figures with a particularly abrasive, controversial, and even antagonistic character” (Nai & Maier, 2024) – prompting several researchers to take a closer look at these politicians. Part of such a focus has revolved around examining the personality, particularly the aversive personality, of politicians in order to assess its influence on their behavior. However, previous measures have not been suitable for self-reporting by political elites because the inventories were often still too long and contained (supposedly) extremely worded items.

To delve into the aversive personality of politicians, the Political Elites Aversive Personality Scale (PEAPS) was introduced (Maier et al., 2023). PEAPS is, to the best of our knowledge, the first inventory that seems in principle suitable for capturing the core of the aversive personality among political elites with self-assessments. First research supported the reliability and validity of PEAPS (Maier et al., 2023), but the scale had not yet demonstrated its test-retest reliability – and thus its stability across at least two measurement occasions of the same individual.

Taking advantage of a unique situation – the 2023 repeated Berlin state election, in which only parties and politicians who had already run in 2021 were allowed to participate – we find that PEAPS shows moderate to good levels of reliability, using different methods for estimating test-retest reliability. More precisely, correlation analyses suggest a moderate (towards strong) association

between the two measurement occasions, a paired t-test shows a high level of agreement between the measurement occasions, the Bland-Altman plot suggests an acceptable level of test-retest reliability, and the Intraclass Correlation (ICC) suggests a “substantial” to “almost perfect” association. Overall, these findings suggest a minimum acceptable stability of the inventory, particularly in light of the time lag between the two measurement occasions, which is with 17 months rather large for examining the test-retest reliability of a psychological trait measure.

This study comes with certain limitations. First, whereas support for the reliability and validity of the PEAPS has been shown for a larger sample of German candidates (Maier et al., 2023), the test-retest reliability analyzed in this paper is based on a smaller sample of candidates running for Berlin state elections, self-selecting into our survey. Further studies should thus test whether aversive personality of politicians can also be repeatedly measured in a reliable way in larger sample. Second, the PEAPS has been only used with German samples, so far. It thus needs to be examined whether the PEAPS is also useful for research in other countries, including an analysis of test-retest reliability. Third, the time elapsed between the first and second measurement points is quite long, which may have a negative impact on test-retest reliability. Further research should use a shorter time interval to produce results that are more comparable with other findings for test-retest reliability.

Based on our results, we recommend the use of PEAPS to self-assess the aversive personality of politicians. PEAPS offers the possibility to measure the aversive personality characteristics of political decision-makers with very few items and in connection with a clear theoretical concept (i.e., the Dark Factor of Personality, D). In principle, this short scale also allows the measurement of the aversive personality of politicians in research designs in which participants have little time (e.g., experts) or where the measurement of extensive personality assessments is expensive (e.g., population surveys). Because the PEAPS items have no relation to politics, we believe that the scale might also be suitable for measuring aversive personality traits of other elites, e.g., corporate leaders. Thus, future research might aim to test the reliability and validity of PEAPS in other applied fields of psychology with high-level decision-makers, such as organizational psychology. Given the conceptualization of D as a fluid construct, it is possible to develop scales specifically tailored to a population in focus, potentially using PEAPS as a starting point when elites are considered. Finally, applying PEAPS on other political levels and in other political systems would allow to conduct much-needed, comprehensive comparative research on the personality of politicians (or other elites). This would be beneficial for research in the field of political psychology, as it would allow researchers to systematically integrate an important but not easily measured aspect of personality as an explanatory variable for political attitudes and behavior. We hope that the complementary test of PEAPS’ retest-reliability presented here will further substantiate the basis for this.

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The authors report there are no competing interests to declare.

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DATA AVAILABILITY STATEMENT

Since our data contain sensitive, non-anonymized information from candidates, the data can be only made available to other researchers on request. The script of our data analyses is stored in the following Open Science Foundation (OSF) repository: https://osf.io/jmxt8/?view_only=bc98954c91af4c22bcc35198fb39fe80