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The dark triad traits and relationship satisfaction: Dyadic response surface analysis

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Abstract

Objective: The current study investigated actor and partner effects and the effects of (dis)similarity in the dark triad traits on self-reported relationship satisfaction of both members of romantic couples. We examined these effects on actual similarity, similarity of perception, and men's and women's perceived similarity.

Methods: On the sample of 205 heterosexual romantic couples, we administered questionnaires for measuring self-reported and partner-reported psychopathy, Machiavellianism, and narcissism, as well as self-reported relationship satisfaction. For analyzing data, we used dyadic response surface analysis.

Results: The results corroborated our hypotheses that the dark triad traits exerted mainly negative actor and partner effects on both partners' relationship satisfaction. The effects of (dis)similarity were obtained for psychopathy and narcissism. Dissimilarity in psychopathy was related to lower men's relationship satisfaction. Dissimilarity in narcissism was related to lower, whereas similarity in this trait to higher relationship satisfaction of both partners. Generally, our findings were similar across methods and sources of assessment.

Conclusion: The results suggest that the DT traits of both members of a romantic couple matter for judgments of their relationship satisfaction and that along with actor and partner effects, the effects of (dis)similarity in psychopathy and narcissism also contribute to their relationship satisfaction.

KEYWORDS

dark triad traits, dyadic analyses, partner perception, relationship satisfaction, self-perception

1 | INTRODUCTION

1.1 | The dark triad personality traits and relationship outcomes

The dark triad (DT), a cluster of three antisocial personality traits, psychopathy, Machiavellianism, and narcissism, has recently attracted research attention because of its mainly detrimental effects on various life outcomes. Psychopathy is defined by high impulsivity, interpersonal antagonism, sensation seeking, and low empathy and anxiety (Hare & Neumann, 2006), Machiavellianism by self-interest, glib social charm, tendency toward deception, manipulation, and the exploitation of others (Christie & Geis, 1970), whereas narcissism by grandiosity, feelings of entitlement, superiority, and dominance (Raskin &

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Terry, 1988). A meta-analytic study has found medium sex differences in psychopathy and small in narcissism and Machiavellianism, with men having higher scores on all DT traits (Muris et al., 2017).

Previous research has suggested mainly negative associations between DT traits and relationship outcomes in romantic partners. Out of these traits, psychopathy is the most damaging to romantic relationships. As a male-typical fast life history strategy, it has positively predicted exploitative, short-term mating strategy (Jonason et al., 2009), frequency, and success in poaching mates from others as well as having been poached by others (Jonason et al., 2010; Kardum et al., 2015), promiscuity (Ali & Chamorro-Premuzic, 2010), and infidelity (Jones & Weiser, 2014). Furthermore, psychopathy has been positively related to the frequency of using mate retention tactics, especially those referring to cost-inflicting behaviors such as punishing mates' infidelity threats, violence against rivals, etc. (Jonason et al., 2010). Additionally, psychopathy has been negatively associated with a desire for a long-term relationship (Jonason et al., 2012) and intimacy and commitment in a romantic relationship (Ali & Chamorro-Premuzic, 2010). It accounted for significant variance in overall relationship quality, commitment, satisfaction, romance, and trust in romantic relationships for men and in overall relationship quality, commitment, and trust for women (Love & Holder, 2014). To sum up, psychopathy has been associated with deceitful, exploitative, and aggressive behaviors that are especially harmful in the context of romantic relationships.

Individuals high on Machiavellianism prefer emotionally detached relationships, are often reluctant to commit (Ali & Chamorro-Premuzic, 2010), report less faith in their partners, and are less willing to persist with the relationship than those with low levels of this trait (Brewer & Abell, 2017). Furthermore, Machiavellianism has been associated with several problematic behaviors in romantic relationships, such as divulging intimate sexual secrets, inducing intoxication to secure sex (McHoskey, 2001), using deceptive mating strategies (Dussault et al., 2013), engaging in a romantic relationship for status and resources (Ináncsi et al., 2016), and in controlling behavior and emotional abuse (Brewer & Abell, 2017). Although individuals higher on Machiavellianism may not view their relationships as satisfying, they engage in long-term relationships to adhere to social norms or to provide opportunities to manipulate and exploit their partners (Brewer & Abell, 2015).

Individuals higher on narcissism, the most socially desirable of the DT traits, show little empathy, take advantage of close others (Masterson, 1988), have low levels of relationship commitment (Ali & Chamorro-Premuzic, 2010), and their ex-partners regret getting involved with them (Brunell & Campbell, 2011). Furthermore, they show increased rates of romantic infidelity (Brunell & Campbell, 2011) and mate poaching (Kardum et al., 2015). In long-term relationships, they are relatively unsatisfied and become so more over time, an effect that was stronger for men than women (Ye et al., 2016). Even though narcissists have not proved to be good at establishing and maintaining long-term romantic relationships, they still form them, and although narcissism has been often related to negative outcomes in long-term relationships, in some instances, narcissists may function well, especially when getting their needs met by their partners (Foster & Brunell, 2018). For example, they have been the most satisfied with their romantic relationships when they perceive their partners meeting their extrinsic ideals such as being attractive and successful (Seidman, 2016).

Notably, the DT traits substantially overlap with other personality traits, especially with low agreeableness from the five-factor personality traits (O'Boyle et al., 2015) and with low Honesty-Humility from the HEXACO model (Muris et al., 2017), and it seems that the level of overlap between the DT traits and other personality traits depends on measures applied (Vize et al., 2020). For example, Hodson et al. (2018) found that the common core of the DT traits measured by Short Dark Triad (SD3; Jones & Paulhus, 2014), corresponds almost completely with the opposite pole of Honesty-Humility. However, evidence shows that the common core of the DT traits measured by original measures and by SD3 and Dirty Dozen (Jonason & Webster, 2010), is not covered well by the five-factor personality traits or by their two higher-order factors (Schreiber & Marcus, 2020) and that the DT traits have a unique contribution to various outcomes, apart from the five-factor personality traits (Kardum et al., 2015; Lee & Lim, 2021). Additionally, behavioral genetic research shows that although the five-factor model may account for individual differences in antisocial traits, it does not fully cover them (Veselka et al., 2012). Another important question regarding the DT traits relates to their mutual overlap. Although they are conceptually and empirically similar, especially psychopathy and Machiavellianism (Muris et al., 2017), there is also evidence corroborating their distinctiveness (Furnham et al., 2013).

1.2 | Dyadic approach in personality relationship outcomes links

Almost all we know about the DT traits and relationship outcomes comes from studies exploring only one partner's perspective, disregarding the perspective of the other. Several theoretical frameworks, such as the vulnerability-stress-adaptation model (Karney & Bradbury, 1995) and the social interdependence theory (Johnson & Johnson, 2005), postulate that relationship outcomes are

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affected by the actions of both partners. Therefore, the understanding of the effects of the DT traits on relationship outcomes could be improved by including both partners' perspectives, considering not only the relationship between individual's DT traits and his/her own relationship outcome (actor effects) but also the relationship between individual's DT traits and his/her partner's outcome (partner effects). There is growing evidence that romantic partners' personality traits mutually influence each other's behaviors and experiences. For example, a summary of nine studies investigating actor and partner effects of the five-factor personality traits on satisfaction showed that one's own and the partner's neuroticism were the most consistently linked between relationship satisfaction and life satisfaction, followed by agreeableness and conscientiousness, whereas for extraversion and openness, the results were more inconsistent (Weidmann et al., 2016). Few studies that investigated actor and partner effects of the DT traits in romantic couples have found that they exerted negative actor and partner effects. For example, the DT traits, especially men's psychopathy, exerted both actor and partner effects on various mate retention behaviors (Kardum et al., 2019), and men's psychopathy and Machiavellianism have been consistently related to mate poaching in both men and women (Kardum et al., 2022). Furthermore, the DT traits, particularly psychopathy, exerted actor and partner effects on aggression and argumentativeness (Webster et al., 2016), and men's psychopathy and Machiavellianism had deleterious actor and partner effects on health-promoting behaviors (Hudek-Knezevic et al., 2021). The first study that examined actor and partner effects of the DT traits on relationship satisfaction showed the most damaging effects of psychopathy on romantic relationships, and much weaker effects of other two traits (Smith et al., 2014). Similarly, higher levels of men's psychopathy led to lower levels of investments and satisfaction of their female partners, whereas women's psychopathy did not exert partner effects (Prusik et al., 2021). A study on married Chinese couples found that Machiavellianism and psychopathy exerted actor and partner effects on marital instability indirectly, through marital quality (Yu et al., 2020).

1.3 | Similarity in personality traits and relationship satisfaction

Recent studies also investigated whether a combination of both partners' personality traits, that is, their (dis)similarity, affects relationship outcomes. Partly overlapping theoretical explanations predict similarity-satisfaction effects. Firstly, similarity might foster closeness trough partner's self-verification and mutual understanding (Luo, 2017). The second proposes implicit egotism or a preference toward whatever reminds us of ourselves (Pelham et al., 2002), whereas the third explanation is based on "mere exposure effect" or a preference toward familiar stimuli (Zajonc, 1968).

There are several types of similarities potentially relevant for relationship outcomes as follows: actual (real) similarity, similarity of perceptions (reciprocity), and perceived (assumed) similarity. Actual similarity is an association between self-assessments of both partners. Similarity of perception is a relationship between partner and assessments of both members of a couple. Perceived similarity is a relationship between the self-assessment of one partner and his/her assessment of the other partner.

The majority of studies focused on how actual similarity, especially in five-factor personality traits, relates to relationship satisfaction. The results are mixed, depending on the methods investigating similarity in couples and may be sex-specific. For example, evidence show that actual similarity in the five-factor personality traits was unrelated to relationship satisfaction (Leikas et al., 2018) but that perceived similarity in them was positively related only to women's relationship satisfaction (Decuyper et al., 2012). However, no evidence of an association between perceptual similarity in participants' five-factor personality traits and mutual attraction was found on more than 900 speed dating interactions (Humberg et al., 2023). A study on two large representative samples found that in Australian sample actual similarity in extraversion and openness measured by absolute difference scores predicted relationship satisfaction, whereas in UK sample, differences in emotional stability predicted the same outcome (Dyrenforth et al., 2010). A longitudinal study found that dissimilar neuroticism levels in partners were related to lower relationship satisfaction in men, and modest openness levels in both partners were related to higher relationship satisfaction in women (Weidmann et al., 2017). Both studies showed that actual similarity in the five-factor personality traits does not have a substantial role in couples' satisfaction. For example, similarity between partners consistently explained less than 0.5% of the variance in relationship satisfaction after controlling for actor and partner effects (Dyrenforth et al., 2010).

There are several reasons why (dis)similarity in the DT traits may exert somewhat stronger effects on relationship satisfaction than the five-factor personality traits as well as why they are uniquely important in studying the effects of their similarity on relationship (dis)satisfaction. First, it is their explicit antisocial common core, including low empathy, interpersonal manipulation, and exploitation (Jones & Figueredo, 2013), which could have potentially detrimental effects on social relationships. Second, it seems that the degree of assortment in the DT traits is considerably higher

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than assortment in other personality traits, including the five-factor traits (Kardum et al., 2022), which may facilitate the effects of similarity in the DT traits on relationship satisfaction. Several studies are in line with these suggestions. For example, a polynomial regression analysis as a method for assessing partners' actual similarity showed that on young heterosexual dating couples' dissimilarity in psychopathy was related to lower women's relationship quality (Kardum et al., 2018). Another study investigated the effects of actual similarity in psychopathy components on relationship quality in heterosexual dating couples and showed that profile similarity in interpersonal manipulation was positively related to women's relationship quality. Polynomial regression analyses showed that greater disagreement between men and women's erratic lifestyle was related to a sharper decrease of women's relationship quality, whereas men's relationship quality decreased when both partners had high levels of erratic lifestyle. Greater disagreement between men and women's interpersonal manipulation resulted in lower relationship quality in women, whereas higher men and women's relationship quality were found when women's interpersonal manipulation was higher than men's (Kardum et al., 2017). Actual similarity at higher levels of Machiavellianism was related to lower relationship quality in both sexes, with women's relationship quality decreasing more sharply when their partners had similarly high levels of Machiavellianism. Using profile similarity as a method for assessing partners' similarity, the same study found that profile similarity in narcissism was associated with higher relationship quality in both sexes (Kardum et al., 2018). Similar results were obtained on friends. Namely, members of military cadet dyads with similarly low levels of manipulativeness or egotism liked each other more (Ilmarinen et al., 2016).

Others who know us well sometimes see us differently than we see ourselves, and especially those aspects of our personality that are easily observed and that we care a lot about, and therefore we do not see them objectively (Vazire, 2010). As the DT traits are easily observed (Küfner et al., 2015) and are highly evaluative (Maples-Keller & Miller, 2018), they may be especially susceptible to various self-serving biases. Although scarce, some evidence suggests the importance of similarity of perception (reciprocity) for relationship satisfaction. For example, a study shows that both men and women were more dissatisfied with their relationship when they perceived their partners similarly high in negative temperament and disinhibition, and low in positive temperament, as well as that partner ratings of other specific traits were uniquely related to dyadic adjustment (Brock et al., 2016). Moreover, it seems that partner-perceived personality traits were more strongly related to relationship satisfaction of both members of a couple than self-perceived traits (Furler et al., 2014).

Perceiving one's partner as similar to oneself may be another important factor for partners' relationship satisfaction. Although a meta-analysis showed that in existing romantic relationship, perceived similarity was more strongly related to interpersonal attraction than actual similarity (Montoya et al., 2008), there are also some inconsistencies. For example, perceived similarity-satisfaction effect has been more pronounced in women, and it depends on the method used for computing partners' similarity (Decuyper et al., 2012). Additionally, perceived similarity had a weak unique contribution to partners' relationship satisfaction over and above actual similarity and reciprocity (Furler et al., 2014).

1.4 | The present study

The main aim of the present study was to investigate actor and partner effects[1] and the effects of similarity in the DT traits on self-reported relationship satisfaction in both members of romantic couples. These effects we examined on actual similarity, similarity of perception (reciprocity), and men and women's perceived similarity (assumed similarity). To explore them, we used dyadic response surface analysis (DRSA) that combines response surface analysis (RSA) with actor–partner interdependence model (APIM; Kenny et al., 2006). RSA tests similarity effects of two predictors on one outcome variable, and APIM tests actor and partner effects of two predictors on two interdependent (dyadic) outcome variables. The advantage of DRSA is that it fully accounts for the dyadic nature of relationship data and helps to avoid most problems in analyzing similarity indices. Additionally, DRSA allows testing whether the similarity effects are the same for both partners (Schönbrodt et al., 2018).

Previous findings suggest that we can expect negative actor and partner effects of the DT traits, especially men's psychopathy and to a lesser extent Machiavellianism and narcissism on relationship satisfaction of both partners. To investigate the effects of (dis)similarity in the DT traits, we used the method based on polynomial regression analysis that may overcome problems with other measures of (dis) similarity, such as difference scores and profile similarity. It enables the investigation of the degree to which a combination of two predictor variables relates to an outcome, especially if the difference between two predictor variables is of a central interest. Additionally, it allows us to retain the independent effect of each component measure, which may help to avoid interpretative ambiguity resulting from the component measures reduced to a single score (Edwards, 2002). Polynomial regression regards similarity and dissimilarity as continuums in three-dimensional space, and combined with response surface methodology, it can identify nonlinear relationships as well. This method

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can reveal complex relationships between (dis)similarity in the DT traits and relationship satisfaction that are difficult to predict. In line with the similarity-satisfaction hypothesis, we can expect that all three types of similarities in the DT traits will be related to higher relationship satisfaction, but only at lower levels of these traits. On the other hand, having in mind deleterious effects of the DT traits, and especially psychopathy, on relationship outcomes, we can expect negative effects of all three types of similarities at higher levels of these traits on both partners' relationship satisfaction. Furthermore, dissimilarities in psychopathy, particularly when men's psychopathy is higher than women's, may lead to lower relationship satisfaction. Regarding narcissism and Machiavellianism, the effects of dissimilarities on relationship satisfaction are difficult to predict. Dissimilarity in personality traits usually leads to lower relationship satisfaction, but greater differences between partners in these two traits may allow a partner higher on them to manipulate and exploit the other and to maintain a sense of grandiosity, entitlement, and dominance that may lead to greater relationship satisfaction in partners higher on Machiavellianism and narcissism. The above-mentioned hypotheses may be further obscured by sex differences in these traits, especially psychopathy, because men higher on the DT traits have lower probability to mate with women similarly high on them, which may attenuate the effects of similarity.

Previous studies showed that the effects of actual similarity, similarity in perception, and perceived similarity on relationship satisfaction are somewhat inconsistent and, therefore, it was difficult to predict some specific effects of these three types of similarities on relationship satisfaction. Although stronger actor and partner effects as well as similarity effects should appear when both predictor and outcome variables come from the same informant, we expected some significant but weaker effects even when predictor and outcome variables do not come from the same informant (e.g., when the DT traits are partner-reported, whereas relationship satisfaction is self-reported). Self-reports and partner reports may be similar in predicting behaviors, and therefore we could expect the strongest effects to generalize across both informants, but we could also expect them to be to some extent different, because self-ratings and other-ratings provide somewhat different information of one's personality (Vazire, 2010).

2 | METHOD

2.1 | Participants and procedure

We used a convenience sample of 205 Caucasian heterosexual married (30%), cohabiting, or dating (70%) urban couples because no appropriate sampling frame was available from which we could recruit romantic couples. The study was carried out during the spring of 2018, and participation was voluntary and not compensated in any way. Research assistants distributed the research announcement to their friends, colleagues, and other students and arranged a time for data collection after they had found couples agreeing to participate. The inclusion criteria were the age of more than 18 years and the relationship length of more than 1 year. The participants' age ranged from 18 to 56 years ($M = 29.40$ years, $SD = 6.48$ for men; $M = 27.17$ years, $SD = 5.06$ for women), and their relationship length ranged from 1 to 22 years ($M = 5.98$, $SD = 4.48$). A majority of men (55.6%) and 37.1% of women had a high school education, 72.7% of men and 49.8% of women were employed, and 30% of couples had at least one child. Research assistants administered the questionnaires to each member of a couple alone at the faculty premises or in their homes at the same time. After providing written informed consent from both members of the dyad, they rated themselves and their partners on a number of questionnaires by the paper-and-pencil method. The four forms of the questionnaires were counter-balanced across participants in terms of the order of measures and the subject of assessment (self or partner). Participants were told that the research investigated the characteristics of romantic couples.

2.2 | Measures

We used a 31-item Self-Report Psychopathy Scale-III (Paulhus et al., 2012) to assess nonclinical psychopathy. Participants rated how much they agreed (1 = *strongly disagree*, 5 = *strongly agree*) with each statement (e.g., "I almost never feel guilty over something I've done").

Machiavellianism was measured with the 20-item MACH-IV (Christie & Geis, 1970). Participants rated the degree of their agreement with each statement (−3 = *strongly disagree*, +3 = *completely agree*; later recoded from 1 to 6) (e.g., "The best way to handle people is to tell them what they want to hear").

Narcissism was measured with the 40-item Narcissistic Personality Inventory (Raskin & Terry, 1988). For each item, participants chose one of two statements they felt applied to them more (A. "I insist upon getting the respect that is due to me" or B. "I usually get the respect that I deserve").

Previous studies showed these instruments to be appropriate for measuring the DT traits in the Croatian language (e.g., Kardum et al., 2015). All three measures were treated as unidimensional, and for each of them, a total score was computed by summing up ratings for all scale items.

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Relationship satisfaction was measured by The Perceived Relationship Quality Components Questionnaire (PRQCQ; Fletcher et al., 2000), consisting of six items, each of them measuring one aspect of the relationship (love, passion, commitment, trust, satisfaction, and intimacy). Participants rated each item on a 7-point scale from 1 (*not at all*) to 7 (*extremely*). Research using the Croatian language version of this questionnaire showed satisfactory psychometric properties (Kardum et al., 2018). The instruction was provided for each measure, and the original wording of the items in all measures was adapted to be appropriate for partner reports.

2.3 | Statistical approach

All analyses were performed in R (R Core Team, 2021) based on the code (Schönbrodt et al., 2022) which accompanies the paper by Schönbrodt et al. (2018) and utilizes packages *lavaan* (Rosseel, 2012), *RSA* (Schönbrodt & Humberg, 2021), *dplyr* (Hadley et al., 2021), and *gridExtra* (Auguié, 2017). All variables were standardized across partners by using grand mean and pooled standard deviation (Schönbrodt et al., 2018). Missing data were estimated using full information maximum likelihood (FIML). Confidence intervals were bootstrapped with 10,000 replications.

Each pair of predictor variables, one woman and one man's traits were included in the analysis comprising several steps following recent recommendations on the appropriate statistical procedures for testing similarity effects (Humberg et al., 2019; Schönbrodt et al., 2018). Before each analysis, we investigated whether in all combinations of predictors, the data contain discrepant predictor pairs for both directions of incongruence (i.e., couples in which women had higher trait levels than men and couples in which men had higher trait levels than women).

In the first step of model estimation (M0) we employed the dyadic response surface analysis (DRSA) defined by two polynomial regressions, predicting women's (Z_f) and men's (Z_m) relationship satisfactions separately (Equations 1 and 2, respectively; Schönbrodt et al., 2018, p. 632).

$$Z_f = b_{0f} + b_{1f}X + b_{2f}Y + b_{3f}X^2 + b_{4f}XY + b_{5f}Y^2 + e_f \quad (1)$$

$$Z_m = b_{0m} + b_{1m}X + b_{2m}Y + b_{3m}X^2 + b_{4m}XY + b_{5m}Y^2 + e_m \quad (2)$$

In this notation, X denotes women's trait level (either self- or partner-reported), Y stands for men's trait level, and their effects can either be linear actor (b_{1f}, b_{2m}), linear partner (b_{2f}, b_{1m}), curvilinear actor (b_{3f}, b_{5m}), curvilinear partner (b_{5f}, b_{3m}), or interaction effects (b_{4f}, b_{4m}). It is worth noting that this approach accounts for the nonindependence of dyadic data (i.e., e_f and e_m are correlated). Recommendations provided by UCLA: Statistical Consulting Group (n.d.) were used for the interpretation of coefficients b_1–b_5.

In the second step, we estimated the *DRSA with gender constraints model* (M1) to test whether constraining all DRSA coefficients to be equal across genders significantly worsened the model fit. In the third step, we estimated the *simple APIM* (M2), a dyadic model nested in the DRSA model but including only the linear actor and partner effects. The final estimated model was the *simple APIM with gender constraints* (M3), that is, the same model as the simple APIM (M2), but with coefficients constrained to be equal across genders. We compared this simplest model (M3) to M2 if the latter showed a better fit compared to M0. For assessing the comparative model fit, we used the chi-square difference test, and following the suggestion of Weidmann et al. (2017), the Tucker-Lewis Index (TLI > 0.95), the comparative fit index (CFI > 0.95), and the root-mean-square error of approximation (RMSEA < 0.06). The more complex model was retained if it differed significantly from the comparable simpler models (M0 from M1 and M2; M2 from M3) and its comparative estimators indicated an appropriate fit. Therefore, multiple criteria for model retention had to be met.

In cases in which either the DRSA unconstrained (M0) or the DRSA gender-constrained model (M1) was selected, we tested similarity effects that may be found in addition to the main effects. Specifically, we evaluated the parameters defining the three-dimensional response surface plot that visualizes the effects of both partners' personality traits on the relationship satisfaction of one partner. The parameters derived from polynomial regression coefficients are termed p_{10} and p_{11} (intercept and slope on the first principal axis), a_1 and a_2 (linear and curvilinear slope on the line of congruence—LOC: X=Y), a_3 and a_4 (linear and curvilinear slope on the line of incongruence—LOIC: X=−Y; for computation and definition, see Edwards, 2002; Humberg et al., 2019). We expected that men's and women's personality trait levels should have linear or curvilinear main effects on relationship satisfaction contrary to the strict version of a congruence hypothesis (i.e., *only similarity matters*) and therefore, we imposed no conditions on the a_1 and a_2 parameters. To test the broad congruence hypothesis (i.e., *similarity or dissimilarity matters too*), four criteria had to be met. Coefficients that statistically define the orientation of the surface with respect to the X-Y plane had to be either nonsignificant (p_{10}) or their confidence interval had to include 1 (p_{11}). In other words, the observed ridge of the response surface (i.e., principal axis) does not deviate from the LOC. Additionally, the surface above the LOIC had to resemble an inverted U-shape, with a peak at the congruent predictor

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combination, which is the case when the a_4 is significantly negative and the a_3 is nonsignificant.

Response surface plots were created only when the polynomial model proved to be superior to the simple APIM model. Only one plot was shown when the model with gender equality constraints proved to be better. In total, we repeated this procedure 12 times: for each of the traits measured through self-reports and partner reports (to investigate *actual similarity and reciprocity*), followed by the combination of self-reports and partner reports of women and self-reports and partner reports of men (to investigate the *perceived similarity*). In all analyses, relationship length was controlled to account for the possibility of couples' convergence. To accept a parameter as significant, we used both an alpha level of 0.05 for *p*-values and the 95% confidence intervals. Response surface parameters were interpreted only if a model met the conditions for similarity effects, based on the procedure suggested by Humberg et al. (2019). Otherwise, only polynomial regression coefficients were interpreted.

2.3.1 | Power analysis

We used the program APIMPowerR (Ackerman & Kenny, 2016) which estimates power for the APIM with indistinguishable or distinguishable dyads. Based on previous research results, we expected small to medium actor effects (standardized estimate = 0.20) and small partner effects (standardized estimate = 0.15). With a sample of 205 couples and a significance level of 0.01, the power to detect actor effects is 0.91, whereas the power to detect partner effects is 0.65. Regarding the power for detecting similarity effect, we adapted the R code by Schönbrodt et al. (2018). The details of the analysis are available in the Supplementary materials at https://osf.io/rznhm/?view_only=ae049eb6a2704cf881b18156e2615d7d. In short, using the significance level of 0.05, the power to detect a similarity effect that would explain 5% of the variance in women's or men's relationship satisfaction was 0.79.

3 | RESULTS

Descriptives for both partners' self-reported and partner-reported DT traits, self-reported relationship satisfaction, intrapersonal bivariate correlations for all variables, assortative mating coefficients for personality traits, and relationship satisfaction as well as interpersonal bivariate correlations between DT traits and relationship satisfaction are presented in Table S1. The reliability measures ω-total indicate that across different rating methods, the scales scores accounted between 75% and 94% of total reliable variance by the general and the group factors. The ω-hierarchical estimates generally indicate sufficient unidimensionality for the scale scores, although greater caution should be taken in the case of partner-reported psychopathy and Machiavellianism in women. Metric invariance between men and women was tested using the approach recommended by Saris et al. (2009) and by employing *miPowerFit* function of the *semTools package* (Jorgensen et al., 2022). Details regarding the analysis and results are included in the Supplementary materials at https://osf.io/rznhm/?view_only=ae049eb6a2704cf881b18156e2615d7d. Suffice it to say that in the seven models tested (three personality traits each assessed with two methods, and relationship satisfaction), only one misspecification was found for partner-reported Machiavellianism. In short, the results indicate that the measures used are commensurable for the two sexes.

Mean scores and standard deviations obtained on the measures used in the present study were similar to those obtained in previous studies on similar samples (e.g., Hudek-Knezevic et al., 2016). The scores obtained for the DT traits were somewhat lower than the scales' midpoints, which was expected for the subclinical population. Men scored significantly higher than women on self-reported psychopathy and narcissism and all partner-reported DT traits, whereas they did not differ in self-reported Machiavellianism and relationship satisfaction. All intercorrelations between the DT traits obtained by self-reports and partner reports in men and women were significant and positive. Expectedly, they were moderate in size and generally in line with the results of a meta-analysis (Muris et al., 2017). All assortative mating coefficients were positive and significant indicating nonindependence of the data and appropriateness of the dyadic approach. Assumed similarity coefficients for men's and women's psychopathy and narcissism were moderate and lower than self-partner agreement, whereas for Machiavellianism they were somewhat higher than self-partner agreement in both sexes. Self-reported and partner-reported narcissism did not have any significant correlations with both one's own and one partner's relationship satisfaction, whereas self-reported and partner-reported psychopathy and Machiavellianism significantly negatively correlated with relationship satisfaction of both sexes.

Table S2 presents the percentages of couples with discrepant ratings in personality traits based on the procedure suggested by Fleenor et al. (1996). The results warranted further investigation of the DT traits' (dis)similarity effects on relationship satisfaction. The results of model fit comparative analyses are displayed in Table S3. We report the summary of significant effects from all analyses in Table 1 along with the explanations of the meaning of polynomial regression and response surface coefficients across different methods of estimation.

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TABLE 1 Summary of significant study results.

	Criteria	
Predictors	**Women's relationship satisfaction**	**Men's relationship satisfaction**
Psychopathy Self-reported	**DRSA unconstrained** • No conditions for similarity effects • Negative linear actor effect of women's self-reported psychopathy ($b_1 = -0.32$***) • Negative linear effect of relationship length ($b = -0.17$*) when self-reported psychopathy is considered	**DRSA unconstrained** • Conditions for similarity effects satisfied • Linear similarity effect ($a_1 = -0.34$***) above the LOC due to the negative linear partner effect of women's self-reported psychopathy ($b_2 = -0.30$***) • Negative nonlinear effect of dissimilarity ($a_4 = -0.34$**) • Positive interaction effect ($b_4 = 0.19$**) of self-reported psychopathy • Negative linear effect of relationship length ($b = -0.23$**) when self-reported psychopathy is considered
Psychopathy Partner-reported	**DRSA unconstrained** • No conditions for similarity effects • Negative linear actor effect of women's partner-reported psychopathy ($b_1 = -0.33$***) • Negative linear effect of relationship length ($b = -0.16$*) when partner-reported psychopathy is considered	**DRSA unconstrained** • No conditions for similarity effects • Negative linear partner effect of women's partner-reported psychopathy ($b_2 = -0.37$***) • Positive interaction effect ($b_4 = 0.18$**) of partners' mutual assessments of psychopathy • Negative linear effect of relationship length ($b = -0.24$**) when partner-reported psychopathy is considered
Psychopathy Women's perceived	**DRSA unconstrained** • No conditions for similarity effects • Negative linear actor effect of women's self-reported psychopathy ($b_1 = -0.28$**)	**DRSA unconstrained** • Conditions for similarity effects satisfied • Linear similarity effect ($a_1 = -0.29$***) above the LOC due to the linear partner effect of women's self-reported psychopathy ($b_2 = -0.26$***) • Negative nonlinear effect of dissimilarity ($a_4 = -0.28$**) • Positive interaction effect ($b_4 = 0.14$*) of women's self-reported and men's partner-reported psychopathy • Negative linear effect of relationship length ($b = -0.20$**) when women's self-reports are considered along with her perception of men's psychopathy
Psychopathy Men's perceived	**DRSA unconstrained** • No conditions for similarity effects • Negative linear actor effect of women's partner-reported psychopathy ($b_1 = -0.33$***) • Negative linear effect of relationship length ($b = -0.15$*) when men's self-reports are considered along with his perception of women's psychopathy	**DRSA unconstrained** • Conditions for similarity effects satisfied • Linear similarity effect ($a_1 = -0.35$***) above the LOC due to the negative linear partner effect of women's partner-reported psychopathy ($b_2 = -0.35$***) • Negative nonlinear effect of dissimilarity ($a_4 = -0.66$**) • Positive interaction effect ($b_4 = 0.35$*) of men's self-reported and women's partner-reported psychopathy • Negative linear effect of relationship length ($b = -0.21$**) when men's self-reports are considered along with his perception of women's psychopathy
Machiavellianism Self-reported	**DRSA with gender constraints** • No conditions for similarity effects • Negative linear actor ($b_1 = -0.19$***) and partner effects ($b_2 = -0.11$**) of self-reported Machiavellianism on both partners' relationship satisfaction • Positive nonlinear actor ($b_3 = 0.08$*) and positive nonlinear partner effects ($b_5 = 0.12$***) of self-reported Machiavellianism on both partners' relationship satisfaction	
Machiavellianism Partner-reported	**Simple APIM with gender constraints** • Negative actor ($b_1 = -0.14$**) and partner effects ($b_2 = -0.23$***) of partner-reported Machiavellianism on both partners' relationship satisfaction	
Machiavellianism Women's perceived	**Simple APIM with gender constraints** • Negative actor ($b_1 = -0.13$**) and partner effects ($b_2 = -0.12$***) of women's self-reports and men's partner-reported Machiavellianism on both partners' relationship satisfaction	

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TABLE 1 (Continued)

Predictors	Criteria	
	Women's relationship satisfaction	**Men's relationship satisfaction**
Machiavellianism Men's perceived	**DRSA unconstrained** • No conditions for similarity effects • Marginally significant negative nonlinear actor effect ($b_3 = -0.25$*) of women's partner-reported Machiavellianism	**DRSA unconstrained** • No conditions for similarity effects • Negative linear partner effect of women's partner-reported Machiavellianism ($b_2 = -0.26$*)
Narcissism Self-reported	**DRSA with gender constraints** • Conditions for similarity effects satisfied • Negative nonlinear effect of dissimilarity ($a_4 = -0.22$*) in self-reported narcissism • Positive interaction effect ($b_4 = 0.12$*) of men and women's self-reported narcissism on both partners' relationship satisfaction • negative nonlinear partner effect ($b_5 = -0.06$*) of men and women's self-reported narcissism on both partners' relationship satisfaction	
Narcissism Partner-reported	**Simple APIM with gender constraints** • marginally significant actor effect ($b_1 = -0.10$*) of partner-reported narcissism on both partners' relationship satisfaction	
Narcissism Women's perceived	**DRSA unconstrained** • No conditions for similarity effects • Positive linear partner effect ($b_2 = 0.17$*) of men's partner-reported narcissism • Positive interaction ($b_4 = 0.18$**) of women's self-reported and men's partner-reported narcissism • Negative non-linear partner effect ($b_5 = -0.08$*) of men's partner-reported narcissism	**DRSA unconstrained** • No conditions for similarity effects • Positive interaction ($b_4 = 0.20$***) of women's self-reported and men's partner-reported narcissism • Negative nonlinear partner effect ($b_5 = -0.16$**) of women's self-reported narcissism
Narcissism Men's perceived	**DRSA with gender constraints** • Conditions for similarity effects satisfied • Negative nonlinear effect of dissimilarity ($a_4 = -0.43$**) • Positive interaction effect ($b_4 = 0.24$**) of men's self-reported and women's partner-reported narcissism • Negative nonlinear partner effect ($b_5 = -0.10$**) of men's self-reported narcissism on women's relationship satisfaction, and women's partner-reported narcissism on men's relationship satisfaction	

Note: 95% CI – bootstrapped 95% confidence intervals; b_1 – linear actor effect; b_2 – linear partner effect; b_3 – squared actor effect; b_4 – interaction (actor x partner) effect; b_5 – squared partner effect; LOC – line of congruence; Response surface parameters are computed as follows: $a_1 = b_1 + b_2$; $a_2 = b_3 + b_4 + b_5$; $a_3 = b_1 - b_2$; $a_4 = b_3 - b_4 + b_5$. Polynomial regression coefficients can be interpreted as standardized β-weights due to the pooled standardization of all variables across partners; required conditions for similarity effects: p_{10} and a_3 are nonsignificant, CI for p_{11} includes 1, $a_4 < 0$; *$p \leq 0.05$; **$p \leq 0.01$; ***$p \leq 0.001$.

Tables showing detailed results with all the polynomial regression coefficients and/or response surface parameters of the final models are provided in the Supplementary materials at https://osf.io/rznhm/?view_only=ae049eb6a2704cf881b18156e2615d7d separately for each personality trait and for both partners' self-reports and partner reports as well as men's and women's perceived assessments.

3.1 | Effects of psychopathy

Across the four combinations of reports, self-reported and partner-reported psychopathy and men and women's perceived similarity in psychopathy (Tables S4 and S5), the best models were the original DRSA unconstrained models (M0; Table S3). Analyses of self-reported psychopathy and both men and women's perceived similarity in psychopathy yielded broad sense congruence effects for the prediction of men's relationship satisfaction (Figure S1). The inverted U shape of the surface indicates that men's relationship satisfaction decreased when partners were dissimilar, or perceived to be dissimilar in psychopathy ($a_4 < 0$). Specifically, men's satisfaction was the highest when there was no dissimilarity, whereas increased dissimilarity in both directions was related to incrementally lower satisfaction. The significant linear similarity effect

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(a_1) was probably the result of the significant linear partner effect of women's self-reported and partner-reported psychopathy (b_2).

No congruence effect was found when partner reports were used to predict men's relationship satisfaction (Table S4). Again, a significant negative linear partner effect of women's psychopathy (b_2) was found, that is, the higher men perceived their partners' psychopathy, the lower was their own satisfaction. Similarly, in models including men's and women's perceived psychopathy, men's satisfaction was lower when both partners perceived higher women's psychopathy (b_2) (Table S5).

Furthermore, across two assessment methods and two sources, there was a significant weak to moderate positive interaction effect (b_4) of both partners' psychopathy on men's relationship satisfaction, suggesting that along with the main effects of independent variables, their interactions added additional predictive power. Simple slope analyses showed that men's relationship satisfaction was negatively predicted by their self-reported ($b=-1.24$; $p<0.001$) and partner-reported psychopathy ($b=-1.24$; $p<0.001$) when their partners' self-reported and partner-reported psychopathy were lower, but not when their partner's self-reported ($b=-0.36$; $p>0.05$) and partner-reported psychopathy was higher ($b=-0.22$; $p>0.05$). Similarly, men's relationship satisfaction was negatively predicted by their own ($b=-0.83$; $p<0.05$) and women's self-reported psychopathy ($b=-0.68$; $p=0.05$) when they perceived their partners ($b=0.07$; $p>0.05$) or were perceived by their partners as lower on this trait, but not higher ($b=-0.30$; $p>0.05$).

In all models predicting women's relationship satisfaction, the auxiliary RSA parameters did not satisfy the conditions for similarity effects. Namely, only negative linear actor effects of women's psychopathy (b_1) were consistently found across different assessment methods. Almost all models related to psychopathy (Tables S4 and S5) showed that relationship length negatively predicted both partners' relationship satisfaction.

3.2 | Effects of Machiavellianism

For self-reported Machiavellianism, the best-fitting model was the DRSA constrained to be equal across genders (M1; Table S3), because constraining the models to simple APIMs yielded a significantly worse fit. Our data contradict the congruence effect of self-reported Machiavellianism. Significant negative linear actor and partner effects emerged (b_1 and b_2; Table S6), along with modest positive nonlinear actor and partner effects (b_3 and b_5) of Machiavellianism on both partners' relationship satisfaction. Although higher levels of both partners' Machiavellianism were related to both partners' lower relationship satisfaction, this association was stronger at lower levels of this trait.

When partner reports were analyzed, the simplest model, APIM with gender constraints yielded optimal fit (M3; Table S3) and did not differ significantly from more complex models. Negative actor (b_1) and partner (b_2) effects were modest but significant. Therefore, when partners perceived each other to be higher on Machiavellianism, their own and their partner's satisfaction was lower. A consistent pattern of results emerged for women's perceived Machiavellianism (Table S7). When women perceived higher Machiavellianism in themselves and their partners, both partners reported lower relationship satisfaction.

Regarding men's perceived Machiavellianism, the full unconstrained model differed significantly from simpler models, although data did not support the congruence effects (M0; Table S3). Higher women's partner-reported Machiavellianism was negatively related to men's satisfaction (b_2). No significant relations were found between men's self-reported and partner-reported Machiavellianism and women's satisfaction, apart from a marginally significant negative nonlinear actor effect (b_3) of women's partner-reported Machiavellianism. The effect of relationship length failed to reach significance in all models that included Machiavellianism.

3.3 | Effects of narcissism

When self-reports and men's perceived narcissism were used for the prediction of both partners' relationship satisfaction, the DRSA models with gender equality constraints explained the data best (M1; Table S3), and congruence effects emerged (Tables S8 and S9). The significant a_4 effects indicate that relationship satisfaction was increasingly lower the more incongruent the partners were on narcissism, which may be seen in Figure S2 as an inverted U-shaped surface above the LOIC diagonal. For both men and women's relationship satisfaction, negative nonlinear partner effects (b_5) emerged. Along with nonsignificant linear partner effect (b_2), this nonlinear partner effect indicates that the more extreme self-reported narcissism in both directions was, the incrementally lower were both partners' relationship satisfaction (inverted U-shaped curve) (Table S8).

Regarding men's perceived narcissism, the combination of significant negative nonlinear partner effect (b_5) and nonsignificant linear partner effect (b_2) indicates that both lower and higher men's self-reported narcissism levels were related to increasingly lower women's relationship satisfaction (inverted U-shaped curve). Similarly, the

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more extreme women's partner-reported narcissism was related to increasingly lower men's relationship satisfaction (Table S9).

Furthermore, positive interaction (*b4*) emerged for both partners' relationship satisfaction when self-reports and men's perceived narcissism were analyzed. In line with the significant a_4 parameter, both interactions indicate the similarity-satisfaction effect. Both partners' relationship satisfaction was positively predicted by their own self-reported narcissism when their partners' self-reported narcissism was higher ($b=0.53$; $p<0.05$), whereas their relationship satisfaction was negatively predicted by their own self-reported narcissism when their partners' self-reported narcissism was lower ($b=-0.44$; $p=0.06$). Similarly, both partners' relationship satisfaction was positively predicted by men's self-reported narcissism when they perceived women's narcissism as higher ($b=0.72$; $p<0.05$), whereas their relationship satisfaction was negatively predicted by men's self-reported narcissism when they perceived women's narcissism as lower ($b=-0.45$; $p=0.06$).

Regarding women's perceived narcissism, the original unconstrained model was the best (M0; Table S9), with no congruence effects. In line with the pattern of relations for self-reports and men's perceived narcissism on both partners' relationship satisfaction, we found negative nonlinear partner effects (b_5). Along with a significant positive linear partner effect on women's relationship satisfaction (b_2), negative nonlinear effect indicates that men's partner-reported narcissism had an increasingly weaker positive effect on women's relationship satisfaction. The combination of nonsignificant linear and significant nonlinear partner effects on men's relationship satisfaction shows that both higher and lower levels of women's self-reported narcissism were related to increasingly lower men's relationship satisfaction (inverted U-shaped curve) (Table S9).

For both men's and women's relationship satisfaction, positive interaction effects (b4) were found. Simple slope analysis showed that both men's ($b=-0.77$; $p<0.05$) and women's relationship satisfaction ($b=-0.89$; $p<0.05$) was negatively predicted by women's self-reported narcissism when they perceived their partners as lower on this trait. When women perceived their partners as higher on this trait, their own self-reported narcissism was not related to their own ($b=-0.07$; $p>0.05$) or their partners' relationship satisfaction ($b=0.42$; $p>0.05$).

The optimal model for partner reports was the simplest one, the APIM with gender equality constraints (M2; Table S8). The only significant effect was the weak actor effect (b_1), indicating that both partners' relationship satisfaction was lower when their partners perceived them higher on narcissism. The effect of relationship length failed to reach significance in all models that included narcissism.

4 | DISCUSSION

We investigated actor, partner, and similarity effects of self-reported, partner-reported, and men and women's perceived DT traits on self-reported relationship satisfaction of romantic partners by using DRSA. Generally, we expected negative actor and partner effects of the DT traits on relationship satisfaction. Regarding the effects of (dis)similarity in these traits, we expected positive effects of similarity at lower trait levels and negative effects at higher trait levels as well as negative effects of dissimilarity in the DT traits. The most detrimental effects of psychopathy, particularly men's psychopathy were expected. Additionally, we assumed that the largest effects would generalize across self-reports, partner reports, and men's and women's perceived DT traits.

4.1 | Effects of psychopathy and dissimilarity-dissatisfaction effects on men's satisfaction

The results for self-reported psychopathy and both men's and women's perceived similarity show dissimilarity-dissatisfaction effect on men (Figure S1). Increased dissimilarity in psychopathy in both directions, whether self-reported or perceived, was related to the incremental decrease in men's relationship satisfaction. The dissimilarity-dissatisfaction effect on men was not found when partner reports were analyzed. However, when men perceived their partners' psychopathy to be higher, their own satisfaction was lower. In all the above-mentioned models, higher self-reported or partner-reported women's psychopathy was related to lower men's relationship satisfaction.

The dissimilarity-dissatisfaction effects on men could be partly seen from the interaction effects. They indicate that men's relationship satisfaction became lower with the increase in their own psychopathy when their partners' psychopathy was lower, notwithstanding the assessment method. Likewise, men's relationship satisfaction became lower with the increase in their own or their partners' self-reported psychopathy when they perceived or were perceived by their partners as lower on this trait. Notwithstanding the assessment method, our results consistently show that women's relationship satisfaction was lower when their own psychopathy was higher. Additionally, in almost all models, the results show that the longer the relationship length, the lower the relationship satisfaction of both partners.

The above-mentioned results partly confirm the hypothesis about negative effects of dissimilarity in psychopathy, but only on men's relationship satisfaction. They are

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partly in line with previous findings showing that dissimilarity in specific components of psychopathy (erratic lifestyle and interpersonal manipulation) was related to lower relationship quality in both sexes (Kardum et al., 2017).

The results of this study differed between genders but were consistent within gender regarding assessment methods and sources, which added to their generalizability. Therefore, it seems that the origin of lower satisfaction with the relationship somewhat differs in men and women. In women, it was only their own higher psychopathy, whereas in men, it was higher women's psychopathy and dissimilarity between their own and their partner's psychopathy, notwithstanding a direction.

Dissimilarity in psychopathy probably creates differences in partners' perceptions, expectancies, and behaviors, which may lead to the lack of understanding and support within the couple. Living with a partner who has dissimilar levels of psychopathy than ourselves, may lead to problems in communication and organization of daily activities that may be detrimental to the relationship, especially for men. Namely, previous studies showed that among the DT traits, psychopathy is the strongest male-linked trait (Muris et al., 2017), and has probably evolved as a male-typical life history strategy in which mating effort rather than parental effort is preferentially pursued (Jonason et al., 2009). On the other hand, our results show that, contrary to our expectation, women's psychopathy exerted the most frequent and strongest effects on both partners' relationship satisfaction. These results may suggest that higher psychopathy in women is more incongruent with their gender role and their femininity, which may lead to lower relationship satisfaction in both men and women. Furthermore, a romantic relationship with a partner higher on psychopathy may be lower in intimacy and commitment, emotionally shallow, and potentially highly conflictual, which can result in lower satisfaction with the relationship (Ali & Chamorro-Premuzic, 2010).

4.2 | Actor and partner effects of Machiavellianism but no (dis)similarity effects

Regarding Machiavellianism, our results did not confirm (dis)similarity-(dis)satisfaction effect. In accordance with the hypothesis, higher levels of both partners' self-reported Machiavellianism were negatively related to men's and women's relationship satisfaction, which is in line with previous findings (Kardum et al., 2018). This association was somewhat stronger at lower levels of this trait. Similar results were obtained for partner-reported and women's perceived Machiavellianism. According to the hypothesis, our results show that perceiving one's partner as higher on Machiavellianism is related to lower relationship satisfaction of both perceiver (actor effect) and his/her partner (partner effect) and that higher women's self-reported and men's partner-reported Machiavellianism are related to both partners' lower relationship satisfaction. Similarly, when men's perceived Machiavellianism was analyzed, the results show that the higher men perceived Machiavellianism in their partners the lower men's relationship satisfaction. Generally, our results show consistent negative actor and partner effects of Machiavellianism on the relationship satisfaction of both partners notwithstanding the method of assessment and source of information.

Therefore, Machiavellian motives for taking advantage of others, their cynicism, amorality, low impulse control, manipulative, self-interested, and exploitative behaviors as well as lack of empathy obviously decrease their own and their partner's relationship satisfaction. As Machiavellianism facilitates short-term gains and immediate benefits and as Machiavellians are especially successful when there is no time or opportunity to detect them (Bereczkei, 2018), long-term romantic relationships are not a fruitful social environment for partners high on Machiavellianism. Namely, in a long-term relationship, it is much easier to detect Machiavellianism in one's partner, which aggravates potential benefits arising from his/her Machiavellian behavior. It could be expected that the negative actor and partner effects of Machiavellianism on relationship satisfaction may have partly different origins. Negative partner effects may be due to mutual partners' Machiavellian behaviors, whereas negative actor effects may be a consequence of limited possibilities in gaining benefits from one's own Machiavellian behaviors.

4.3 | Effects of narcissism and (dis)similarity-(dis)satisfaction effects on both partners' relationship satisfaction

When self-reports and men's perceived narcissism were analyzed, our results support dissimilarity-dissatisfaction effect. The more dissimilar partners were on narcissism, the increasingly lower their relationship satisfaction (Figure S2). In line with these findings are interactions between self-reported men's and women's narcissism and between men's self-reported and women's partner-reported narcissism that show similarity-satisfaction effect. Furthermore, the partner effect of self-reported narcissism shows that at both extremes, narcissism was related to increasingly lower relationship satisfaction of both partners. Similarly, men's self-reported narcissism was at both extremes related to

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increasingly lower women's relationship satisfaction, and women's partner-reported narcissism was at both extremes related to increasingly lower men's relationship satisfaction.

Regarding women's perceived narcissism, our results, contrary to the hypothesis, show that men's partner-reported narcissism was related to higher women's relationship satisfaction, although at higher levels of men's partner-reported narcissism, this effect became increasingly weaker. Additionally, at both extremes of women's self-reported narcissism men's relationship satisfaction became increasingly lower. Both interactions obtained for women's perceived narcissism are in line with the dissimilarity-dissatisfaction hypothesis because they show that men's and women's relationship satisfaction was negatively predicted by women's self-reported narcissism when women perceived their partners as lower on this trait. When partner reports were analyzed, the results show that both partners' relationship satisfaction was lower when their partners perceived them higher on narcissism.

The results for narcissism are less consistent across assessment methods and sources than those for psychopathy and Machiavellianism. The most consistent results regard self-reports and men's and women's perceived narcissism, and they generally show that dissimilarity in narcissism was related to lower, whereas similarity in this trait to higher relationship satisfaction of both partners. Additionally, both extremes of narcissism in one partner were related to increasingly lower relationship satisfaction in the other partner. This finding may be a consequence of a broader dissimilarity-dissatisfaction effect because both extremes of narcissism increased the probability of partners' dissimilarity. Therefore, our results are in line with the hypotheses that higher dissimilarity in narcissism will be related to lower relationship satisfaction and higher similarity to higher relationship satisfaction, which is partly in line with a previous study showing that profile similarity in narcissism was related to higher relationship quality of both partners (Kardum et al., 2018). As already mentioned, higher narcissism in both partners was related to lower relationship satisfaction (Ye et al., 2016), and the novel finding of the present research is that dissimilarity in narcissism is also related to higher dissatisfaction with the relationship. Dissimilarity in the level of narcissism probably leads to a lack of self-verification and decreases the understanding and closeness between partners. Additionally, people high on narcissism have a more agentic value system (Campbell et al., 2002), and therefore, when their partners are lower on narcissism, they cannot adequately meet their agentic goals. However, research suggests that sometimes narcissists might function well, particularly when their needs are met by their partners (Foster & Brunell, 2018). For example, people high on narcissism are most satisfied with a relationship when they see their partners as meeting their agentic goals, such as attractiveness and status (Seidman, 2016). Positive partner effects of men's partner-reported narcissism on women's relationship satisfaction obtained in this study may reflect these processes but can also reflect women's more general preference for characteristics of men higher on narcissism such as self-confidence and assertiveness.

The DT traits mainly exerted different effects on relationship satisfaction suggesting their distinctiveness. However, some similarities in their effects may be the consequence of the overlap among these traits, that is, their common core, which to a great extent corresponds with low agreeableness and low Honesty-Humility. Therefore, our findings may partly reflect the impact of antisocial components contained in these more general personality traits. On the other hand, our results to some extent also reflect the specificities of each DT trait because despite the conceptual overlap each of them has unique characteristics (Jones & Figueredo, 2013). Additionally, although the DT traits are related to general models of personality, their components such as interpersonally antagonistic, selfish, and exploitive behaviors cannot be completely reduced to them (Ilmarinen et al., 2016; Schreiber & Marcus, 2020).

4.4 | Summary and contribution

All DT traits had negative actor and partner effects on both partners' relationship satisfaction, consistent with the social interdependence theory (Johnson & Johnson, 2005), and vulnerability-stress-adaptation model (Karney & Bradbury, 1995) that considers negative personality traits as permanent vulnerabilities directly leading to conflictual interactions in a romantic couple. Psychopathy had the highest number of negative effects, which confirms its most detrimental role and its superordinate position in the DT model. The finding that psychopathy had the strongest negative relations with relationship length also shows its deleterious impact that may eventually result in a higher number of romantic relationship terminations. Women's self-reported and partner-reported DT traits exerted more effects on women's (actor effects) as well as men's (partner effects) relationship satisfaction, which is similar to the results of a previous study that analyzed temperamental traits (Brock et al., 2016). Therefore, it seems that women's personality traits, especially those related to mental health problems, are more important for the quality of romantic relationships.

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The strength of the present research is its advanced methodology. As far as we know, this is the first study that used DRSA for investigating actor and partner effects as well as the effects of (dis)similarity in the DT traits on relationship satisfaction in romantic couples. The current study relies upon a multimethod approach, and we secured both self-reports and partner reports of the DT traits in order to control common method variance and self-serving biases which occur especially in the perception of highly evaluative traits. Furthermore, we included partner reports because partner perspective may be even more important for relationship satisfaction than self-perspective (Furler et al., 2014), and using both self-reports and partner reports allowed us to examine the effects of men's and women's perceived DT traits on relationship satisfaction. However, the research design of this study does not allow for determining to what degree each of these factors accounted for the effects obtained.

4.5 | Limitations and future directions

Future studies could be improved by the inclusion of ideal-partner ratings as well as meta-perception, that is, an individual's representations of and beliefs about how others perceive one's personality (Schaffhuser et al., 2014). With rare exceptions (e.g., Brock et al., 2016), the majority of research on personality and relationship outcomes has been focused on broad, higher-order personality traits, whereas this study analyzed more specific antisocial personality traits that have not been studied sufficiently in association with relationship satisfaction in couples. Several limitations of the current study could be addressed in future research. The first is that cross-sectional design does not allow causal interpretations. For example, although personality traits predict relationship satisfaction, relationship satisfaction may influence the perception of personality (Luo et al., 2010). In order to improve the understanding of the effects of the DT traits on the relationship satisfaction change, future research should use longitudinal designs with multiple measurement points. Furthermore, our results may be to some extent a consequence of attrition, as we did not include couples who had broken up, and it is possible that some personality traits and (dis)similarity in these traits between partners have had even stronger effects on their relationship satisfaction. A nonclinical sample used in this study had relatively low levels of the DT traits, and this limited variability could additionally attenuate the effects obtained. Additionally, sex differences in these traits may have decreased the effects of similarities between partners on their relationship satisfaction. Notably, our results may be specific regarding participants' sociodemographic characteristics. Future studies should analyze the DT traits as multidimensional constructs, which may be useful in clarifying possible mechanisms underlying the actor and partner effects and the effects of (dis)similarity on relationship satisfaction. In addition, it is possible that in our power analysis, we overestimated the assumed similarity effect on relationship satisfaction. Since the power for linear effects (actor and partner effects) is always higher than the power for similarity effects, future studies should make efforts to significantly increase sample sizes.

5 | CONCLUSION

The present study extends previous research by using different methods (self-reports and partner reports) and sources (men's and women's reports) for assessing the DT traits as well as men's and women's perceived similarity, and novel analytical procedures for analyzing dyadic data. The findings show that the DT traits of both members of a couple are important for their relationship satisfaction. Along with actor and partner effects of all DT traits, the effects of (dis)similarity in psychopathy and narcissism also matter to their relationship satisfaction. These effects are low to moderate and are similar to those of other personality traits.

AUTHOR CONTRIBUTIONS

Igor Kardum: Conceptualization; funding acquisition; investigation; methodology; writing – original draft; writing – review and editing. Jasna Hudek-Knezevic: Conceptualiztion; investigation; methodology; writing – original draft; writing – review and editing. Nermina Mehić: Conceptualization; data curation; formal analysis; writing – original draft; writing – review and editing. Katarina Banov Troselj: Conceptualization; data curation; formal analysis; writing – original draft; writing – review and editing.

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CONFLICT OF INTEREST STATEMENT

The authors have no conflict of interest to disclose.

DATA AVAILABILITY STATEMENT

The data and code for this manuscript are available at https://osf.io/rznhm/?view_only=ae049eb6a2704cf881b18156e2615d7d.

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ETHICS STATEMENT

The study was approved by the Institutional Review Board at the Faculty of Humanities and Social Sciences, University of Rijeka. The study and statistical analysis plan were not preregistered. STROBE guidelines for observational studies were followed for the reporting of this research.

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ENDNOTE

[1] This word, as used in this paper, refers only to association and does not entail any causality.

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