

Curvilinear Associations Between Neuroticism and Dyadic Adjustment in Treatment-Seeking Couples

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Among personality traits, neuroticism has been shown to be the most significant predictor of dyadic adjustment. Despite some propositions arguing that low, as well as high levels of personality traits are maladaptive tendencies, only the negative linear relationship between neuroticism and couple satisfaction has been addressed in past research. The aim of this study was to examine the nonlinear association between neuroticism and dyadic adjustment for both partners of a clinically distressed sample of couples. The sample included 472 couples seeking couple therapy who completed the NEO-FFI (P. T. Costa & R. R. McCrae, 1992, *NEO PI-R professional manual*, Odessa, FL, Psychological Assessment Resources) and the Dyadic Adjustment Scale (G. B. Spanier, 1976, Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads, *Journal of Marriage and the Family*, 38, pp. 15–28). Results showed, for actor and partner effects, a significant nonlinear, inverted U-shaped relationship between neuroticism and dyadic adjustment. In particular, both very low levels and high levels of neuroticism were associated with lower dyadic adjustment for both the individual and his or her partner. This finding is in contrast with the traditional negative linear association between neuroticism and dyadic adjustment observed in previous research. Openness and agreeableness also positively predicted self and partner dyadic adjustment. Findings bear important clinical implications for therapists assessing and working with distressed couples.

Keywords: neuroticism, curvilinear relationship, marital distress, personality, five-factor model

Neuroticism, or negative affectivity, is defined by the proneness to experience negative emotions such as anxiety, anger, guilt, and fear. Individuals evidencing high levels of neuroticism tend to develop irrational thoughts about anxiogenic events; they are also characterized by low impulse control and they cope poorly with stress (Costa & McCrae, 1992). Inversely, individuals low in neuroticism tend to be emotionally stable and generally confident, and they react adequately

to stressful situations (Watson, 2001). Despite the diversity of labels, in the last century, a neuroticism-like dimension has been conceptualized in almost every trait model (Watson, 2001). The significance of this universal dimension is also confirmed by the abundance of life outcomes to which it is related (see Ozer & Benet-Martinez, 2006). Neuroticism has been consistently associated with diverse mental-health problems such as depression, anxiety, and personality disorders (Costa & Widiger, 2002; Malouff, Thorsteinsson, & Schutte, 2005; Watson & Casillas, 2003). Neurotic individuals also report more physical complaints and have an increased risk of hypertension, cardiovascular diseases, and cancer (Ozer & Benet-Martínez, 2006; Smith & Spiro, 2002; Watson, 2001). Higher levels of neuroticism are also negatively related to subjective well-being, life satisfaction, work satisfaction, and relationship quality (Heller, Watson, & Hies, 2004; Ozer & Benet-Martínez, 2006). The economic costs of high levels of neuroticism, as assessed by the number of consultations in health services, hospitalization days, and loss of work days, exceed those of common mental disorders like mood disorders, anxiety disorders, substance-abuse, and somatic disorders (Cuijpers et al., 2010).

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Neuroticism and Couple Satisfaction

Among personality traits, neuroticism has been shown to be the most significant predictor of couple satisfaction (Karney & Bradbury, 1995) and to be more strongly related to relationship outcomes than background variables (e.g., family events, sexual history) (Kelly & Conley, 1987). It is also the trait raising the most

interest among couple-relationship researchers, with an increasing number of studies that support the strong negative association between neuroticism and dyadic satisfaction. These studies demonstrate that an individual's neuroticism not only predicts his or her own dyadic adjustment, but also his or her partner's dyadic adjustment (Barelds, 2005; Bouchard & Arseneault, 2005; Bouchard, Lussier, & Sabourin, 1999; Botwin, Buss, & Shackelford, 1997; Donnellan, Conger, & Bryant, 2004; Dyrenforth, Kashy, Donnellan, & Lucas, 2010; Kelly & Conley, 1987; Robins, Caspi, & Moffitt, 2000; Watson, Hubbard, & Wiese, 2000). The growing interest in the study of personality and couple relationships is shown by the publication of two meta-analyses in the last decade (Heller et al., 2004; Malouff, Thorsteinsson, Shutte, Bhullar, & Rooke, 2010). Heller et al. (2004) found an average correlation of $-.26$ for the actor effect of neuroticism (i.e., the relationship between self-reported neuroticism and self-reported couple satisfaction). Malouff et al. (2010) reported a weighted correlation of $-.22$ for the partner effect (i.e., the relationship between self-reported neuroticism and partner-reported couple satisfaction). In addition, these meta-analyses showed that, among personality traits, neuroticism shows the strongest association with dyadic adjustment.

Although the consistent negative association observed between neuroticism and dyadic adjustment is now well-established, researchers are just beginning to address the processes by which this trait constitutes a threat to couple happiness. Some evidence suggests that neuroticism is related to both partners' relational perceptions and behaviors (Caughlin, Huston, & Houts, 2000; Donnellan et al., 2004). It has been shown that partners of more neurotic individuals tend to behave more negatively during problem discussions, that women's neuroticism predicts their own negative behaviors, and that women's and men's neuroticism predict negative perception of their partner's behaviors (McNulty, 2008). Sexual satisfaction and behaviors may also play a role by mediating the effect of neuroticism on couple adjustment (Fisher & McNulty, 2008). In fact, the association between neuroticism and lower sexual satisfaction may partly explain how this personality dimension is negatively related to relationship quality.

Adaptive Features of Neuroticism

Despite the wide range of negative life and relationship outcomes associated with high levels of neuroticism, some theoreticians contend that it is nevertheless a universal characteristic that shows inherent adaptive features (see Watson & Casillas, 2003). That is, neuroticism can be viewed as a positive strategy for dealing with emotions. In particular, neurotic individuals may be more introspective, prone to confront and analyze their thoughts and emotions, and willing to honestly express them with others. In contrast, individuals with extremely low neuroticism may be more likely to avoid or deny threats. The role of neuroticism is also to protect the individual from danger by promoting vigilance and motivating actions when he or she is threatened. Just like physical pain allows the individual to detect danger and arouse reactions in order to protect the body from injuries, the unpleasant emotions associated with neuroticism would serve the same purpose on a psychological level (Nesse, 1991). Consequently, extremely low scorers on neuroticism may be more likely to be exposed to threats because of their lack of vigilance and adequate responses in the

face of danger. Drawing on Gray's biological view of neuroticism as expressed in the behavioral inhibition system (Gray, 1987) and on Damasio's somatic marker hypothesis (Damasio, 1994), Watson and Casillas (2003) reviewed some empirical evidence showing that low neuroticism may be associated with poor health, antisocial behaviors, poor decision-making skills, and deficits in social competence. They suggested that extreme levels of neuroticism, both high and low, can have deleterious psychological effects in diverse life domains.

These conclusions can be extended to couple research. In the context of romantic relationships, one can argue that neuroticism is likely to play an essential protective role for the relationship. For instance, neuroticism may encourage partners to be vigilant toward possible threats to their relationship (i.e., a decrease in commitment, intimacy, or passion), promote actions in order to keep the relationship safe from those threats (i.e., increase positive activity levels and problem-solving discussions), and support confrontation and expression of thoughts and feelings between intimate partners. Neyer and Lehart (2007) showed that individuals who demonstrate higher neuroticism and higher extraversion are more motivated to find a partner and value relationship commitment more. Despite the potential adaptive value of neuroticism on couple satisfaction, however, past studies mostly reported a moderately negative linear relationship between these two variables.

Up until now, the hypothesis of a curvilinear relationship between neuroticism and dyadic adjustment has never been investigated. Clinical research on personality is just beginning to link extreme scores on normal personality dimensions to nonadaptive tendencies (Costa & Widiger, 2002; Widiger & Mullins-Sweatt, 2009). Away from the traditional conception that normal and abnormal psychology are separated fields, experts in research on personality disorders argue that personality pathology might be associated with variations in normal personality dimensions (Costa & Widiger, 2002). This assumption has received empirical support, with some preliminary data showing that both poles of every dimension of the five-factor model (neuroticism, extraversion, openness, agreeableness, and conscientiousness; Costa & McCrae, 1992) are maladaptive to some extent (Coker, Samuel, & Widiger, 2002). For example, whereas very high scores on neuroticism are related to intense and unstable emotionality, extreme anxiety, and suicidality, very low scores have been associated with traits such as unawareness of danger, unrealistic, exaggerated optimism, shamelessness, and a sense of invincibility (for a review of these studies, see Mullins-Sweatt & Widiger, 2006). In addition, results from studies using an expert consensus approach (i.e., prototypic DSM-IV cases rated using trait descriptors of the Five Factor Model facets) with researchers (Lynam & Widiger, 2001) and clinicians (Samuel & Widiger, 2004) showed that low scores on three facets of neuroticism (self-consciousness, anxiousness, and vulnerability) are related to antisocial personality disorder. Clinical theory in couple therapy also focuses on extreme variants on personality dimensions in partners who are likely to have a detrimental effect on dyadic adjustment (Jacobson & Christensen, 1996; Wright, Lussier, & Sabourin, 2008). For example, emotionally focused or integrative cognitive-behavioral couple therapies provide broad theoretical and clinical frameworks designed to take into account underregulated (high neuroticism) or overregulated (low neuroticism) emotional processes (Snyder, Hughes, & Simpson, 2006). However, these propositions remain mostly conceptual

and the well-documented negative linear relationship between neuroticism and couple adjustment continues to be the traditional way of conceptualizing the association between these two variables. As Mullins-Sweatt and Widiger (2010) argued, studies that do not address maladaptive variants of the five-factor model may fail to identify problems in living associated with these dimensions. Consequently, the adaptive value of neuroticism, as well as the potential detrimental effect of very low scores on this dimension may have been overlooked in marital research.

The aim of this study was to verify the existence of a curvilinear relationship between neuroticism and couple satisfaction. Both the relationship between neuroticism and self-reported (actor effect) and partner-reported (partner effect) dyadic adjustment were investigated. We hypothesized that very low as well as very high levels of neuroticism would lead to poorer dyadic adjustment, whereas moderate levels would lead to better adjustment, in both partners. A second goal was to examine whether a curvilinear association between neuroticism and dyadic adjustment holds after controlling for the remaining dimensions of the five-factor model.

This study was designed to gather data from a clinical sample composed of distressed couples seeking psychological treatment. Gattis, Berns, Simpson, and Christensen (2004) replicated the well-established negative association between neuroticism and dyadic adjustment in treatment-seeking couples. Except for this finding, very little is known about this association in clinical couples. This is partly due to the fact that most studies are based on samples consisting of undergraduate students or couples recruited in the community (Cooper & Sheldon, 2002). Given the association between marital distress and physical- and mental-health problems (Schonbrun & Whisman, 2010; Whisman, Uebelacker, & Settles, 2010), there is a need to conduct more studies targeting clinical populations of couples. In the present study, the use of a sample composed of treatment-seeking couples is part of an effort to provide more meaningful results for applied research and to help clinicians in the identification of intrapersonal variables that may significantly influence couple functioning. Even though the use of clinical samples may somewhat constrain variability in scores of dyadic satisfaction and potentially reduce our ability to detect significant results, we believe that such investigations are highly important because of the clinical implications that can be drawn from its findings.

Method

Participants

The sample was composed of 472 heterosexual couples seeking couple therapy. Partners had been living together for an average of 13.29 years ($SD = 9.06$). Of these couples, 54.7% ($n = 258$) were legally married and 45.3% ($n = 212$) were cohabiting. The number of children per couple ranged from 0 to 5 ($M = 1.70$, $SD = 1.09$). 83% ($n = 392$) of the couples had at least one child and 17% ($n = 80$) had no children. The age of women varied from 22 to 66 years ($M = 40.01$, $SD = 8.64$) and from 23 to 66 years ($M = 42.63$, $SD = 8.88$) for men. The annual income for women ranged from less than \$5,000 to more than \$200,000, with most of them earning between \$30,000–\$99,999 in Canadian currency. The annual income for men ranged from less than \$5,000 to more than \$200,000, with the majority earning between \$50,000–\$99,999. Among

women, 0.4% ($n = 2$) had not completed high school, 18.2% ($n = 86$) had a high school degree, 22.9% ($n = 108$) had a college degree, 37.1% ($n = 175$) had an undergraduate degree, and 21.1% ($n = 99$) had a graduate degree. Among men, 4.2% ($n = 20$) had not completed high school, 15.9% ($n = 75$) had a high school degree, 27.1% ($n = 128$) had a college degree, 31.4% ($n = 148$) had an undergraduate degree, and 20.3% ($n = 96$) had a graduate degree. Regarding ethnicity, 95.5% ($n = 445$) of women were Canadian, 2.3% ($n = 11$) were European, 1% ($n = 5$) were Asian, 0.2% ($n = 1$) were African, 0.2% ($n = 1$) were south American, and 0.6% ($n = 3$) belonged to another ethnic group. Among men, 94.5% ($n = 430$) were Canadian, 2.3% ($n = 11$) were European, 1.9% ($n = 9$) were Asian, 0.4% ($n = 2$) were African 0.2% ($n = 1$) were South American, and 0.4% ($n = 2$) belonged to other ethnic groups. Among those who emigrated, women had been living in Canada for an average of 18.75 years ($SD = 12.63$) and men, for an average of 23.86 years ($SD = 14.59$).

Procedure

Couples were recruited in a fee-for-service clinic located in Montréal, Québec, Canada, and testing occurred at the beginning of treatment (after the first therapy session). Couples were either self-referred or had been referred to couple therapy by a mental-health professional. Couples generally sought help for communication problems, lack of emotional intimacy, and sexual difficulties, and they were treated by therapists trained in traditional or integrative cognitive-behavioral approaches. At the beginning of the treatment, each partner was invited to complete a series of questionnaires, including the NEO Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1992) and the Dyadic Adjustment Scale (DAS; Spanier, 1976), a demographic questionnaire and a consent form. Participants were instructed to complete the questionnaires at home, without consulting their partners, and to return them by mail before the second therapy session. These questionnaires were part of a large comprehensive study aimed at evaluating couple functioning.

Measures

NEO Five-Factor Inventory. Neuroticism was measured using the French translation of the NEO-FFI (Sabourin & Lussier, 1992; Costa & McCrae, 1992), a 60-item questionnaire assessing the dimensions of the five-factor model of personality: Neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. Each scale includes 12 items rated on a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*) which assesses the extent to which the respondent considers each statement to be representative of himself or herself. Costa and McCrae (1992) suggested the following ranges to interpret scores on each dimension: Very low (T score = 34 or below), low (T score = 35–44), moderate (T score = 45–55), high (T score = 56–65), and very high (T score = 65 or above). The NEO-FFI shows adequate estimates of construct validity and the neuroticism scale has good reliability, with an α coefficient of .86 (Costa & McCrae, 1992). The French version of the questionnaire was developed by Sabourin and Lussier (1992). In the present study, α coefficients were .86 for neuroticism, .74 for extraversion, .73 for openness to experience, .73 for agreeableness, and .79 for conscientiousness.

Dyadic Adjustment Scale. The DAS (Spanier, 1976) is a 32-item self-report questionnaire of couple adjustment. The questionnaire provides scores on four subscales (consensus, satisfaction, cohesion, and affectional expression) and a global score assessing dyadic adjustment. Items are rated on various Likert-type scales. The global score ranges from 0 to 151, with scores above 100 indicating good adjustment. The French version, developed by Baillargeon, Dubois, and Marineau (1986) has adequate psychometric properties (see also Sabourin, Valois, & Lussier, 2005). In this study, the α coefficient for the global score was .90.

Results

Correlation coefficients, means, and standard deviations for dyadic adjustment and neuroticism in women and men are presented in Table 1. Correlation analyses generally replicated the well-documented negative association between neuroticism and self and partner dyadic adjustment. Preliminary analyses were conducted to examine possible differences in women's and men's mean scores on these variables. Because partner's scores on couple adjustment were correlated, paired t tests using gender as a repeated measure were conducted. Results showed that both men's and women's scores on dyadic adjustment fell in the clinical range (validating the clinical nature of the sample). Women were significantly less satisfied with their relationship than men, $t(465) = 2.86, p = .004, d = 0.13$, and scored significantly higher than men on neuroticism, $t(466) = 2.06, p = .040, d = 0.14$.

Actor-Partner Interdependence Model

In order to examine the curvilinear association between neuroticism and actor and partner dyadic adjustment, actor-partner interdependence model (APIM) analyses were used (Kenny, Kashy, & Cook, 2006). Contrary to hierarchical polynomial regressions, this statistical technique is well suited for couples because it is especially designed to take into account the nonindependence of partners' data in a dyad. Furthermore, in APIM analyses, data for both partners are considered simultaneously, which allows testing for actor effects (i.e., the relationship between one's neuroticism and one's dyadic adjustment) and partner effects (i.e., the relationship between one's neuroticism and one's partner's dyadic adjust-

ment), as well as for gender differences, in one comprehensive model. As in hierarchical polynomial regressions, the linear term corresponds to the score on the neuroticism scale and the quadratic term is obtained by squaring this score (Neuroticism \times Neuroticism).

Hypotheses were tested with path analyses in EQS (Multivariate Software, Encino, CA), using the robust maximum likelihood method of parameter estimation. For women and men, both the linear and the quadratic terms of neuroticism were treated as exogenous variables and dyadic adjustment was the endogenous variable. Due to nonindependence of partners' dyadic adjustment, men's and women's scores on this variable were allowed to correlate. To examine actor and partner effects, all possible paths from exogenous to endogenous variables were included in the model (see Figure 1). When the structural paths from the quadratic terms of neuroticism reach significance, the relationship between neuroticism and dyadic adjustment is better represented by a curvilinear association than by a linear association. Before conducting APIM analyses, an omnibus within-dyad test of distinguishability was used (Kenny et al., 2006). Theoretically, partners are expected to be distinguishable on the base of their gender. It is possible however that gender does not make a meaningful difference on the studied variables. In other words, it is possible that the effect of neuroticism on dyadic satisfaction is the same for women and men in this sample. To test this assumption, variances for each variable as well as actor and partner effects were constrained to be equal across genders. The omnibus chi-square test was not significant, $\chi^2(9) = 7.16, p = .620$, indicating that the dyad members of this sample were empirically indistinguishable. The APIM analysis was therefore conducted considering partners as if they were interchangeable, using equality constraints on the variances of each exogenous variable, as well as on actor and partner effects across gender. Because partners were not distinguishable according to their gender, they were no more identified as women or men. Instead, partners were labeled as Spouse 1 and Spouse 2. The final model with correlations between exogenous variables and path coefficients from exogenous to endogenous variables is presented in Figure 1. Goodness-of-fit indices showed that the model provided a very good fit to the data. The Satorra-Bentler scaled chi-square statistic was nonsignificant, $\chi_{SB}^2(12) = 8.26, p = .765$. The normed-fit index (NFI; Bentler & Bonett, 1980) as well as the comparative fit index (CFI; Bentler, 1990) both exceeded 0.90, and the root mean-squared error of approximation (RMSEA; Browne & Cudeck, 1993) was lower than .05, which suggests a good fit to the data. All structural paths were significant. These findings supported the results of bivariate correlations indicating a negative relationship between neuroticism and dyadic adjustment. They also confirmed, for both actor and partner effects, the hypothesis of a curvilinear relationship between these variables. The negative values of the path coefficients from the quadratic term for actor, $\beta = -.072, p = .003$, and partner effects $\beta = -.062, p = .004$, indicated that the relationship between neuroticism and dyadic adjustment took the form of an inverted U, as illustrated in Figure 2. This suggests that at lower levels of neuroticism, the relationship between self- and partner-reported neuroticism and dyadic adjustment is positive. Thus, an increase from very low to low neuroticism is initially associated with higher couple satisfaction. Past a certain point however, the relationship becomes negative, indicating that higher levels of self- and partner-reported neuroti-

Table 1
Correlation Coefficients, Means, and Standard Deviations for Dyadic Adjustment Scores (DAS) and Neuroticism

Measure	Women		Men	
	1	2	3	4
1. Women's DAS	—	—	—	—
2. Women's neuroticism	-.12*	—	—	—
3. Men's DAS	.53**	-.09	—	—
4. Men's neuroticism	-.11*	.05	-.17**	—
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
DAS	90.88**	16.39	93.01**	16.70
Neuroticism	51.69*	10.83	50.18*	11.07

Note. Means accompanied by an asterisk indicate a significant difference in scores between women and men on this variable.

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

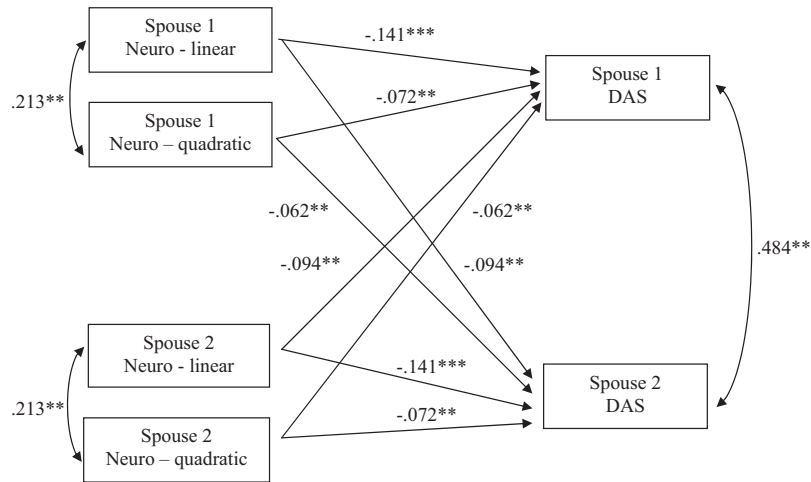


Figure 1. Actor-partner interdependence model for neuroticism and dyadic adjustment. Note. The regression coefficients are based on standardized scores; * $p < .05$. ** $p < .01$. *** $p < .001$.

cism are associated with lower couple satisfaction. It is possible to calculate the precise point at which the relation between neuroticism and dyadic adjustment becomes negative. The following equation allows for the identification of this inflection point, where b_1 represents the path coefficient of the linear association and b_2 , the path coefficient of the curvilinear association (Aiken, West, & Reno, 1991):

$$X_{\text{inflection}} = -b_1/2b_2.$$

Results indicate that a score of 41 for the actor effect and a score of 42 for the partner effect is the level of neuroticism predicting the highest level of dyadic adjustment, and the point at which further increases in neuroticism are associated with a decrease in dyadic adjustment. In the present sample, the proportion of couples with at least one partner evidencing a level of neuroticism below the inflection point was 38.8%.

These results support the hypothesis that the association between neuroticism and self and partner dyadic adjustment is better represented by a curvilinear association than by a purely linear one. Together, actors' and partners' linear and curvilinear associations explained 5% of observed variation in both partners' dyadic adjustment.

In order to determine if the curvilinear associations between neuroticism and dyadic adjustment remain significant after controlling for the linear association between the four remaining dimensions of the five-factor model and dyadic adjustment, we conducted additional APIM analyses. Both spouses' DAS scores were entered as endogenous variables, whereas both spouses' neuroticism (linear and quadratic), extraversion, openness, agreeableness, and conscientiousness scores were entered as exogenous variables. All possible paths from exogenous to endogenous variables were tested. Again, the omnibus chi-square test was not significant, $\chi^2(49) = 36.51, p = .906$, indicating that the dyad members of this sample were indistinguishable. Thus, they were labeled as Spouse 1 and Spouse 2. Results showed significant path coefficients for linear neuroticism (actor effect), quadratic neuroticism (actor and partner effects), openness (partner effect), and

agreeableness (partner effect). To verify whether significant differences existed between actor and partner effects, a final model was tested. The paths from Spouse 1 neuroticism (linear and quadratic), openness, and agreeableness to self-reported DAS (actor effect), as well as the paths from Spouse 2 neuroticism, openness, and agreeableness to Spouse 1 DAS (partner effect) were constrained to be equal. Because they showed no significant association with dyadic adjustment, no constraints were applied to extraversion ($b = .018, p = .619$, for the actor effect and $b = .064, p = .096$, for the partner effect) and conscientiousness ($b = .012, p = .732$, for the actor effect and $b = .051, p = .139$, for the partner effect). Because these equality constraints did not significantly worsen the fit of the model, $\Delta\chi^2(4) = 6.29, p = .178$, the results suggested no difference between actor and partner effects in the association between neuroticism, openness, and agreeableness

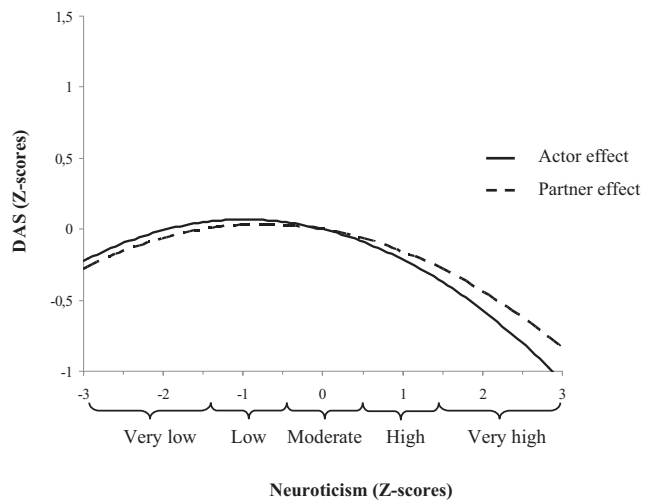


Figure 2. Curvilinear relationships between neuroticism and dyadic adjustment.

and dyadic adjustment. By constraining the paths for actor and partner effects to be equal, variables that showed only significant actor or partner effects showed both significant actor and partner effects in the final model. This model, including path coefficients, is illustrated in Figure 3. In order to simplify the figure, nonsignificant paths were not included. Goodness-of-fit indices showed that the model provided a good fit to the data, $\chi_{SB}^2(68) = 82.26$, $p = .115$, CFI = 0.98, RMSEA = 0.02. The results indicate that, for both actor and partner effects, the curvilinear association between neuroticism and dyadic adjustment held even after controlling for the remaining dimensions of the five-factor model. They also reveal additional positive associations between openness to experience and agreeableness and both self and partner dyadic adjustment. This model explains 7.2% of the variance of both spouses' dyadic adjustment.

Discussion

The negative linear relationship observed between neuroticism and self- and partner-reported dyadic adjustment is a well-established empirical finding in studies conducted with community couples (Barelds, 2005; Botwin et al., 1997; Bouchard et al., 1999; Donnellan et al., 2004; Dyrenforth et al., 2010; Kelly & Conley, 1987; Kosek, 1996; Robins et al., 2000; Watson et al., 2000). The present analyses showed that, in clinically distressed couples, this pattern of results is replicated, even if the coefficients are of lower magnitude than what has been reported in past research with community couples (Heller et al., 2004; Malouff et al., 2010). The generalizability of this negative relationship between neuroticism and dyadic adjustment to distressed couples is important. How-

ever, the main purpose of this study was to determine if this negative association is the best representation of the link between these two variables. Based on theoretical and empirical findings, we have argued that low neuroticism may be associated with diminished attention to relational threats and lower motivation to positively confront couple problems. Thus, the negative relation between neuroticism and dyadic adjustment may not hold at different levels of neuroticism and may be best represented as a curvilinear association. Our results provide some support for this hypothesis. The fact that we found significant results despite the potentially constrained variance in dyadic adjustment in this sample of maritally distressed couples strengthens the validity of the results found in this study. Four specific significant findings need to be discussed.

First, we found an inverted U-shaped relationship between neuroticism and dyadic adjustment. This curvilinear association was significant for both actor and partner effects. That is, neuroticism initially showed a positive association with dyadic adjustment, until an inflection point from which further increases in neuroticism predicted lower dyadic adjustment. The inflection points for actor and partner effects correspond to a low level of neuroticism (Costa & McCrae, 1992). That is, in this sample of maritally distressed couples, for both partners, moderate- to high-neuroticism scores (see Figure 2) were negatively associated with couple adjustment. This finding replicated the well-documented negative relationship between this personality dimension and dyadic adjustment in community samples. High levels of neuroticism thus seem to have the same deleterious effect on clinically distressed couples. We also found no significant difference between actor and partner effects of neuroticism. This indicates that the partner neuroticism is as much related to the individual couple satisfaction as his or her own neuroticism. This contrasts with results of Barelds (2005), who reported a greater association with marital satisfaction for the actor effect than for the partner effect of neuroticism. However, they did not mention having statistically tested for significant differences. In addition, meta-analyses on the association between dimensions of the five-factor model and marital satisfaction showed similar average correlations for actor, $r = -.26$ (Heller et al., 2004) and partner, $r = -.22$ (Malouff et al., 2010) effects of neuroticism.

The present results also indicated that, from very low to low levels of neuroticism (see Figure 2), there was a positive association between neuroticism and self- and partner-reported dyadic adjustment. This finding challenges the assumption that neuroticism is inherently detrimental to couple satisfaction and that an optimal level of dyadic adjustment is predicted by very low neuroticism scores. It rather supports studies in clinical personality psychology (Costa & Widiger, 2002; Widiger & Mullins-Sweatt, 2009), which show that very low as well as very high scores on any personality dimensions may be associated with nonadaptive tendencies. Whereas the deleterious effect of high neuroticism is increasingly well documented in couple studies, the potential negative outcomes of very low neuroticism on dyadic adjustment has received, to our knowledge, no attention from researchers. These findings are consistent with the hypothesis that neuroticism has inherent adaptive features, mainly for protection and responsiveness to internal or external pressures (Watson, 2001). In the context of romantic relationships, up to a certain point, neuroticism may keep partners alert to possible threats to their relationship and

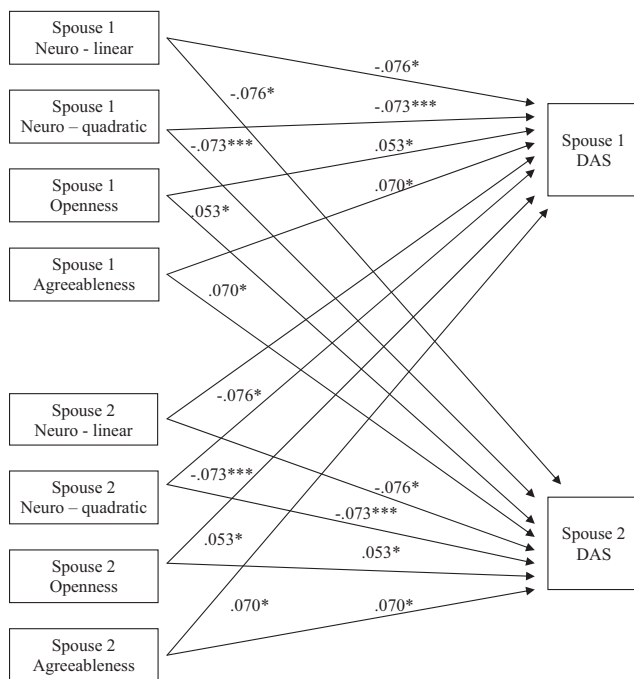


Figure 3. Actor-partner interdependence model for neuroticism, openness, agreeableness, and dyadic adjustment. Note. Path coefficients are based on standardized scores. To avoid overloading the figure, covariances between variables are not reported; * $p < .05$. ** $p < .01$. *** $p < .001$.

motivate them to respond adequately through emotional or behavioral regulation. Thus, individuals with very low neuroticism would be less likely to pay attention to potential difficulties and to take action before these problems become overwhelming and deleterious to the relationship. In addition, individuals evidencing extremely low levels of neuroticism tend to experience few negative emotions, a situation that may lower empathy and understanding toward the expression of negative feelings by their partner. This theoretical explanation on the adaptive features of neuroticism challenges researchers' assumptions regarding personality development. Roberts, Walton, and Viechtbauer (2006) proposed that lower neuroticism is part of a more mature personality profile. However, it is not clear if the normal decrease in neuroticism they observed led to the extremely low levels of neuroticism that are found to be unfavorable in the present sample of clinical patients. Finally, our findings are coherent with the assumption proposed by McNulty and Fincham (2012) that psychological traits should not be considered inherently positive or negative because their relationship with well-being depends largely on the context in which they occur. Characteristics intuitively regarded as positive, for instance, forgiveness, optimism, benevolent attribution, and kindness are positively related to satisfaction in couples facing few difficulties. The opposite, however, can be found in couples experiencing more significant problems (McNulty & Fincham, 2012). For example, in the context of severe difficulties, being less forgiving, less optimistic, and less prone to excuse negative behaviors from the partner may lead to improvement in relationship difficulties. Thus, in the context of significant couple distress, extremely low levels of neuroticism, characterized by unwarranted optimism and poor sensitivity to negative emotions, may perpetuate relationship difficulties instead of promoting change. In the present sample, the proportion of couples with at least one partner evidencing very low levels of neuroticism almost reached 40%, suggesting that such couples may be encountered in clinical settings frequently. When only the linear relationship between neuroticism and dyadic adjustment is considered, clinicians working with distressed couples may miss or overlook possible problems related to low neuroticism in one or both partners. Given that there is a high proportion of partners with extremely low neuroticism consulting in couple therapy, it is necessary to better understand how this characteristic is related to relationship functioning in order to intervene more efficiently.

Second, the curvilinear associations between neuroticism and dyadic adjustment were not moderated by gender. The test of distinguishability between dyad members showed that women and men in this sample were interchangeable, indicating no gender difference in the shape and magnitude of the relationship between neuroticism and self- and partner-reported dyadic adjustment. Although Heller et al. (2004) did not address gender differences in their meta-analysis, some studies using community samples suggest that neuroticism is more strongly associated with self-reported dyadic adjustment for women than for men (Bouchard et al., 1999; Stroud, Durbin, Saigal, & Knobloch-Fedders, 2010). For the partner effect, Lavee and Ben-Ari (2004) reported that women's dyadic adjustment is significantly related to their partners' levels of neuroticism, whereas men's dyadic adjustment is not. However, in their meta-analysis, Malouf et al. (2010) found no gender differences in the relationship between neuroticism and partner's dyadic

adjustment. Otherwise, the gender differences found in previous studies were not tested in the context of a comprehensive model accounting for both men and women in simultaneous analyses. To our knowledge, only Robin et al. (2000) tested for gender differences in such analyses. They found that negative emotionality was more strongly associated with relationship interactions (shared activities, balance of power, open communication, intimacy, etc.) for women than for men, but, consistent with our results, they observed no gender difference for actor and partner effects in the prediction of relationship satisfaction.

Third, we found significant actor and partner effects for openness to experience in the prediction of dyadic adjustment. Results suggest a positive association between an individual's level of openness and both self- and partner-reported dyadic adjustment. This result contrasts with those of the meta-analyses conducted by Heller et al. (2004) and Malouf et al. (2010), which reported no significant association between this personality trait and marital satisfaction. However, Botwin et al. (1997) found a significant positive association between men's and women's marital satisfaction and their spouses' ratings on openness. Our results also replicate those of Bouchard et al. (1999), who found a positive association between men's openness and both their own and their wives' marital adjustment. These authors suggested that individuals high on openness are more curious, attentive, and understanding toward their partners, which may facilitate the development of effective communication skills. These individuals may also be more tolerant and respectful of differences in the attitudes and behaviors of their partners. In addition, Bouchard and Arsenuit (2005) showed that, for women in recent relationships, the association between openness and dyadic adjustment was positive, whereas in longer relationships, the association was negative. They proposed that women high on openness have a nontraditional view of romantic relationships, are more willing to call their relationship into question, and are more inclined to examine possible alternatives to their present relationship. Alternatively, the present results could be explained by the fact that in the context of maritally distressed couples, openness to communication and tolerance on the part of the partner could be especially important in the process of overcoming important relationship difficulties.

Fourth, we found significant actor and partner effects for agreeableness, suggesting a positive association between this personality trait and dyadic adjustment. These results are consistent with meta-analyses by Heller et al. (2004) and Malouf et al. (2010), which showed that agreeableness is, after neuroticism, the dimension most strongly associated with marital satisfaction. Our findings are also consistent with those of Donnellan et al. (2004), who observed that agreeableness is positively related to self- and partner-reported global evaluation of the marriage. The authors also found that this dimension is negatively related to observable negative behaviors, suggesting that partners with high agreeableness are less prone to engage in interactions likely to have detrimental effects on couple relationships.

Strengths and Limitations

The use of a large sample of distressed, treatment-seeking couples is an important strength of the present study. As mentioned

earlier, marital research shows a significant lack of documentation on the determinants of couple adjustment in distressed couples. The scarcity of studies using clinical samples makes it difficult to determine if results found in community and convenience samples can be generalized to distressed couples. In addition, the conclusions of McNulty and Fincham (2012) reported earlier underline the importance of considering psychological traits in different contexts and with both healthy and distressed individuals. The use of APIM analyses is another strength of this study because this sophisticated statistical technique is especially designed to account for the nonindependence of partners' data.

This study also has several limitations. First, albeit the use of distressed couples is an important feature of this study, it is not possible to generalize the finding of a curvilinear association between neuroticism and dyadic adjustment to community samples. Future research examining this relationship in couples recruited in the general community is necessary. A second limitation refers to the cross-sectional, correlational design of the study, which does not allow any inference about causation and does not permit the examination of a possible transactional relationship between neuroticism and couple satisfaction. Finally, this study relies solely on self-reported data. The use of multiple sources, for instance, an independent opinion from the treating therapist, would have permitted a more objective assessment of partners' neuroticism and its relation with couple adjustment.

Despite the small proportion of explained variance found in this study, our results support the significant and complex relationship observed between neuroticism and couple satisfaction in a clinical sample. These results certainly need to be replicated, but some preliminary practical implications can be proposed. First, the present findings indicate that an evidence-based assessment of couple distress may include valid measures of neuroticism in each partner. They also show that, when considering neuroticism, two clinical profiles are of interest. First, therapists need to pay close attention to couples in which one or both partners present an elevated profile of neuroticism. High neuroticism is associated with lower self- as well as partner satisfaction, most probably through an increase in the frequency and intensity of negative interactions, including sexual interactions (Donnellan et al., 2004; Fisher & McNulty, 2008). Routine diagnosis of such an elevated profile would be consistent with the now-traditional view in couple therapy that highlights the detrimental effects of higher neuroticism or negative affectivity on couple communication, emotional regulation, and conflicts (Jacobson & Christensen, 1996; Snyder & Mitchell, 2008).

Second, our results suggest the existence of another detrimental profile characterized by low to very low levels of neuroticism. If these findings can be replicated, their clinical implications may be important. In adults, low neuroticism is generally represented as a positive outcome of personality maturation and development (Roberts et al., 2006). Partners with very low neuroticism possibly represent a subgroup of individuals with low motivation/capacity to detect relational threats, to empathize with their spouses' needs or emotions, and to actively cope with them. In addition, these two profiles can be useful in the context of an assessment-feedback session at the end of a couple-evaluation process. They can be used in the context of a multifactorial model presented to help partners understand the causes of their couple distress and, in some cases, the origin of disruptive interactional patterns.

Finally, many clinicians promote the acceptance of each partner's attitudes and behaviors (Jacobson & Christensen, 1996). This therapeutic process may benefit from a better understanding of the effects of each spouse's personality traits. In the case of neuroticism, a partner with low neuroticism may be less attentive to relationship problems, less prone to question the quality of the relationship, and less able to use negative emotions as important signals of the presence of difficulties in couple functioning. In contrast, a partner with high neuroticism is likely to experience negative emotions more frequently and more strongly, to develop irrational thoughts about threats to the relationship, and to perceive the latter more negatively. A better consideration of their respective personalities and of attitudes and behaviors that arise from them, may therefore enhance partners' empathy for each other and help them develop coping strategies to better deal with their differences. Future research should examine more directly the potential mediators (e.g., partner's alertness to relational threats, motivation to respond to them, and positive activity levels to resolve relationship difficulties) of the relationship between low neuroticism and dyadic adjustment, as proposed in the present article.

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