

Personality traits and marital satisfaction within enduring relationships: An intra-couple discrepancy approach

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Abstract

In this study of 125 heterosexual long-wed couples, we examined both spouses' personality traits and relative differences in partner perceptions of personality as predictors of marital satisfaction, simultaneously for both husbands and wives. As hypothesized, each of the *Big Five* personality traits emerged as significantly associated with marital satisfaction though significant between-trait and between-sex differences were observed. Most notably, trait levels predicted marital satisfaction less consistently than positive reporting discrepancies (i.e., comparatively greater extraversion, openness to experience, agreeableness, conscientiousness, and lower neuroticism reported by spouses vis-à-vis their partners' self-descriptions). While previous research points to a central role of neuroticism, our findings suggest that conscientiousness is the trait most broadly associated with marital satisfaction in this sample of long-wed couples. These differences between study findings may reflect change over the course of married life, the degree to which neuroticism determines divorce, overreliance on younger samples in previous marital research, or some combination of these three.

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Hollywood and advice columnists commonly contend that the ideal enduring romantic relationship requires individuals to look beyond physical appearance and instead focus upon the personality of romantic partners. Along these lines, past research has pointed to personality traits as associated with mate selection, relationship satisfaction, and marital stability (Donnellan, Conger, & Bryant, 2004). The most consistent finding to emerge to date is that neuroticism appears particularly problematic to relationships. Spouses high in the trait of neuroticism are more likely to report dissatisfaction and to divorce (Karney & Bradbury, 1995; Shiota & Levenson, 2007). Yet thus far, personality and marriage research has been undertaken almost exclusively with young and newlywed young couples; little research has examined the dynamics of married life with couples married over decades.

With the advent of valid proxy-report measures, we can now compare individual self-descriptions vis-à-vis partner reports of their spouses (e.g., personality). For instance, discrepancies between self-reports and spousal reports of personal attributes are associated with relationship instability in the first years of married life, even when spouses are described relatively more positively than their self-descriptions (Neff & Karney, 2005). Neff and Karney (2005) contend that these discrepancies foster unrealistic relationship expectations. In contrast, others have reported that overly positive spousal reports buffer relationships (e.g., Murray, Holmes, & Griffin, 1996), perhaps because relationship satisfaction occurs when partners see one another in idealized ways and describe their relationships as near perfect (O'Rourke & Cappelliez, 2005). This has been reported with young couples (de la Rubia, 2008), spousal caregivers of persons with Alzheimer disease (O'Rourke, Claxton, Kupferschmidt, Smith, & Beattie, 2011), spouses undergoing treatment for addiction (Grigg, 1994) and widows who have adjusted to the loss of their husbands (O'Rourke, 2004).

In the current study, we examined the implication of discrepancies between self and spousal reports of personality in a sample of long-wed, older adults. We examined both partner traits, as well as discrepancies between self-reports and spousal reports of their personalities; these are examined simultaneously for both spouses. We contend that positive discrepancies between spouses (relative to self-descriptions) are associated with greater marital satisfaction as reported by couples married 20+ years. We contend that these dyadic phenomena of relative positive perception (i.e., being perceived, and perceiving one's spouse, comparatively more positively) are associated with marital satisfaction. We hypothesized that the personality traits of men and women, as well as interpersonal dyadic phenomena defined on the basis of relative perception within couples, predict levels of marital satisfaction as reported by long-wed husbands and wives.

Literature review***Personality and marriage***

Terman and colleagues (1938) first advanced the notion that people have enduring dispositions that influence married life. As concluded by Karney and Bradbury (1995),

"It would be difficult to imagine a model of marriage that did not in some way account for . . . enduring traits that each spouse brings to the relationship" (p. 22). Indeed, nearly every model of intimate relationships acknowledges that each individual's personality plays a role. For example, Karney and Bradbury's (1995) vulnerability-stress-adaptation model (VSA) posits that individuals bring stable characteristics called *enduring vulnerabilities* to married life (e.g., personality traits, attachment styles, education level). This model states that couples utilize *adaptive processes* to understand and negotiate both *enduring vulnerabilities* and *stressful events* (e.g., workload, finances, health); these together directly influence marital satisfaction. Another is Huston's (2000) social ecology model which delineates three levels of analysis for marriage: society; individual spouses (e.g., physical, psychosocial and personality traits); and interpersonal behavior within the marriage. These models underscore the integral role of personality to marital satisfaction and relationship continuity.

A recurrent finding to emerge from personality and marriage research has been that neuroticism appears particularly problematic to relationship satisfaction and marital stability (Barelds, 2005; Belsky & Hsieh, 1998; Karney & Bradbury, 1995; Kelly & Conley, 1987; Kurdek, 1993; Schmitt, Kliegel, & Shapiro, 2007). Not surprisingly, a negative association between neuroticism and marital satisfaction has emerged in both cross-sectional and longitudinal research (Bouchard, Lussier, & Sabourin, 1999; Caughlin, Huston, & Houts, 2000; Kelly & Conley, 1987). This trait is linked to negative affect (Ormel & Wohlfarth, 1991), susceptibility to negative mood inductions (Gross, Sutton, & Ketelaar, 1998), passive coping (Watson & Hubbard, 1996), and preferences for negative stimuli (Rusting & Larsen, 1995). Findings from a meta-analysis by Heller, Watson, and Ilies (2004) indicated that neuroticism was the personality trait most strongly associated with marital satisfaction; similarly, Karney and Bradbury (1995) reported that 10% of all variance in marital satisfaction can be attributed to this core personality trait.

In contrast, less consistent findings have emerged regarding the remaining Big Five traits. For instance, extraversion is associated with positive emotions (in contrast to neuroticism), yet little agreement exists as to whether this trait is beneficial to marriage. Some studies have linked husbands' extraversion to low marital satisfaction (Lester, Haig, & Monello, 1989). Other studies suggest positive links between extraversion and marital satisfaction (Barelds, 2005; Belsky & Hsieh, 1998), and that extraversion is especially important for women's account of marriage (Chen et al., 2007). To further complicate matters, others have reported no association between extraversion and marital satisfaction (Bouchard et al., 1999; Donnellan, et al., 2004; Gattis, Berns, Simpson, & Christensen, 2004; Karney & Bradbury, 1995). In their meta-analysis, Heller and colleagues (2004) did not detect a direct association between extraversion and marital satisfaction; instead, their findings suggest indirect effects (i.e., determined by other factors correlated with both).

Openness to experience, agreeableness and conscientiousness are generally, but inconsistently, associated with marital satisfaction. In contrast to neuroticism, each is considered a positive trait, at least in Western societies (Watson & Humrichouse, 2006). Several studies have linked self-reported openness, agreeableness and conscientiousness to marital outcomes (Botwin, Buss, & Shackelford, 1997; Bouchard et al., 1999). Watson and Humrichouse (2006) found that decreases in spouse ratings of openness,

agreeableness and conscientiousness were associated with decreases in marital satisfaction over the first two years of marriage. In their study of couples married an average of 18 years, Donnellan and colleagues (2004) reported that wives' openness, agreeableness and conscientiousness were each positively related to marital satisfaction. Heller and colleagues (2004) reported in their meta-analysis that agreeableness and conscientiousness are both associated with marital satisfaction, in that order. Others, however, have found no association between these traits and marital satisfaction (Karney & Bradbury, 1995).

Personality in enduring marriages

The associations between personality traits and marriage have been observed almost exclusively in studies with young adults; in contrast, comparatively little attention has been devoted to older adults whose marriages have withstood the test of time. Given that approximately half of all marriages end in divorce, and the median duration of marriages ending in divorce is eight years (U.S. Census Bureau, 2007), long-wed couples constitute a distinct subpopulation.

In our brief review of studies published over 10 years in the *Journal of Family Psychology*, 183 articles examined marital dynamics, in which the average duration of the relationships was 9.43 years; only five articles examined normative relationship processes among couples married more than 20 years. The dearth of studies pertaining to personality and marriage in long-wed couples constitutes a significant oversight in the literature.

To our knowledge, Donnellan and colleagues (2004) are among the few to have examined personality and marriage with long-wed couples. In their study, the traits of neuroticism and agreeableness were each related to global marital quality, and openness appears related to sexual satisfaction for women. Even in this study, however, the average age of spouses was less than 40 years at recruitment ($SD = 4.46$). More problematic, marital satisfaction was assessed with only two items asking how happy and how dissatisfied participants were in their relationships (Donnellan et al., 2004). Akin to most personality and marriage research, personality data were obtained by Donnellan and colleagues (2004) without corroborating responses from spouses as proxy informants (see Barelds, 2005 for a critique of research methods in marriage research). The current study redresses these limitations with the aid of a suitable sample size, standardized measures and statistical methods that adjust for shared variance within dyads to enable simultaneous estimation of phenomena reported by men and women (between-dyad analyses) and husbands and wives (within-dyad analyses).

Various critiques have faulted the field for sole reliance on self-report data in marriage and family research (Gottman & Notarius, 2002; Watson & Humrichouse, 2006). With this awareness, we obtained both self-reports and corresponding responses from spouses describing each of the Big Five (and vice versa with the spouse as the subject). This allowed us to compute trait averages for both spouses (e.g., the average of husbands' neuroticism and wives' reports of his neuroticism). Persons married 20+ years are certainly well positioned to describe their spouses. As each of the Big Five traits can be described as value-laden (i.e., ideal is less neuroticism but more extraversion,

openness, conscientiousness and agreeableness; Watson & Humrichouse, 2006), positive reporting differences between self- and spousal reports represent relatively more positive perceptions. In addition to the traits of both spouses, we contend that the direction and magnitude of these reporting differences reflect dyadic phenomena within couples (i.e., between-spouse relative perceptions). These trait discrepancies (self-descriptions vs. spousal descriptions of self) exist largely independent of trait levels.

Discrepancies between self-reports and spousal reports of personality

Self-reports and spousal reports of personality traits have been examined individually and in relation to marital outcomes; however, the discrepancy between self-reports and spousal reports of personality has rarely been studied. One exception is reported by Swann, de la Ronde, and Hixon (1994), who found that newlywed married couples desired self-verifying evaluations by spouses, as opposed to more positive evaluations. Similarly, Neff and Karney (2005) reported that newlywed husbands whose spousal trait reports corresponded to their wives' self-descriptions were more supported by their wives; in addition, the couple was less likely to divorce over the first two years of marriage. In contrast, others including Murray, Holmes and Griffin (1996) and O'Rourke and Cappeliez (2005) identified and described protective aspects of idealizing one's partner and relationship. Study sample differences may account for these different findings; specifically, the relative age of spouses and duration of marriages. Samples of young married persons and newlywed couples are composed of a significant proportion that will divorce. Although rates of divorce in late-middle age are rising (Bair, 2007), number of years wed continues to be a robust predictor of relationship continuity (Kingston, 2007).

As previously noted, a further limitation of prior marriage and personality research has been overreliance on self-report data without corroborating proxy, behavioral or physiological data. Use of spousal proxy-report responses (as obtained for this study) has two primary advantages. First, including these data along with self-reports doubles the number of estimates for each trait (i.e., two vs. a single estimate for each of the Big Five for both spouses). As research suggests that interpersonal familiarity increases self-and-other agreement between personality ratings (Paulhus & Reynolds, 1995); we contend that spouses married 20+ years have had ample opportunity to see their partners' character and behavior across a range of settings. In other words, long-wed spouses are well-situated proxy informants.

An added benefit of corresponding descriptive responses between spouses is the ability to examine discrepancies between self- and spousal trait descriptions; this allows researchers to measure dyadic or within-couple phenomena distinct from the traits levels of either spouse. One reason for a paucity of dyadic research to date is due to the complications inherent to statistical analyses of couples' data (i.e., dependent or correlated observations). The procedures applied for this study enable simultaneous examination within- and between-couples predictor variables.

Statistical analyses with dependent data

There has been an ongoing and sometimes contentious debate regarding how best to measure discrepancies between correlated or dependent respondents. Some have

advocated for use of the simplest method: difference scores (e.g., Rogosa & Willett, 1983; Rogosa, 1988). Tisak and Smith (1994) argued that difference scores have high face validity and represent unique aspects of the two original raw scores that would not otherwise be captured. Yet others correctly contend that simple difference scores are invariably confounded by the main effects of raw scores (Sayer & Klute, 2005). In other words, a result seeming to indicate an association between an outcome and a difference score could simply reflect correlation between the outcome and one (or both) of the raw scores; thus, attributing this finding to the difference between raw scores might be completely erroneous. Also, multicollinearity between difference and raw scores precludes use of both in multivariate linear models as all information within the difference is already present in the form of raw scores. This prevents researchers from comparing the relative importance of trait levels and difference scores (see Griffin, Murray, & Gonzalez, 1999 for a complete discussion of the use of difference scores in relationship research).

In recent years, various techniques have been developed to redress these problems. One particularly effective procedure, first demonstrated by Lyons, Zarit, Sayer, and Whitlatch (2002) and since used by other authors (e.g., O'Rourke, Neufeld, Claxton, & Smith, 2010), applies multilevel modeling (MLM) to analyze discrepancies between reporters. With this technique, MLM examines the trait levels of husbands and wives (each averaged between self-reports and spousal reports), as well as the direction and magnitude of differences between reporters.

The current study

For the current study, we use MLM to examine the relation between personality traits and discrepancies between self-reports and spousal reports of personality, and we use these variables as predictors of marital satisfaction in this sample of married persons 50+ years of age, who have been married 20+ years. Although somewhat arbitrary, 50+ years is a widely applied threshold to designate later life. For example, 50+ has been used as the age inclusion criterion in studies with older adult couples (e.g., O'Rourke et al., 2010) and seniors' mental health (e.g., Robitaille, Cappeliez, Coulombe, & Webster, 2010). This age is generally seen as a point past which one has lived more years than s/he will likely live from that point forward.

For this study, we defined an *enhancing or positive discrepancy* as an instance when a participant's spouse describes him/her relatively more positively than s/he describes him/herself (i.e., relatively lower neuroticism and higher extraversion, openness, agreeableness and conscientiousness vs. corresponding self-reports). *Intra-couple trait averages* are the mean between self- and partner reports of each personality trait.

Based on findings from studies with younger couples, our first hypothesis was that spouses' *intra-couple trait average* of neuroticism would be related to lower marital satisfaction for both husbands and wives, while trait averages for extraversion, openness to experience, agreeableness, and conscientiousness would be associated with higher marital satisfaction. Our second hypothesis was that *enhancing discrepancies* for each personality trait would be related to higher marital satisfaction for both husbands and wives. This assertion is based on existing research showing that positive illusions of one's spouse and relationship are related to positive outcomes for young (Murray et al.,

1996) and older couples (O'Rourke & Cappeliez, 2005). Finally, we hypothesized that *enhancing discrepancies* will emerge as stronger predictors of marital satisfaction than *intra-couple trait averages* for both husbands and wives, and for each trait. We assumed positive effects for both perceiving one's spouse more positively, and being perceived relatively more positively, as distinct dyadic predictors of marital satisfaction.

Methods

Participants

A total of 125 heterosexual couples were recruited over the course of one year as part of a larger study of marriage and health. The average age of participants was 59.2 years ($SD = 6.52$; range 50 to 82). On average, these couples had been married 33.83 years ($SD = 7.92$; range 20 to 56), and the large majority had been married only once (201 of 250 or 82.4%). Two-thirds of participants ($n = 163$) indicated that they were happier than the average couple. Most self-identified as Caucasian (231 or 92.4%) with small percentages of Asian (15 or 6%) and Aboriginal/First Nations participants (2 or .8%). They, on average, had completed 14.82 years of formal education ($SD = 4.72$; range 0 to 29) and roughly equivalent proportions worked (now or prior to retirement) in clerical/administrative (112 or 44.8%) or professional/managerial positions (93 or 37.2%); 37.2% of participants had retired from the paid workforce (93 of 250).

Measures

Big Five personality traits. Personality traits were measured using the 60-item NEO-FFI Personality Inventory (NEO-FFI) (Costa & McCrae, 1992). The NEO-FFI is a widely used index of Big Five personality traits (neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness; e.g., "I am not a worrier"; "I like to have a lot of people around me"; "I have a very active imagination"; "I try to be courteous to everyone I meet"; "I keep my belongings clean and neat", respectively).

Participants indicate their degree of concurrence to each NEO-FFI statement with response alternatives ranging from *strongly disagree* (1) to *strongly agree* (5). In addition to the standard self-report NEO-FFI (Form S) participants in this study also completed NEO-FFI Form R three weeks later describing their spouses (e.g., "my spouse is a cheerful, high-spirited person"). Table 1 reports correlation coefficients between self-reports of personality (NEO Form S) and spousal reports (NEO Form R). Table 2 reports descriptive statistics and population norms for study instruments.

Marital satisfaction. Marital satisfaction was measured using the 32-item Dyadic Adjustment Scale (DAS) (Spanier, 1976). The DAS is a well-known index with questions pertaining to marital satisfaction, cohesion, the level of consensus, and affectionate expression (e.g., "Do you confide in your spouse?"; "How often do you and your spouse quarrel?"). Responses are recorded along a series of five- and six-point Likert-type scales, two yes/no questions, and one final question to which persons are asked to endorse the statement which best reflects their expectation of relationship continuity (six response alternatives provided). According to Stuart

Table 1. Pearson Product-Moment correlation coefficients between self (NEO Form S) and spouse (NEO Form R) trait responses

	Neuroticism (spouse)	Extraversion (self)	Extraversion (spouse)	Openness (self)	Openness (spouse)	Agreeableness (self)	Agreeableness (spouse)	Conscientiousness (self)	Conscientiousness (spouse)
Neuroticism (self-reported)	.51**	-.30**	-.34**	.12	.09	-.14	.03	-.30**	-.11
Neuroticism (spouse described)		.03	-.25**	.16	.04	-.09	-.34**	-.17	-.34**
Extraversion (self-reported)			.60**	.03	-.09	.16	-.06	.14	-.09
Extraversion (spouse described)				.06	.11	.12	.16	.03	.08
Openness (self-reported)					.78**	.23**	.25**	-.11	-.10
Openness (spouse-described)						.25**	.29**	-.16	-.02
Agreeableness (self-reported)							.58**	.06	.11
Agreeableness (spouse described)								-.05	.20*
Conscientiousness (self-reported)									.52**

Note: Coefficients in bold represent self-reported correlations across personality traits. Coefficients in bold and italicized (diagonal) represent self- vs. spouse trait descriptions of one another; ** $p \leq .01$; * $p \leq .05$

Table 2. Descriptive statistics for study variables by sex

Construct	Population averages (SD)	Sample means (SD)	t Values (p values)	Range	Alpha	Skewness	Kurtosis
Marital satisfaction							
Husbands	114.8 (17.8)	115.07 (12.71)	14.92	83 – 143	.88	-.45	.04
Wives		113.82 (13.89)	(.01)	61 – 142	.87	-1.07	2.38
Neuroticism							
Husbands	17.60 (7.46)	14.38 (7.33)	3.56	0 – 36	.86	.62	.17
Wives	20.54 (7.61)	17.72 (8.07)	(.01)	1 – 45	.87	.66	.28
Extraversion							
Husbands	27.22 (5.85)	29.26 (5.92)	.48	11 – 45	.77	-.28	.38
Wives	28.16 (5.82)	29.61 (5.32)	(ns)	16 – 42	.70	.04	-.50
Openness to experience							
Husbands	27.09 (5.82)	29.72 (6.77)	1.61	11 – 45	.79	-.06	-.29
Wives	26.98 (5.87)	30.84 (5.99)	(ns)	16 – 47	.74	-.12	-.01
Conscientiousness							
Husbands	34.10 (5.95)	33.34 (6.54)	4.55	8 – 47	.85	-.90	1.51
Wives	35.04 (5.78)	35.15 (5.88)	(.01)	18 – 47	.82	-.36	.16
Agreeableness							
Husbands	31.93 (5.03)	33.01 (5.25)	2.30	20 – 47	.73	-.01	-.24
Wives	33.76 (4.74)	35.82 (4.70)	(.02)	24 – 48	.68	.26	-.18

Note: NEO general adult population norms, Form S (Costa & McCrae, 1992), average DAS response level (both husbands and wives) from Spanier (1976). Paired-samples *t* tests (*df* = 124) computed on the basis of between-spouse comparisons (dependent observations).

(1992), total scores in excess of 99 suggest stability of the marriage and overall satisfaction whereas DAS scale responses 120+ suggest inordinate self-sacrifice or relationship idealization (Kazak, Jarmas, & Snitzer, 1988).

Participant recruitment

For this study, we recruited participants 50+ years of age who had also been married 20+ years to their current spouse. Advertisements were placed in various British Columbia (Canada) daily newspapers. At the time of recruitment, participants were sent an initial package of questionnaires including the NEO-FFI (Form S). Participants completed this self-report personality measure without knowing that they would later be asked to similarly describe their spouses. To prevent collaboration, packages were mailed separately to husbands and wives; they were asked not to collaborate when completing questionnaires.

Three or more weeks thereafter, couples came to the lab of the second author where participants completed the NEO-FFI Form R (spousal report) as well as the DAS. Here, spouses were separated and monitored behind one-way glass to ensure that they did not collaborate. We assumed that 3+ weeks were sufficient to reduce the possibility that initial NEO Form S responses later confounded NEO Form R responses. Multigroup analyses comparing husbands' and wives' responses to Forms S and R revealed no discernable differences, suggesting that NEO responses did not differ between home and lab, $\Delta\chi^2(\Delta df = 5) = 10.22, ns$.

Analytic procedures

As couples data collected from married persons are statistically dependent or correlated between spouses, we used statistical procedures that take shared variance into account. Multilevel modeling (MLM) is a regression-based method that accounts for shared variance, resulting in more accurate error estimates and reducing the likelihood of Type I errors (see Atkins, 2005) for an extended explanation of error estimation between nested responses). There are two levels of analyses in the basic application of MLM with dyads. A regression equation is first computed for each dyad to identify within-couple variation on a common variable of interest; subsequent variables identify between-sex differences (Sayer & Klute, 2005).

Our hypotheses required that we examine both the average of, and the difference between, self- and spousal trait reports. In order to avoid multicollinearity inherent in difference scores (i.e., $X_2 - X_1$), we applied a multivariate extension of a two-level MLM to examine these discrepancies (see O'Rourke et al., 2010 or Lyons et al., 2002 for examples of this method). We did not assume that either self- or spouse ratings were necessarily the more 'accurate' of the two; rather, these analyses were undertaken to measure relative differences between self- and spousal reports. Nor do we compare husbands' versus wives' self-descriptions, but rather self- versus spousal responses for both. MLM analyses were conducted using the Hierarchical Linear Modeling statistical program (HLM 6) (Raudenbush, Bryk, Cheong, & Congdon, 2004).

Calculation of intra-couple trait average and discrepancies. To compute the *intra-couple trait averages* and *discrepancy* scores for each couple, we first computed an unconditional MLM model without predictor variables. Because NEO subscales were nested within the same measure, we included all five subscales in a single model to control for shared variance. In standard applications of MLM, the unconditional model fits a regression line for each participant for Variable X as a function of time, and it yields an estimate of slope and an intercept for each participant. This slope is an estimate of variability in Variable X; in other words, a regression equation is computed across points of measurement (see Figure 1a). The intercept is the value of Variable X at one point (where time = 0).

In our MLM adaptation, an unconditional model was fit to estimate a regression line for each participant in couples for each personality trait. This allows us to measure both the direction and magnitude of reporting differences between respondents. Here, the slope measures the difference between self-reports (regressed onto -0.5) and spousal reports (regressed onto 0.5) such that steeper slopes indicate greater difference between the self- and spousal reports and shallow values indicate similarity between the two. In this way, positive values reflect more enhancing or relatively more positive appraisals of one spouse by the other (e.g., more agreeable, lower neuroticism). The intercept for these equations is the point where each trait is 0 (see Figure 1b). For each of the Big Five, the intercept is interpreted as the average between self- and spousal trait reports; the slope is interpreted as the range or discrepancy between self- and spousal reports for that trait. Equations were computed in this way so that the resulting regression coefficients reflect both the direction and magnitude of difference between responses; conversely, these values also indicate response similarity where there is little or no difference between couples' responses.

Models were computed for each personality trait yielding four values per couple: (1) husband's trait averages (Avg_H), or the mean between a husband's self-report and his wife's description of him; (2) wife's trait averages (Avg_W), or the mean between a wife's self-report and her husband's description of her; (3) discrepancies for husbands (Dis_H), or the difference between a husband's self-report and his wife's description of him; and, (4) discrepancies for wives (Dis_W), or the difference between a wife's self-report and her husband's description of her.

One strength of this method is that discrepancies are estimated as slopes, and therefore do not contain the raw components of individual reports; thus, discrepancies can be included in equations along with intra-couple trait averages without violating assumptions of collinearity (Sayer & Klute, 2005). In fact, Kenny, Kashy, and Cook (2006), contend that including main effects are necessary in order to determine whether discrepancies enable prediction independent of trait averages.

These dyadic phenomena are examined simultaneously and independently of trait levels. This enables direct comparison of the relative importance of trait levels and trait discrepancies. Moreover, it is possible to identify interaction effects that may exist between trait averages and reporting discrepancies between spousal reports (e.g., additive effects of being both high in the trait of conscientiousness as well as being rated as relatively higher in this trait by one's spouse).

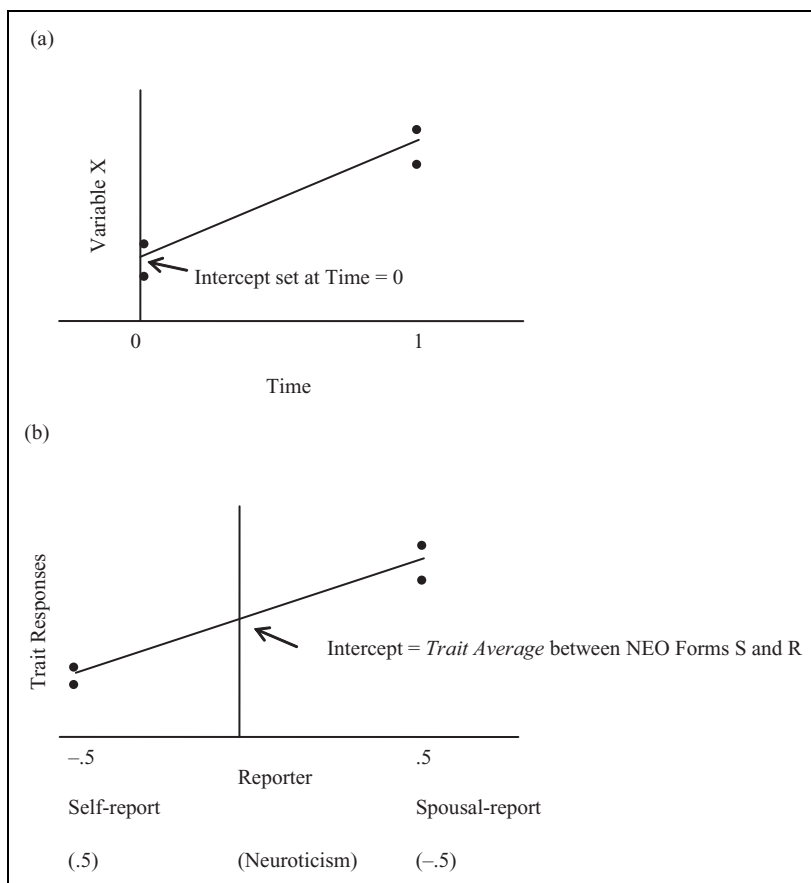


Figure 1. (a) Traditional application of MLM between two time points. (b) MLM Adaptation for discrepancy scores between personality trait descriptions

Note. Responses to extraversion, openness to experience, agreeableness and conscientiousness regressed onto $-.5$ and $.5$ for self and spousal responses, respectively (vs. $.5$ and $-.5$ for neuroticism) so that positive discrepancies would reflect more positive spousal appraisals for each trait. Graph has two data points per reporter because NEO items were paired on the basis of measurement reliability and then assigned to one of two parallel

Using MLM to analyze study hypotheses. Once intra-couple trait averages and trait discrepancies were estimated for all participants, primary study hypotheses were tested. MLM regressions were next computed examining marital satisfaction as reported by both husbands and wives as predicted by both the intra-couple trait averages and trait discrepancies. To simplify interpretation of findings and to reduce the likelihood of multicollinearity, each of the Big Five traits was examined as independent predictors of marital satisfaction. Marital satisfaction is predicted concurrently for husbands and wives. These MLM equations appear below.

Level 1 Model:

$$Y = \beta_1 \times (\text{Husbands' Marital Satisfaction}) + \beta_2 \times (\text{Wives' Marital Satisfaction}) + r$$

Level 2 Model:

$$\begin{aligned} \beta_1 &= \gamma_{10} + \gamma_{11} \times (\text{Avg}_H; \text{husband average}) + \gamma_{12} \times (\text{Dis}_H; \text{husband discrepancy}) + \\ &\quad \gamma_{13} \times (\text{Avg}_W; \text{wife average}) + \gamma_{14} \times (\text{Dis}_W; \text{wife discrepancy}) + u_1 \\ \beta_2 &= \gamma_{20} + \gamma_{21} \times (\text{Avg}_H; \text{husband average}) + \gamma_{22} \times (\text{Dis}_H; \text{husband discrepancy}) + \\ &\quad \gamma_{23} \times (\text{Avg}_W; \text{wife average}) + \gamma_{24} \times (\text{Dis}_W; \text{wife discrepancy}) + u_2 \end{aligned}$$

Results

Descriptive statistics

Men recruited for this study reported marginally higher levels of marital satisfaction than women ($M = 115.07$, $SD = 12.71$ vs. $M = 113.82$, $SD = 13.89$, respectively), though these DAS responses did not significantly differ between sexes, $t(124) = 1.03$, *ns*. Descriptive statistics suggest a sample of happily married persons (i.e., $DAS > 99$; Stuart, 1992) though a wide range of responses was reported by both men ($82 < DAS < 144$) and women ($60 < DAS < 143$). Though DAS responses were strongly correlated within couples ($r[124] = 14.92$, $p < .01$) the correlation coefficient between spouses was $r = .49$, suggesting that just 24% of observed variance in marital satisfaction can be explained by the corresponding DAS responses of one's spouse; fully three-quarters of all variance in marital satisfaction remains unexplained after accounting for his/her spouse's DAS responses.

We conducted a confirmatory factor analysis of the NEO responses by husbands and wives (self-report and spousal report formats separately; analyses reported here are specific to the former). Each NEO item loaded upon its a priori factor (i.e., t values > 1.96), yet four complex items loaded across 2+ factors (i.e., not specific to one particular trait). Statistical power for this CFA model = .99 as per the formula provided by MacCallum, Browne, and Sugawara (1996). After correction for correlated error between items, this model emerged with adequate goodness of fit indices, χ^2 ($df = 1039$) = 1365.16, $p < .01$; Comparative Fit Index = .90, Standardized Root Mean Square Residual = .072, Root Mean Square Error of Approximation = .036. Also of note, the full 90% confidence interval for the RMSEA statistic was in optimal parameters, $.030 \leq RMSEA_{CL90} \leq .041$ (Hu & Bentler, 1999).

Unconditional MLM models

As indicated above, we first computed MLM analyses to calculate *intra-couple trait averages* and reporting *discrepancies* to be used as predictor variables in subsequent analyses. In this unconditional model examining all traits between reporters, fixed-effect estimates and standard deviations are adjusted for shared variance. See Table 2. On average, husbands described their wives as somewhat more extraverted ($\gamma = .52$, $SE = .23$, $p < .05$), less open to experience ($\gamma = -1.08$, $SE = .24$, $p < .01$) and more conscientious ($\gamma = 1.11$, $SE = .30$, $p < .01$) than wives described themselves. Wives, in contrast, described their husbands as more agreeable ($\gamma = .90$, $SE = .25$, $p < .01$) and more conscientious ($\gamma = .87$, $SE = .32$, $p < .01$) than husbands described themselves.

Table 3. Intra-couple averages and discrepancies reported personality traits (fixed effects)

Fixed effects	Husbands		Wives	
	Coefficient values	Standard errors	Coefficient values	Standard errors
Trait averages:				
Neuroticism	13.43 **	.30	15.03 **	.32
Extraversion	20.62 **	.26	21.06 **	.24
Openness	20.78 **	.29	20.88 **	.24
Agreeableness	23.11 **	.28	24.13 **	.23
Conscientiousness	22.96 **	.24	23.85 **	.19
Trait discrepancies:				
Neuroticism	-.47	.34	-.34	.35
Extraversion	-.02	.26	.52 *	.23
Openness	-.16	.21	-1.08 **	.24
Conscientiousness	.90 **	.25	-.13	.27
Agreeableness	.87 **	.32	1.11 **	.30

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

Primary study analyses

An unconditional model (i.e., without predictors) was next computed to examine marital satisfaction. Findings indicate overall similarity in DAS responses between men and women; however, variance components indicate significant within-couple variability ($\gamma = 35.13$, $SE = 5.94$, $p < .01$ for husbands; $\gamma = 42.80$, $SE = 6.54$, $p < .01$, for wives). Next, *intra-couple trait averages* and reporting *discrepancies* served as predictor variables in MLM equations predicting marital satisfaction concurrently for husbands and wives.

Neuroticism. Neuroticism emerged as broadly associated with marital satisfaction. A lower intra-couple average for husbands' neuroticism was associated with his DAS responses ($Avg_H: \gamma = -0.43$, $SE = 0.20$, $p < .05$); however, the intra-couple average of wives' neuroticism was unassociated with marital satisfaction as reported by either spouse. See Table 3.

In contrast, positive reporting discrepancies for both spouses were associated with DAS responses. Not only perceiving one's spouse as lower in neuroticism than s/he sees him/herself, but also being perceived as lower in this trait predicted the marital satisfaction of both husbands ($Dis_H: \gamma = 0.57$, $SE = 0.19$, $p < .01$ and $Dis_W: \gamma = 0.97$, $SE = 0.23$, $p < .01$) and wives ($Dis_H: \gamma = 0.85$, $SE = 0.22$, $p < .01$ and $Dis_W: \gamma = 0.76$, $SE = 0.20$, $p < .01$). Overall, the trait of neuroticism accounted for a 26% proportional reduction in variance in husbands' marital satisfaction and 18% for wives.

Extraversion. For extraversion, a complementary pattern of results emerged. See Table 3. Specifically, the intra-couple trait average for husbands ($Avg_H: \gamma = 0.53$, $SE = 0.23$, $p < .05$) and a positive discrepancy for wives ($Dis_W: \gamma = 1.12$, $SE = 0.34$, $p < .01$) predicted

Table 4. Husband and wife NEO trait averages and reporting discrepancies predicting both husbands' and wives' marital satisfaction

	Fixed effects	Neuroticism			Extraversion			Openness			Agreeableness			Conscientiousness		
		γ	SE	T	γ	SE	t	γ	SE	t	γ	SE	t	γ	SE	t
Husband marital satisfaction	Husband average	-0.43	.20	-2.12*	0.53	.23	2.26*	-0.02	.21	-0.11	-0.16	.32	-0.49	0.51	.21	2.41*
	Wife average	-0.17	.15	-1.15	0.28	.28	1.00	0.04	.33	0.13	0.09	.31	0.28	0.75	.21	3.60**
	Husband discrepancy	0.57	.19	2.92**	0.48	.30	1.58	0.84	.61	1.37	1.33	.43	3.09**	0.37	.25	1.50
	Wife discrepancy	0.97	.23	4.24**	1.12	.34	3.28**	1.28	.39	3.26**	1.69	.44	3.85**	0.76	.24	3.13**
Proportional reduction in variance		26%			17%			8%			20%			29%		
Wife marital satisfaction	Husband average	-0.11	.23	0.53	0.23	.22	1.05	0.05	.22	0.24	0.19	.30	0.65	0.43	.18	2.35*
	Wife average	-0.28	.19	-1.49	0.91	.37	2.47*	0.06	.31	0.21	0.14	.43	0.32	0.59	.33	1.81
	Husband discrepancy	0.85	.22	3.77**	0.70	.35	2.02*	1.29	.74	1.75	1.37	.48	2.86**	0.84	.29	2.89**
	Wife discrepancy	-0.76	.20	3.79**	0.78	.45	1.73	1.28	.45	2.82**	1.46	.47	3.13**	0.58	.27	2.13*
Proportional reduction in variance		18%			21%			8%			18%			24%		

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

Note. Average = intra-couple trait averages (between self- and spousal reports of partners' traits). Discrepancies = differences between spouses' trait reports with higher values representing higher spousal ratings vs. self-ratings. Coefficients (and standard errors) in bold represent statistically significant trait predictors for both husbands and wives; italicized coefficients (and standard errors) indicate that predictors are statistically significant for the other sex only. Pseudo-R values calculated on the basis of proportional reduction in variance.

husbands' DAS responses. Concomitantly, higher intra-couple averages for wives ($\text{Avg}_W: \gamma = .91, SE = 0.37, p < .05$) and a positive discrepancy for husbands ($\text{Dis}_H: \gamma = .70, SE = 0.35, p < .01$) were associated with wives' marital satisfaction. In both instances an individual's own extraversion *and* the perception of his/her spouse as more extraverted than s/he sees him/herself were associated with DAS responses. The trait of extraversion accounted for a 17% and 21% proportional reduction in the variance in marital satisfaction for husbands and wives, respectively.

Openness to experience. Openness to experience emerged as the trait least predictive of marital satisfaction, accounting for only an 8% proportional reduction in variance in marital satisfaction for both spouses. See Table 3. Only a positive discrepancy in reports of wives' openness to experience was associated with the marital satisfaction of husbands and wives ($\text{Dis}_W: \gamma = 1.28, SE = 0.39, p < .01$ and $\text{Dis}_W: \gamma = 1.28, SE = 0.45, p < .01$, respectively). Husbands' openness, both intra-couple averages and discrepancies, appears to be unrelated to husbands' and wives' marital satisfaction.

Agreeableness. As with openness, a positive discrepancy in reports of wives' agreeableness was associated with DAS responses by both husbands and wives ($\text{Dis}_W: \gamma = 1.69, SE = 0.44, p < .01$ and $\text{Dis}_W: \gamma = 1.46, SE = 0.47, p < .01$, respectively). See Table 3. In contrast to openness, however, positive discrepancies in husbands' agreeableness were also associated with husbands' and wives' marital satisfaction ($\text{Dis}_H: \gamma = 1.33, SE = 0.43, p < .01$ and $\text{Dis}_H: \gamma = 1.37, SE = 0.48, p < .01$, respectively). Intra-couple agreeableness averages appear unrelated to DAS responses. Agreeableness discrepancies account for a 20% and 18% proportional reduction in variance in husbands' and wives' marital satisfaction, respectively.

Conscientiousness. Conscientiousness was also broadly associated with marital satisfaction for both husbands and wives. See Table 3. Higher intra-couple averages of husbands' conscientiousness ($\text{Avg}_H: \gamma = 0.51, SE = 0.21, p < .05$), wives' conscientiousness ($\text{Avg}_W: \gamma = 0.75, SE = 0.21, p < .01$), and a positive discrepancy for wives ($\text{Dis}_W: \gamma = .76, SE = 0.24, p < .01$) were associated with husbands' DAS responses. In contrast, positive discrepancies for both husbands' and wives' personality traits were significantly related to wives' marital satisfaction ($\text{Dis}_H: \gamma = .84, SE = 0.29, p < .01$; $\text{Dis}_W: \gamma = .58, SE = 0.27, p < .05$), as well as the intra-couple average for husbands ($\text{Avg}_H: \gamma = 0.43, SE = 0.18, p < .05$). Conscientiousness accounted for the highest proportional reduction in variance, for both husbands and wives (29% and 24%, respectively).

Discussion

The results of this study of long-wed couples demonstrate strong associations between the dynamics of personality and marital satisfaction. Statistically significant findings emerged for each of the Big Five traits; however, results differed by trait and by sex. Although personality trait levels have often been examined in conjunction with relationship outcomes, the relative importance of spousal ratings had been overlooked. This

study documents the importance of discrepancies between husbands and wives. A unique feature of the current study has been the ability to compare trait averages vis-à-vis discrepancies between spouses while taking measurement error and shared variance into account (underscoring the utility of multilevel modeling in couples research).

Our first research question was only partially supported. We hypothesized that neuroticism would be linked to negative marital outcomes whereas extraversion, openness to experience, agreeableness, and conscientiousness would predict positive marital outcomes. Instead, only the intra-couple trait averages for conscientiousness and neuroticism were related to marital satisfaction.

The second hypothesis stated that enhancing discrepancies would be related to good marital outcomes; this was supported. For each trait, when husbands rated their wives relatively more positively, they reported higher levels of marital satisfaction; similarly, when wives rated their husbands relatively more positively for four of five traits (all traits but openness to experience), they tended to describe more satisfied marriages. Also, being perceived more positively by one's husband predicted wives' marital satisfaction for all traits except extraversion. In contrast, being perceived more positively by one's wife predicted husbands' marital satisfaction only for the traits of neuroticism and agreeableness. Thus, it appears that wives benefit more from these positive relative perceptions (O'Rourke et al., 2010). This finding is in accord with previous research suggesting that women's emotional and physical wellbeing are affected by their husbands to a greater degree than vice versa (e.g., Heffner et al., 2006). In other words, it appears that beliefs and behaviors of married men are relatively less likely to be influenced by spousal factors as compared to their wives (Cross & Madson, 1997; Kiecolt-Glaser et al., 2005).

Perhaps most interesting, the third hypothesis was also supported. For both husbands and wives, these findings underscoring the importance of trait discrepancies stand in stark contrast to the comparatively negligible importance of trait averages as predictors of marital satisfaction. These findings support the previous research indicating that enhancing perceptions are strongly associated with marital satisfaction (Murray et al., 1996; O'Rourke & Cappelliez, 2005). Yet these results observed with older couples differ from findings from newlyweds who report feeling less understood by spouses who describe them more positively (Neff & Karney, 2005). Of course, a spouse may believe that s/he wishes to be seen as s/he sees him/herself and still benefit from being perceived (and perceiving one's spouse) more positively. Fear of falling from a pedestal may cease to be a concern after decades of marriage when this has yet to occur.

Within this sample of long-wed participants, conscientiousness emerged as most strongly associated with marital satisfaction; moreover, conscientiousness accounted for a greater proportional reduction in variance than neuroticism. These findings are noteworthy as they stand in contrast to studies with younger samples which have ascribed near-singular importance to neuroticism as a determinant of marital satisfaction (see Karney & Bradbury, 1995). Differences in study findings with young and older couples may be attributed to sample biases inherent in research with young and newlywed couples (i.e., higher percentage who will divorce). As close to half of all marriages end in divorce (Bramlett & Mosher, 2002), neuroticism may decline in importance over time as a function of survival effects (i.e., predictor of divorce). In contrast, conscientiousness

seems to become more important over time as marriages endure over decades. It is also possible that differences between young and older couples may reflect cohort effects. Longitudinal research will be required to determine what accounts for these age-related differences. It would seem that previous findings may provide an incomplete depiction of the association between personality and marital satisfaction over the course of married life. It is likely inappropriate to extrapolate findings from studies with newlywed and dating couples to long-wed couples. This assertion is supported by the findings of our current study.

Study limitations and summary

This study must be viewed in light of its limitations. For instance, findings are based on responses from self-selected participants unrepresentative of the current cohort of older adults. Similar to most research with self-selected participants, persons who chose to take part in the current study are more educated than the population from which they are drawn.¹ Our spouses had completed an average of 15 years of education, limiting generalizability of findings as their responses may not correspond to older adults with less education. This observation underscores the need to replicate findings with other samples (e.g., same-sex couples) and research methodologies (e.g., randomly recruited participants). For instance, it is possible that the effects of enhancing discrepancies might be unique to older adults, who are comparatively more likely to optimize positivity in social interactions (Carstensen, 1995).

As previously noted, a sizeable percentage of this sample has been divorced prior to marrying their current spouse. Particularly in this context of relative perception, these participants had an additional point of prior reference when describing their current spouse. Initial comparisons suggest no overt differences in marital satisfaction between previously divorced and one-time-married only spouses; further analyses are warranted to ascertain if a prior marriage affects perceptions of a current spouse.

Also, future studies should attempt to simultaneously analyze all five personality traits to enable examination of the relative contribution of each trait while controlling for the effects of the others (i.e., shared variance). The current study examined trait averages *in addition to* discrepancies in personality reports between spouses; we therefore made the decision in favor of depth over breadth of analyses. Because we included responses *from and about* both spouses, the quantity of variables made it impossible to examine all traits in a single MLM model.

Finally, there are many aspects of married individuals and their interactions that are likely to contribute to the overall marital satisfaction of long-wed couples, but were not accounted for in the current study. For instance, studies suggest that individuals' well-being and physical health may relate to marital satisfaction, in addition to individuals' personality traits (Whisman, Uebelacker, Tolejko, Chatav, & McKelvie, 2006), and marital satisfaction may in turn affect health (Kiecolt-Glaser et al., 2005). Further study is required to determine whether or not established models of marital satisfaction apply to long-wed couples.

At the turn of the 20th century, persons born in the United States could expect to live 47 years on average (National Center for Health Statistics, 2009); today, those over 84

years represent the fastest growing segment of populations in most Western nations (National Center for Health Statistics, 2009; Statistics Canada, 2005). Although persons today tend to marry later, extended life expectancy conceivably means that middle-aged persons may be married 50, 60 or 70 years. For the first time in human history, these couples may be married more years subsequent to child-rearing than before. Such demographic trends necessitate further study of personality and marriage among older adults. As the current study indicates, we cannot assume that factors contributing to marital satisfaction are the same for the young and the not-so-young. Further study is needed to provide a richer understanding of the dynamics of personality and married life across the lifespan.

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Notes

1. As shown in Table 2, responses by participants in this study are very similar to population norms for both the DAS and NEO. Therefore concerns regarding the possible effects of self-selection may be overstated.

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