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Sex and Neuroticism: Frequent Sex Protects Intimates from the Negative Implications of Their Neuroticism

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To the Graduate Council:

I am submitting herewith a thesis written by Virginia Michelle Russell entitled "Sex and Neuroticism: Frequent Sex Protects Intimates from the Negative Implications of Their Neuroticism." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Psychology.

James K. McNulty, Major Professor

We have read this thesis and recommend its acceptance:

Lowell A. Gaertner, Michael A. Olson

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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**SEX AND NEUROTICISM:
FREQUENT SEX PROTECTS INTIMATES FROM THE NEGATIVE
IMPLICATIONS OF THEIR NEUROTICISM**

A Thesis Presented for the
Master of Arts
Degree
The University of Tennessee, Knoxville

Virginia Michelle Russell
August 2010

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ABSTRACT

A robust literature documents numerous negative implications of neuroticism for romantic relationships. The current study was the first to demonstrate necessary information regarding how couples can protect against these implications. Given the role of negative affect in the association between neuroticism and relationship difficulties, and given the role of sex in reducing negative affect, the current 8-wave longitudinal study of 72 newlywed couples tested the prediction that sexual frequency would moderate the association between neuroticism and marital satisfaction. Lagged multilevel modeling analyses supported this prediction. Specifically, although neuroticism was negatively associated with changes in marital satisfaction among spouses engaging in less frequent sex over the prior 6 months, neuroticism was unrelated to changes in satisfaction among spouses reporting more frequent sex over the prior 6 months. These findings join others in highlighting the importance of considering the broader context of the relationship to developing a complete understanding of relationship development.

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CHAPTER I

INTRODUCTION AND GENERAL INFORMATION

For more-neurotic intimates, maintaining a satisfying intimate relationship can be difficult. Not only is neuroticism more strongly associated with marital outcomes than any other personality factor (see Karney & Bradbury, 1995), those associations are always negative. Neuroticism, for example, predicts more-negative interpersonal perceptions and experiences (Caughlin, Huston, & Houts, 2000; McNulty, 2008b), lower levels of relationship satisfaction (Bouchard, Lussier, & Sabourin, 1999; Caughlin, Huston, & Houts, 2000; Donnellan, Conger, & Bryant, 2004; Fisher & McNulty, 2008; Karney & Bradbury, 1997; Rogge, Bradbury, Hahlweg, Engl, & Thurmaier, 2006; Russell & Wells, 1994), lower levels of sexual satisfaction (Costa, Fagan, Piedmont, Ponticas, & Wise, 1992; Fisher & McNulty, 2008; Goldenberg et al., 1999; Heaven, Fitzpatrick, Craig, Kelly, & Sebar, 2000; Schenk & Pfrang, 1986) and a greater likelihood of divorce (Kelly & Conley, 1987; Kurdek, 1993; Jockin, McGue, & Lykken, 1996; Rogge et al., 2006).

Nevertheless, contextual models of relationships, such as Karney and Bradbury's (1995) vulnerability-stress-adaptation model, suggest that situational factors can moderate the effects of enduring vulnerabilities, such as neuroticism, on relationship outcomes, such as relationship satisfaction. Although much is known about the detrimental effects of neuroticism, we are aware of no studies that have examined factors that can protect intimates from the negative implications of their neuroticism. The current study attempted to address this omission by testing the potential role of one potential moderator in buffering intimates against the negative implications of

neuroticism—more-frequent sex. To this end, the remainder of this introduction is divided into two sections. The first section describes one way in which neuroticism harms relationships—negative affect—and then describes evidence consistent with possibility that sex may protect intimates from their neuroticism by reducing negative affect. The second section then describes an eight-wave, five-year longitudinal study of newlywed couples that tested whether the association between neuroticism and marital satisfaction at any given assessment was moderated by the frequency of sex occurring prior to that assessment.

CHAPTER II

NEUROTICISM, NEGATIVE AFFECT, AND THE BUFFERING ROLE OF FREQUENT SEX

According to Costa and McCrae (1992, p. 14), neuroticism is “a general tendency to experience negative affects.” Such negative affects likely explain why more neurotic individuals struggle to remain satisfied with their intimate relationships. According to the affect infusion model (Forgas, 1995), affect shapes people’s judgments of their experiences, such that positive affects lead to more positive evaluations whereas negative affects lead to more negative evaluations. Indeed, not only does existing research indicate that mood shapes relationship evaluations in such ways (Forgas, Levinger, & Moylan, 1994), several studies demonstrate that negative affect accounts for at least part of the robust negative association between neuroticism and negative interpersonal outcomes (Caughlin, et al., 2000; Jones, 2004).

Given this role of negative affect in the negative association between neuroticism and interpersonal outcomes, any factor that protects intimates against the effects of neuroticism may do so by reducing negative affect. Accordingly, sex may to be one such factor. Not only is sex associated with the release of oxytocin (Carmichael, Humbert, Dixen, Palmisano, Greenleaf, & Davidson, 1987) and endogenous opioids (Sbarra & Hazan, 2008), chemicals associated with less-negative and more-positive affect (Koepp et al, 2009; Scantamburlo, et al, 2007), studies have directly linked sex to higher levels of positive affect and lower levels of negative affect (Blanchflower & Oswald, 2004; Burleson, Trevathan, & Todd, 2007; Gallup, Burch, & Platek, 2002). Burleson et al.

(2007), for example, used a daily diary study to demonstrate that sexual behaviors on one day were linked to less negative mood the next day.

Although we are aware of no studies that have directly tested the possibility that sex may accordingly protect intimates from the negative implications of neuroticism, several studies provide indirect support for it. First, a number of studies indicate that sexual satisfaction promotes satisfaction with the relationship generally (Byers, 2005; Yeh, Lorenz, Wickrama, Conger, & Elder, 2006). For example, Yeh et al. (2006) used five waves of sexual and marital satisfaction data to demonstrate that initial levels of satisfaction with the sexual relationship positively predicted subsequent levels of satisfaction with the relationship generally, controlling for initial levels of relationship satisfaction. Second, other research indicates that a lack of sexual satisfaction is at least part of the reason more neurotic intimates are less satisfied with their relationships in the first place (Fisher & McNulty, 2008). Specifically, Fisher and McNulty (2008) recently reported that sexual satisfaction mediates the negative association between neuroticism and marital satisfaction. Finally, yet another study indicates that sex protects intimates from the negative implications of another robust negative predictor of relationship outcomes, attachment insecurity (Little, McNulty, & Russell, 2010). Specifically, Little et al. (2010) showed that although attachment anxiety and attachment avoidance were negatively associated with marital satisfaction on average, attachment anxiety was unrelated to marital satisfaction among spouses reporting more satisfying sex and attachment avoidance was unrelated to marital satisfaction among spouses reporting more frequent sex.

CHAPTER III

OVERVIEW OF THE CURRENT STUDY

Nevertheless, the role of sex in protecting intimates from the negative implications of their neuroticism remains unclear. The current study drew upon data from a longitudinal study of 72 newlywed couples to more directly address this issue. All spouses reported their levels of neuroticism and marital satisfaction at baseline and then, approximately every six months for approximately the first five years of marriage, reported their levels of marital satisfaction and the frequency with which they engaged in sexual intercourse with their partners over the previous 6 months. Although we expected neuroticism to be associated with lower levels of relationship satisfaction over the course of the study on average, we predicted that these effects would be moderated by the frequency of sex reported at each assessment, such that neuroticism would be less strongly negatively associated with marital satisfaction at times when spouses reported having engaged in more frequent sex compared to times when spouses reported having engaged in less frequent sex.

CHAPTER IV

METHOD

Participants

Participants were mailed a packet of questionnaires to complete at home. This packet included a consent form approved by the local human subjects review board, self-report measures of neuroticism, sexual frequency, and marital satisfaction, a letter instructing couples to complete their questionnaires independently of one another, and other items beyond the scope of the current analyses. Every 6-8 months subsequent to the initial assessment, questionnaires were again mailed to participants. Participants were paid \$80 for participating in the first phase of data collection (which included a laboratory session that was beyond the scope of the current analyses) and \$50 for participating in subsequent phases. The current analyses are based on up to 8 reports spanning the first 5 years of marriage.

Procedure

Participants were mailed a packet of questionnaires to complete at home. This packet included a consent form approved by the local human subjects review board, self-report measures of neuroticism, sexual frequency, and marital satisfaction, a letter instructing couples to complete their questionnaires independently of one another, and other items beyond the scope of the current analyses. Every 6-8 months subsequent to the initial assessment, questionnaires were again mailed to participants. Participants were paid \$80 for participating in the first phase of data collection (which included a laboratory session that was beyond the scope of the current analyses) and \$50 for participating in subsequent

phases. The current analyses are based on up to 8 reports spanning the first 5 years of marriage.

Measures

Neuroticism

The Neuroticism subscale of the Big Five Personality Inventory (Goldberg, 1999) was used to assess neuroticism at baseline. This instrument consists of 10 questions to which participants indicate the extent of their agreement on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), with higher scores indicating a greater degree of neuroticism. Sample items include “I get upset easily” and “I change my mood a lot.” Internal consistency was high (coefficient alpha was .90 for husbands and .88 for wives).

Sexual Frequency

Sexual frequency was assessed at every wave of data collection with 1 item. Specifically, participants were asked to provide a numerical estimate of the number of times they had engaged in sexual intercourse with their spouse over the past 6 months.

Marital Satisfaction

Global marital satisfaction was assessed using the Quality Marriage Index (QMI; Norton, 1983). This instrument contains 6 items that ask spouses to report the extent of their agreement with general statements about their marriage. Sample items include “We have a good marriage” and “My relationship with my partner makes me happy.” Five items ask participants to respond according to a 7-item scale, whereas one item asks participants to respond according to a 10-item scale. Items were summed such that higher scores reflect more positive satisfaction with the relationship. Internal consistency was high (across assessments, husbands’ and wives’ alpha was at least .90).

Attachment Security

Given that previous analyses using this data set demonstrated that sexual frequency moderated the effects of attachment insecurity on marital satisfaction at baseline (see Little, et al., 2010), we assessed and controlled for attachment insecurity at baseline using the Experiences in Close Relationships scale (ECR; Brennan, Clark, & Shaver, 1998). The ECR measures attachment on two dimensions: Attachment Avoidance and Attachment Anxiety. The Anxiety subscale is derived from 18 statements that describe the degree of concern partners have about losing a partner or frustration over an inability to become sufficiently close to a partner and the Avoidance subscale is derived from 18 statements that describe the extent to which partners attempt to maintain a distance from a partner. Participants were asked to rate how much they agreed or disagreed with these statements on a 7-point Likert-type scale (1 = *disagree strongly*, 7 = *agree strongly*). Means were formed with higher scores indicating more attachment insecurity. Internal consistency was high for both husbands' and wives' anxiety and avoidance (coefficient alphas = .91 for husbands' anxiety, .92 for wives' anxiety, .92 for husbands' avoidance, and .94 for wives' avoidance).

Analysis Strategy

We tested our primary hypothesis that the frequency of sex that occurred between reports of marital satisfaction would moderate the implications spouses' neuroticism had for changes in their satisfaction between those reports in a three-level model using the Hierarchical Linear Modeling (HLM) 6.08 computer program (Bryk, Raudenbush, & Congdon, 2004). Specifically, spouses' reports of their marital satisfaction at each subsequent assessment were regressed onto their reports of their marital satisfaction at the

previous assessment, their reports of the frequency of their sex between that previous assessment and the subsequent assessment, and time of assessment in the first level of the model, and the intercepts and all slopes estimated by that level-1 model were then regressed onto neuroticism, participant sex, attachment anxiety, and attachment avoidance at level-2. The dependence of husbands' and wives' data was controlled for in the third level of the model.

CHAPTER V

RESULTS

Descriptive Statistics and Preliminary Analyses

Descriptive statistics and correlations are presented in Table 1 (see appendix). As the table reveals, wives reported mean neuroticism scores close to the midpoint and husbands reported mean neuroticism scores below the midpoint. A paired samples *t* test revealed that wives reported significantly more neuroticism than did husbands, $t(71) = -5.05, p < .001$ (also reported in Fisher & McNulty, 2008 and McNulty, 2008b). Not surprisingly, spouses reported relatively high levels of attachment security; however, standard deviations indicated considerable variability suggesting that some spouses were more anxious and avoidant than others. Further, paired samples *t* tests revealed that husbands and wives did not differ in their mean levels of attachment anxiety, $t(71) = .87, p = .39$, but that husbands reported significantly more attachment avoidance than did wives, $t(71) = 2.20, p < .05$ (also reported in Little et al., 2010).

Regarding the correlations, own attachment anxiety was associated with own attachment avoidance among both husbands and wives (also reported in Little et al., 2010). Further, husbands' neuroticism was significantly positively associated both with their own attachment anxiety and with their own attachment avoidance and wives' neuroticism was positively associated with their own attachment anxiety. Regarding the cross-spouse correlations, husbands' and wives' attachment scores were positively associated with one another (also reported in Little et al., 2010) but husbands' and wives' neuroticism scores were not associated with one another (also reported in Fisher & McNulty, 2008 and McNulty, 2008b).

Describing Trajectories of Marital Satisfaction and Sexual Frequency

Descriptive statistics for marital satisfaction and sexual frequency at every assessment are presented in Table 2 (see appendix). As would be expected among newlyweds, both husbands and wives reported relatively high levels of marital satisfaction and sexual frequency in the initial stages of the study, on average. Nevertheless, among both husbands and wives, marital satisfaction and sexual frequency on average appeared to decline over the course of the study.

These apparent changes in marital satisfaction and sexual frequency were estimated statistically through growth curve modeling (e.g., Bryk & Raudenbush, 1987). First, we estimated changes in marital satisfaction by estimating the parameters of the following first level of a 3-level model:

$$Y_{ij} \text{ (Marital Satisfaction)} = \pi_{0ij} \text{ (Intercept)} + \pi_{1ij} \text{ (Time)} + e_{ij}$$

[Equation 1]

Next, we estimated changes in sexual frequency by estimating the parameters of the following first level of a 3-level model:

$$Y_{ij} \text{ (Sexual Frequency)} = \pi_{0ij} \text{ (Intercept)} + \pi_{1ij} \text{ (Time)} + e_{ij}$$

[Equation 2]

Accordingly, Y_{ij} in equation 1 is the marital satisfaction of individual j at Time i and Y_{ij} in equation 2 is the sexual frequency of individual j at Time i ; π_{0ij} in equation 1 is the marital satisfaction of individual j at Time 0 (i.e., the initial satisfaction for individual j) and π_{0ij} in equation 2 is the sexual frequency of individual j at Time 0 (i.e., the initial sexual frequency for individual j); π_{1ij} in equation 1 is the rate of linear change in marital satisfaction of individual j and π_{1ij} in equation 2 is the rate of linear change in sexual

frequency of individual j ; and e_{ij} in both equations is the residual variance in repeated measurements for individual j . These models can be understood as within-subjects regressions of an individual's marital satisfaction (in equation 1) and sexual frequency (in equation 2) onto time of assessment, where time is defined as wave of assessment, the autocorrelation due to repeated assessments was controlled in the second level of the analysis, and the shared variance between husbands' and wives' data was controlled in a third level of the analysis.

Fitting these models to the data provided generalized least squares estimates of the average intercept and slope of marital satisfaction and sexual frequency for participants and estimated the variances of these parameters using restricted maximum-likelihood estimates. Regarding the intercepts of equation 1, participants reported relatively high levels of initial marital satisfaction, on average ($B = 40.73, SE = 1.99, t(71) = 88.09, p < .001, r = .99$). Notably, husbands and wives did not differ in initial levels of marital satisfaction ($B = 0.21, SE = 0.54, t(142) = 0.39, p = .70, r = .03$). Regarding the slopes of that model, the sample experienced significant declines in marital satisfaction over time, on average ($B = -0.08, SE = 0.02, t(71) = -5.02, p < .001, r = .51$). Husbands and wives did not differ in changes in marital satisfaction ($B = -0.01, SE = 0.01, t(142) = -0.34, p = .73, r = .03$; growth curves of marital satisfaction from this sample were also described in McNulty & Russell, 2010). Regarding the intercepts of equation 2, participants reported relatively high initial levels of sexual frequency, on average ($B = 46.51, SE = 3.13, t(71) = 14.88, p < .001, r = .87$). As was the case with marital satisfaction, husbands and wives did not differ in their reports of initial levels of sexual frequency ($B = 3.68, SE = 2.95, t(142) = 1.25, p = .21, r = .10$). Regarding the

slopes of that model, the sample experienced significant declines in sexual frequency over time, on average ($B = -0.29, SE = 0.09, t(71) = -3.17, p < .01, r = .35$). Also as was the case with marital satisfaction, husbands and wives did not differ in declines in their reports of sexual frequency ($B = -0.06, SE = 0.12, t(142) = -0.54, p = .59, r = .04$).

Does Frequent Sex Moderate the Association Between Neuroticism and Marital Satisfaction?

The primary analysis was evaluated by estimating the following first level of a 3-level model:

$$Y_{ij} (\text{Marital Satisfaction at Next Assessment}) = \pi_{0ij}(\text{Intercept}) + \pi_{1ij}(\text{Time}) + \pi_{2ij}(\text{Marital Satisfaction at Previous Assessment}) + \pi_{3ij}(\text{Sexual Frequency between Previous and Next Assessment}) + e_{ij}$$

[Equation 3]

where neuroticism, gender, attachment anxiety, and attachment avoidance were entered to account for variance in every parameter estimated in the level-2 equations and the non-independence of husbands' and wives' data was controlled in the third level of the model. Accordingly, the cross-level Neuroticism X Sexual Frequency interaction tested the primary hypothesis that neuroticism would be less strongly negatively associated with marital satisfaction at times when spouses reported having engaged in more frequent sex than times when spouses reported having engaged in less frequent sex, controlling for satisfaction at the previous assessment, time, gender, attachment anxiety, attachment avoidance, all possible cross-level interactions involving attachment anxiety and attachment avoidance, and all other cross-level interactions involving neuroticism.

The notable results of this analysis are reported in Table 4 (see appendix). As can

be seen there, and not surprisingly, neuroticism was negatively associated with future satisfaction, on average. Nevertheless, as predicted, that main effect was qualified by a significant positive Neuroticism X Sexual Frequency interaction. This interaction did not differ across husbands and wives ($B = 0.001, SE = 0.02, t(138) = 0.07, p = .95, r = .01$). To view the nature of the interaction, we plotted the predicted future marital satisfaction scores for partners one standard deviation above and below the mean on neuroticism and sexual frequency. This plot is depicted in Figure 1 (see appendix). As can be seen in the left half of that plot, more neurotic intimates who reported engaging in less frequent sex over the prior six months were less satisfied with their marriages than less neurotic intimates who reported engaging in less frequent sex. Simple slopes analyses confirmed that this difference was statistically significant ($B = -2.16, SE = 0.68, t(139) = -3.18, p < .01, r = .26$). However, as can be seen in the right half of the plot, that difference in satisfaction was minimized among those reporting more frequent sex. In fact, simple slopes analyses revealed that neuroticism was unrelated to marital satisfaction among partners reporting more frequent sex ($B = -0.65, SE = 0.53, t(139) = -1.23, p = .22, r = .10$). Further, simple slopes analyses also revealed that frequent sex was significantly positively associated with marital satisfaction among partners high in neuroticism ($B = 0.03, SE = 0.02, t(71) = 2.15, p < .05, r = .25$) but unrelated to marital satisfaction among partners low in neuroticism ($B = -0.004, SE = .01, t(71) = -0.426, p = .67, r = .05$).

CHAPTER VI

DISCUSSION

Study Rationale and Summary of Results

Neuroticism is consistently associated with negative relationship outcomes (Fisher & McNulty, 2008; Karney & Bradbury, 1995; Kelly & Conley, 1987; Kurdek, 1993; McNulty, 2008b). Those associations are never perfect, however, suggesting some neurotic individuals are able to maintain satisfying relationships. Nevertheless, prior research has not addressed specific ways in which neurotic partners can protect their relationships from the negative implications of their neuroticism. The current longitudinal study addressed this omission by demonstrating one factor that may buffer neurotic individuals from their neuroticism—sex. Specifically, results indicated that the frequency with which partners engaged in sex every six months moderated the implications of neuroticism for satisfaction during those six months over the course of five years, such that although neuroticism was negatively associated with marital satisfaction at times when partners engaged in less frequent sex, neuroticism was unrelated to marital satisfaction at times when partners engaged in more frequent sex.

Theoretical Implications and Directions for Future Research

The current findings have important theoretical implications. Specifically, they join others (Hellmuth & McNulty, 2008; Little, et al., 2010; McNulty, 2008a, in press; McNulty, O'Mara, & Karney, 2008; McNulty & Russell, 2010; Saavedra, Chapman, & Rogge, in press) in highlighting the importance of considering the broader context of the relationship in which various traits and processes are imbedded when studying when and how those traits and processes are associated with relationship outcomes. For example,

Hellmuth and McNulty (2008) reported that the negative effects of neuroticism on intimate partner violence are limited to spouses who demonstrate fewer problem-solving skills or experience more stress. Moreover, the current work also joins recent work (Fisher & McNulty, 2008; Little, et al., 2010; Meltzer & McNulty, 2010) in highlighting the importance of a particularly important aspect of that broader context—the sexual relationship. For example, although attachment insecurity is consistently associated with lower relationship satisfaction (for review, see Cassidy & Shaver, 1999), Little, et al. (2010) reported that both attachment anxiety and attachment avoidance were unassociated with marital satisfaction among spouses reporting more satisfying or frequent sex.

Nevertheless, the current findings also leave several questions to be addressed in future research. First, although the prediction that sex should buffer intimates against the negative implications of neuroticism was based on sound empirical evidence that sex reduces negative affect, we did not examine whether changes in affect actually accounted for the effects described here. Future research may benefit from addressing this possibility directly. Second, assuming affect is the mechanism through which frequent sex protects intimates from neuroticism, future research may also benefit from examining other factors that may buffer intimates from neuroticism by reducing negative affect. Although sex may be one such activity, there are likely to be others. For example, more-neurotic spouses may benefit from learning skills such as distress tolerance, emotion modulation, or meditation. Indeed, meditation techniques are used in mindfulness-based relationship therapies that appear to work to improve relationship satisfaction (Carson, Carson, Gil, & Baucom, 2004).

Strengths and Limitations

Our confidence in the reported results is enhanced by a number of strengths of the design and methodology. First, the interactive effects of neuroticism and sexual frequency on marital satisfaction emerged in a sample of newlywed couples, participants for whom the outcome was real and consequential. Second, the interactive effects of neuroticism and the sexual frequency emerged on *changes* in marital satisfaction from one assessment to the next, averaged across eight waves of measurement, helping to rule out the alternative interpretation that relationship satisfaction caused more frequent sex among more neurotic individuals. Finally, the interactive effects of neuroticism and sexual frequency also emerged controlling for the main and interactive effects of attachment insecurity, a strong correlate of neuroticism and relationship satisfaction, helping to rule out the alternative interpretation that the effects were spurious due to other qualities of the neurotic intimates who were having more frequent sex.

Despite these strengths, several factors limit interpretations and generalizations of these findings until they can be replicated and extended. First, although the use of longitudinal data helped rule out the possibility that satisfaction predicted greater sex among more neurotic intimates, and although the control of attachment insecurity helped rule out the possibility that other qualities of the more-neurotic intimates who has more frequent sex account for the results that emerged here, these results are correlational and thus cannot support strong causal conclusions. Second, our sample was predominantly Caucasian and Christian, somewhat limiting the ability to generalize these findings to other populations. Finally, although the dramatic changes that occur during the newlywed period offered important variability necessary to test and demonstrate our effects, they

also make that period a unique one from which these findings may be less likely to generalize.

Footnote

¹ Data describing participants from this sample have been presented in several previously published reports (Baker & McNulty, 2010; Fisher & McNulty, 2008; Frye, McNulty, & Karney, 2008; Little et al., 2010; Luchies, Finkel, McNulty, & Kumashiro, 2010; McNulty, 2008a; 2008b; McNulty & Fisher, 2008; McNulty & Hellmuth, 2008; McNulty & Russell, 2010). However, although two of these reports also described associations involving these couples' neuroticism scores (Fisher & McNulty, 2008; McNulty, 2008b), one of which described the association between neuroticism and marital satisfaction at Waves 1 and 3 (Fisher & McNulty, 2008), this is the first report to examine the possibility that sexual frequency moderates the effects of neuroticism on marital satisfaction at any wave of data collection. Also, although another report described the interactive effects of sexual frequency and attachment insecurity among these couples at baseline (Little et al., 2010), the analyses reported here control for those interactive effects and thus describe independent effects.

LIST OF REFERENCES

- Baker, L. & McNulty, J. K. (2010). Shyness and marriage: Does shyness shape even established relationships? *Personality and Social Psychology Bulletin*, 36, 665-676.
- Barnett, R. C., Marshall, N. L., Raudenbush, S., & Brennan, R. (1993). Gender and the relationship between job experiences and psychological distress: A study of dual-earner couples. *Journal of Personality and Social Psychology*, 64, 794-806.
- Blanchflower, D. G., & Oswald, A. J. (2004). Money, sex, and happiness: An empirical study. *National Bureau of Economic Research Working Paper Series* (Working paper no. 10499).
- Bolger, N., & Schilling, E. A. (1991). Personality and the problems of everyday life: The role of neuroticism in exposure and reactivity to daily stressors. *Journal of Personality*, 59, 355-386.
- Bolger, N. & Zuckerman, A. (1995). A framework for studying personality in the stress process. *Journal of Personality and Social Psychology*, 69, 890-902.
- Bouchard, G., Lussier, Y., & Sabourin, S. (1999). Personality and marital adjustment: Utility of the five-factor model of personality. *Journal of Marriage and the Family*, 61, 651-660.
- Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult attachment: An integrative overview. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (2nd ed.) Thousand Oaks, CA: Sage.
- Bryk, A. S., & Raudenbush, S. W. (1987). Application of hierarchical linear models to assessing change. *Psychological Bulletin*, 101, 147-158.

- Bryk, A. S., Raudenbush, S. W., & Congdon, R. T. (2004). *HLM: Hierarchical linear modeling with the HLM/2L and HLM/3L programs*. Chicago, IL: Scientific Software International.
- Burleson, M. H., Trevathan, W. R., & Todd, M. (2007). In the mood for love or vice versa? Exploring the relations among sexual activity, physical affection, affect, and stress in the daily lives of mid-aged women. *Archives of Sexual Behavior, 36*, 357-368.
- Byers, E. S. (2005). Relationship satisfaction and sexual satisfaction: A longitudinal study of individuals in long-term relationships. *The Journal of Sex Research, 42*, 113-118.
- Call, V., Sprecher, S., & Schwartz, P. (1995). The incidence and frequency of marital sex in a national sample. *Journal of Marriage and the Family, 57*, 639-652.
- Carmichael, M. S., Humbert, R., Dixen, J., Palmisano, G., Greenleaf, W., & Davidson, J. M. (1987). Plasma oxytocin increases in the human sexual response. *Journal of Clinical Endocrinology and Metabolism, 64*, 27-31.
- Carson, J. W., Carson, K. M., Gil, K. M., & Baucom, D. H. (2004). Mindfulness-based relationship enhancement. *Behavior Therapy, 35*, 471-494.
- Carter, C. S. (1998). Neuroendocrine perspectives on social attachment and love. *Psychoneuroendocrinology, 23*, 779-818.
- Cassidy, J., & Shaver, P. R. (1999). *Handbook of attachment: Theory, research, and clinical applications*. New York: Guilford Press.

- Caughlin, J. P., Huston, T. L., & Houts, R. M. (2000). How does personality matter in marriage? An examination of trait anxiety, interpersonal negativity, and marital satisfaction. *Journal of Personality and Social Psychology, 78*, 326-336.
- Costa, P. T., Fagan, P. J., Piedmont, R. L., Ponticas, Y., & Wise, T. N. (1992). The five-factor model of personality and sexual functioning in outpatient men and women. *Psychiatric Medicine, 10*, 199-215.
- Costa, P. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PIR): Professional manual*. Lutz, FL: Psychological Assessment Resources.
- Donnellan, M. B., Conger, R. D., & Bryant, C. M. (2004). The Big Five and enduring marriages. *Journal of Research in Personality, 38*, 481-504.
- Edwards, J. N., & Booth, A. (1994). Sexuality, marriage, and well-being: The middle years. In A. S. Rossi (Ed.), *Sexuality across the life course* (pp. 233-259). Chicago: The University of Chicago Press.
- Fisher, T. D., & McNulty, J. K. (2008). Neuroticism and marital satisfaction: The mediating role played by the sexual relationship. *Journal of Family Psychology, 22*, 112-122.
- Forgas, J. P. (1995). Mood and judgment: The affect infusion model (AIM). *Psychological Bulletin, 117*, 39-66.
- Forgas, J. P., Levinger, G., & Moylan, S. J. (1994). Feeling good and feeling close: Affective states and the perception of relationships. *Personal Relationships, 2*, 165-185.

- Frye, N. E., McNulty, J. K., & Karney, B. R. (2008). How do constraints on leaving a marriage affect behavior within the marriage? *Journal of Family Psychology, 22*, 153-161.
- Gallup, G. G., Burch, R. L., & Platek, S. M. (2002). Does semen have antidepressant properties? *Archives of Sexual Behavior, 31*, 289-293.
- Goldberg, L. R. (1999). A broad-bandwidth, public-domain, personality inventory measuring the lower-level facets of several five-factor models. In I. Mervielde, I. Deary, F. De Fruyt, & F. Ostendorf (Eds.), *Personality psychology in Europe* (Vol. 7, pp. 7-28). Tilburg, the Netherlands: Tilburg University Press.
- Goldenberg, J. L., Pyszczynski, T., McCoy, S. K., Greenberg, J., & Solomon, S. (1999). Death, sex, love, and neuroticism: Why is sex such a problem? *Journal of Personality and Social Psychology, 77*, 1171-1187.
- Gordon, G. G., Burch, R. L., & Platek, S. M. (2002). Does semen have antidepressant properties? *Archives of Sexual Behavior, 31*, 289-293.
- Heaven, P. C. L., Fitzpatrick, J., Craig, F. L., Kelly, P., & Sebar, G. (2000). Five personality factors and sex: Preliminary findings. *Personality and Individual Differences, 28*, 1133-1141.
- Hellmuth, J. C., & McNulty, J. K. (2008). Neuroticism, marital violence, and the moderating role of stress and behavioral skills. *Journal of Personality and Social Psychology, 95*, 166-180.
- Jockin, V., McGue, M., & Lykken, D. T. (1996). Personality and divorce: A genetic analysis. *Journal of Personality and Social Psychology, 71*, 288-299.

- Jones, J. T. (2004). Interpersonal traits and interpersonal behaviors as predictors of marital satisfaction in a mediational model (Doctoral dissertation, University of California, Los Angeles, 2004). *Dissertation Abstracts International*, 64, 5787.
- Karney, B. R., & Bradbury, T. N. (1995). The longitudinal course of marital quality and stability: A review of theory, method, and research. *Psychological Bulletin*, 118, 3-34.
- Karney, B. R., & Bradbury, T. N. (1997). Neuroticism, marital interaction, and the trajectory of marital satisfaction. *Journal of Personality and Social Psychology*, 72, 1075-1092.
- Kelly, E. L., & Conley, J. J. (1987). Personality and compatibility: A prospective analysis of marital stability and marital satisfaction. *Journal of Personality and Social Psychology*, 52, 27-40.
- Koepp, M. J., Hammers, A., Lawrence, A. D., Asselin, M. C., Grasby, P. M., & Bench, C. J. (2009). Evidence for endogenous opioid release in the amygdala during positive emotion. *NeuroImage*, 44, 252-256.
- Kurdek, L. A. (1993). Predicting marital dissolution: A 5-year prospective longitudinal study of newlywed couples. *Journal of Personality and Social Psychology*, 64, 221-242.
- Levin, R. J. (2007). Sexual activity, health, and well-being: The beneficial roles of coitus and masturbation. *Sexual and Relationship Therapy*, 22, 135-148.
- Little, K. C., McNulty, J. K., & Russell, V. M. (2010). Sex buffers newlyweds from the negative implications of attachment insecurity. *Personality and Social Psychology Bulletin*, 36, 484-498.

- Luchies, L. B., Finkel, E. J., McNulty, J. K., & Kumashiro, M. (2010). The doormat effect: When forgiving erodes self-respect and self-concept clarity. *Journal of Personality and Social Psychology, 98*, 734-749.
- McNulty, J. K. (in press). When positive processes hurt relationships. *Current Directions in Psychological Science*.
- McNulty, J. K. (2008a). Forgiveness in marriage: Putting the benefits into context. *Journal of Family Psychology, 22*, 171-175.
- McNulty, J. K. (2008b). Neuroticism and interpersonal negativity: The independent contributions of perceptions and behaviors. *Personality and Social Psychology Bulletin, 34*, 1439-1450.
- McNulty, J. K., & Fisher, T. D. (2008). Gender differences in response to sexual expectancies and changes in sexual frequency: A short-term longitudinal investigation of sexual satisfaction in newly married heterosexual couples. *Archives of Sexual Behavior, 37*, 229-240.
- McNulty, J. K., & Hellmuth, J. C. (2008). Emotion regulation and intimate partner violence in newlyweds. *Journal of Family Psychology, 22*, 794-797.
- McNulty, J. K., O'Mara, E. M., & Karney, B. R. (2008). Benevolent cognitions as a strategy of relationship maintenance: "Don't sweat the small stuff"...But it is not all small stuff. *Journal of Personality and Social Psychology, 94*, 631-646.
- McNulty, J. K. & Russell, V. M. (2010). When "negative" behaviors are positive: A contextual analysis of the long-term effects of problem-solving behaviors on changes in relationship satisfaction. *Journal of Personality and Social Psychology, 98*, 587-604.

- Meltzer, A. L., & McNulty, J. K. (2010). Body image and marital satisfaction: Evidence for the mediating role of sexual frequency and sexual satisfaction. *Journal of Family Psychology, 24*, 156-164.
- Norton, R. (1983). Measuring marital quality: A critical look at the dependent variable. *Journal of Marriage and Family, 45*, 141-151.
- Raudenbush, S. W., Brennan, R. T., & Barnett, R. C. (1995). A multivariate hierarchical model for studying psychological change within married couples. *Journal of Family Psychology, 9*, 161-174.
- Rogge, R. D., Bradbury, T. N., Hahlweg, K., Engl, J., & Thurmaier, F. (2006). Predicting marital distress and dissolution: Refining the Two-Factor Hypothesis. *Journal of Family Psychology, 20*, 156-159.
- Russell, R. J. H., & Wells, P. A. (1994). Personality and quality of marriage. *British Journal of Psychology, 85*, 161-168.
- Saavedra, M. C., Chapman, K. E., & Rogge, R. D. (in press). Clarifying links between attachment and relationship quality: Hostile conflict and mindfulness as moderators. *Journal of Family Psychology*.
- Sbarra, D. A., & Hazan, C. (2008). Coregulation, dysregulation, self-regulation: An integrative analysis and empirical agenda for understanding adult attachment, separation, loss, and recovery. *Personality and Social Psychology Review, 12*, 141-167.
- Scantamburlo, G., Hansenne, M., Fuchs, S., Pitchot, W., Maréchal, Pequeux, P., Ansseau, & Legros, J. J. (2007). Plasma oxytocin levels and anxiety in patients with major depression. *Psychoneuroendocrinology, 32*, 407-410.

- Schenk, J., & Pfrang, H. (1986). Extraversion, neuroticism, and sexual behavior: Interrelationships in a sample of young men. *Archives of Sexual Behavior, 15*, 449-455.
- Watson, D., & Clark, L. A. (1984). Negative affectivity: The disposition to experience aversive emotional states. *Psychological Bulletin, 96*, 465-490.
- Yabiku, S. T., & Gager, C. T. (2009). Sexual frequency and the stability of marital and cohabiting unions. *Journal of Marriage and Family, 71*, 983-1000.
- Yeh, H. S., Lorenz, F. O., Wickrama, K. A. S., Conger, R. D., & Elder G. H. (2006). Relationships between sexual satisfaction, marital satisfaction and marital instability at midlife. *Journal of Family Psychology, 20*, 339-343.

APPENDIX

Table 1. Descriptive Statistics and Correlations for Husbands and Wives.

	1	2	3	<i>M</i>	<i>SD</i>
1. Neuroticism	.05	.30*	.12	3.02	0.77
2. Attachment anxiety	.52**	.20[†]	.60**	2.02	0.85
3. Attachment avoidance	.44**	.55**	.27*	1.83	0.68
<i>M</i>	2.37	2.14	2.07		
<i>SD</i>	0.83	0.97	0.87		

Note. Descriptive statistics and correlations for wives are presented above the diagonal; husbands are presented below the diagonal; correlations between wives and husbands are presented on the diagonal in bold.

[†] $p < .10$. * $p < .05$. ** $p < .01$.

Table 2. Mean Marital Satisfaction and Sexual Frequency across Waves of Measurement for Husbands and Wives.

	<u>Time 1</u>	<u>Time 2</u>	<u>Time 3</u>	<u>Time 4</u>	<u>Time 5</u>	<u>Time 6</u>	<u>Time 7</u>	<u>Time 8</u>
	<u>Marital Satisfaction</u>							
Husbands								
M	40.97	40.04	39.62	39.71	37.65	38.81	38.68	38.84
SD	4.81	5.95	6.93	5.92	8.20	5.73	5.42	6.57
N	72	69	66	59	55	53	40	50
Wives								
M	41.74	40.49	39.63	37.98	38.95	37.75	39.44	39.38
SD	4.99	5.22	6.60	7.57	5.96	7.25	4.46	5.01
N	71	72	67	62	55	53	43	50
	<u>Sexual Frequency</u>							
Husbands								
M	49.50	47.48	32.90	38.87	36.53	38.83	41.77	-
SD	37.68	31.13	30.87	35.35	34.99	38.57	35.61	-
N	72	60	68	54	51	41	44	-
Wives								
M	51.59	45.24	45.05	37.98	40.98	39.24	35.21	-
SD	37.11	28.66	48.51	28.72	39.25	37.84	33.46	-
N	71	66	60	58	54	41	43	43

Table 3. Trajectories of Marital Satisfaction and Sexual Frequency.

<u>Frequency</u> Parameters	<u>Change in Marital Satisfaction</u>			<u>Change in Sexual</u>	
	<i>B</i>	<i>SD</i>	<i>r</i> ^a	<i>B</i>	<i>SD</i>
Intercept	40.73	1.62	--	46.51	6.00
--					
Slope	-0.08	0.02	.51***	-0.29	0.23
	.35**				

Note. *df* = 71. ^a The *t* test of the intercepts addresses the hypothesis that the intercepts differ significantly from zero. Because the lowest possible score on each of these measures is greater than zero, these tests are not meaningful and hence are not reported. ** = *p* < .01. *** = *p* < .001.

Table 4. Main Effects of Variables on Subsequent Marital Satisfaction and Interactive Effects of Neuroticism and Sexual Frequency on Subsequent Marital Satisfaction.

Variables	<i>B</i>	<i>r</i> ^c
Intercept ^a	38.66	--
Time ^a	-0.04	.27*
Gender ^b	0.23	.04
Current Marital Satisfaction ^a	0.10	.20 [†]
Neuroticism ^b	-1.02	.21*
Attachment Anxiety ^b	-0.08	.02
Attachment Avoidance ^b	-0.81	.17*
Sexual Frequency ^a	0.01	.20 [†]
Sexual Frequency X Neuroticism ^a	0.02	.17*

Note. a *df* = 71. b *df* = 139

c The *t* test of the intercepts addresses the hypothesis that the intercepts differ significantly from zero. Because the lowest possible score on the marital satisfaction measure is greater than zero, these tests are not meaningful and hence are not reported.

[†] *p* < .10. * *p* < .05.

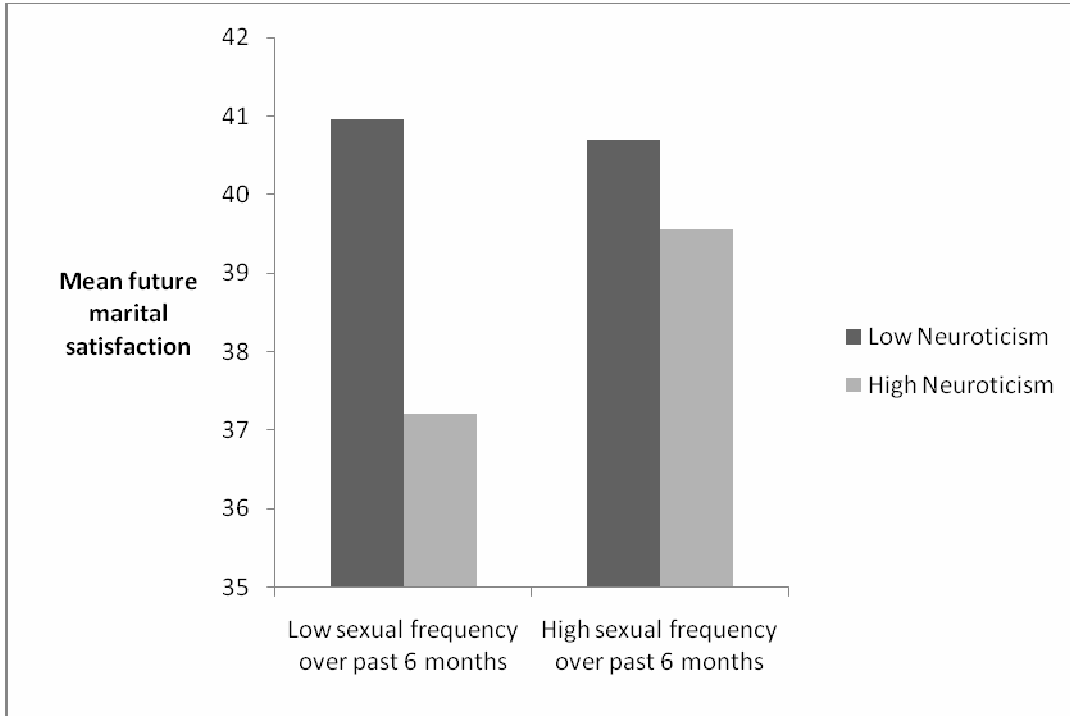


Figure 1. Interactive Effects of Sexual Frequency and Neuroticism on Marital Satisfaction.

VITA

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