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The Conditional Importance of Sex: Exploring the Association Between Sexual Well-Being and Life Satisfaction

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Leaders in the field of sexuality have called for additional research examining the link between sexual well-being and life satisfaction in women in order to expand knowledge regarding the important consequences of a satisfying sex life. Participants in the present study were sexually active women reporting a wide range of sexual difficulties who completed an in-person interview, validated self-report measures, and daily online assessments for 4 weeks. Sexual well-being was related to life satisfaction both cross-sectionally and within individuals over time. In addition, high relational satisfaction and low attachment anxiety served as protective factors, decreasing the degree to which unsatisfying sexual experiences were associated with decreases in life satisfaction. These results extend previous findings by confirming a strong association between sexual well-being and overall life satisfaction within individuals over time. The strength of this association is moderated by a number of intra- and interpersonal factors. Implications for healthcare providers are discussed.

INTRODUCTION

The correlates and consequences of a satisfying sex life are important areas of research that are gaining increasing attention in the psychological and medical literature. While it has long been assumed that sexual activity affects overall quality of life for men (Thompson et al., 2005), only recently have studies begun to report similar findings for women. For example, Davison and colleagues (2009) found that sexually satisfied women reported higher overall subjective well-being than did sexually unsatisfied women. This association between sexual satisfaction and overall life satisfaction has been mirrored by a number of recent small-scale studies (e.g., Thompson et al., 2011; Woloski-Wruble et al., 2010) and large multinational studies such as the Global Study of Sexual Attitudes and Behaviors (Laumann et al., 2006). These effects are present in diverse populations such as recent amputees (Walters & Williamson, 1998) cancer patients (Mulhall, Incrocci, Goldstein, & Rosen, 2012), and women with chronic mental illness (Davison & Huntington, 2010), suggesting that sexuality maintains its importance even in the context of serious health concerns.

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The importance of sexual well-being in predicting overall happiness has also been investigated in comparison to other factors. Kahneman and colleagues (2004) found that sex was rated as the strongest contributor to happiness, with larger effects than, for example, socializing. Similarly, Killingsworth and Gilbert (2010) found that sexual activity was the best predictor of moment-to-moment happiness, beating out factors such as conversation, eating, and praying. These studies not only suggest that sexuality exhibits links to overall well-being that are comparable to other important factors, but also that the potential positive effects of sexual activity may be more direct and immediate, compared to distal effects of factors such as income (Graham, 2011).

However, aside from this small number of studies suggesting a general relation, relatively little is known about the association between sexual activity and overall quality of life. In a recent review of research on the association between sexual well-being and overall well-being, Rosen and Bachman (2008) argued that, although research on female sexuality has increased noticeably in the past two decades, this research has overwhelmingly emphasized sexual function and dysfunction. Meanwhile, the study of sexual happiness and satisfaction, and the effects of sexual well-being on physical and emotional well-being, has been given comparatively little attention (Shifren et al., 2008).

Research aimed at understanding how sexual well-being is related to overall well-being is important for a number of reasons. First, sexual difficulties are a very common health complaint among women worldwide. Estimated prevalence rates of impaired sexual function (low sexual desire, difficulty reaching orgasm) range from 32% to 85% (Hayes et al., 2008; MacNeil & Byers, 1997). Although not all of these difficulties represent diagnosable cases of sexual dysfunction (Bancroft, Loftus, & Long, 2003), it is clear that many of these difficulties have a large effect on overall life satisfaction (Leiblum, 2007). As such, sexual difficulties and sexual well-being in general represent important public health concerns. Research in this area would also help to strengthen the link between sexuality research and the increasingly important field of positive psychology (Seligman, 2000). Positive psychology expands on traditional pathology-oriented research to focus on understanding factors that improve well-being and quality of life, and those that contribute to resiliency in the face of stressors (Kobau et al., 2011). Given its physical and emotional benefits, sexual activity represents a factor that could protect against the deleterious effects of many stressors. For example, researchers have suggested that sexual activity may protect against depression in older women (Ganong & Larson, 2011) and, alternatively, that sexual dysfunction is a risk factor for depression (Atlantis & Sullivan, 2012).

The goal of the present study was to improve our scientific understanding of the association between sexual well-being and life satisfaction in women.[1] While the literature previously summarized firmly establishes a correlation between sexual well-being and life satisfaction in women, it is limited in a number of ways common in research on subjective well-being. These limitations

[1]We use the term *sexual well-being* in the present study as an umbrella term encompassing two types of subjective evaluations of one's sex life: sexual satisfaction and sexual distress. *Sexual satisfaction* has been defined as the individual's subjective evaluation of the positive and negative aspects of one's sexual relationship, and his/her subsequent affective response to this evaluation (Lawrance & Byers, 1992). *Sexual distress* refers to concern, anxiety, and/or frustration regarding one's sex life, a definition in line with that currently used in the field of female sexual dysfunction. Studies have suggested that sexual distress and satisfaction may be partially independent constructs (Stephenson & Meston, 2010a) and, as such, they are included as separate but related factors in the present research. We define the term *life satisfaction* as analogous to Pavot and Deiner's (2008) conceptualization of *subjective well-being*, which includes both a cognitive global evaluation of one's quality of life and affective components such as happiness and (a lack of) sadness and regret.

include the use of cross-sectional methodology, restricted sampling, and examination of only main effects. Our goal was to address a number of these limitations in the present study. McNulty and Fincham (2012) recently published a commentary outlining three primary suggestions for improving the scope and usefulness of research in the area of positive psychology, which provided a useful framework. First, they encouraged researchers to expand beyond main effects to examine interactions that identify the personal and interpersonal circumstances in which certain factors are associated with well-being. This recommendation is particularly important when addressing sexual well-being as, even in studies that have provided the strongest evidence of the link between sexual and general well-being, the strength of that effect has generally been statistically moderate (e.g., Woloski-Wruble et al., 2010). This moderate average effect is likely due to the variability in the association between sexual well-being and life satisfaction, with the two being more strongly related in some contexts than others.

McNulty and Fincham's (2012) second recommendation was to study the association between various factors and subjective well-being for individuals with and without diagnosable psychopathology. There are examples of both types of research in the area of sexual well-being. Many large-scale studies have used, population-based samples recruited through random sampling (e.g., Laumann et al., 2006). These samples tell us more about trends in the general population than about processes specific to sexual dysfunction. There have also been a number of smaller studies that have examined the effect of specific types of sexual dysfunction, such as sexual pain disorders, on quality of life (Tripoli et al., 2011). However, there are fewer studies that have examined the link between sexual well-being and life satisfaction using samples in which a wide range of sexual difficulties are well represented.

McNulty and Fincham's (2012) third recommendation was to move beyond cross-sectional studies to examine potential contributors to subjective well-being over time. While there are some notable exceptions (Killingsworth & Gilbert, 2010), there is generally little empirical evidence as to whether the link between sexual well-being and life satisfaction is present within individuals over time (Balon, 2008). Such longitudinal data, although still essentially correlational, would provide stronger evidence for a causal relation between the two factors by ruling out the universe of third variables that do not change over time.

In the present study, we attempted to use these three recommendations in exploring the association between sexual well-being and life satisfaction in women. First, we recruited a sample that represented a wide range of levels of sexual function and well-being, not only healthy controls or women with a specific diagnosis of sexual dysfunction. Second, we utilized daily diary methodology to assess associations within individuals over time. Third, we assessed whether two factors moderated the association between sexual well-being and life satisfaction: relational satisfaction and attachment orientation.

A number of recent studies have provided empirical evidence of an association between sexual satisfaction and the quality of the overall relationship (Moore & Heiman, 2006). For example, in one recent study (Stephenson, Rellini, & Meston, 2013), relationship satisfaction moderated the association between changes in sexual function and changes in sexual distress over the course of sex therapy. This and other findings suggest that changes in the quality of one's sex life may be of relatively less importance in certain relational contexts. Although not strictly analogous, the association between sexual well-being and life satisfaction may be similarly affected by relational satisfaction. One possibility is that high relational satisfaction may function to buffer against the detrimental effects of decreased quality of sex life such that worsening sexual interactions are

associated with smaller drops in life satisfaction in the context of more satisfying relationships. For example, a recent study (Stephenson & Meston, 2010b) found that impaired sexual desire was only associated with increased distress in the context of relationships with little intimacy. In highly intimate relationships, very low sexual desire was not associated with significant distress. Similarly, a highly satisfying relationship may prevent unsatisfying sexual experiences from impairing one's general well-being.

Adult attachment orientation, and attachment anxiety in particular, has also been tied to sexual experiences in a number of recent studies (Dewitte, 2012). Specifically, individuals with higher levels of attachment anxiety are more likely to use sexual activity to meet attachment needs (Davis, Shaver, & Vernon, 2004) that may not be met through other, nonsexual forms of comfort. Given these motives, it is not surprising that anxiously attached women's sexual experiences tend to be more anxiety filled (Birnbaum, 2007), and to take on an exaggerated importance. For example, anxiously attached women tend to use the quality of their sexual interactions as "barometers of the relationship," meaning that negative sexual experiences are more likely to be interpreted as signs of impending relational dissolution (Birnbaum et al., 2006). Given the relatively greater importance of sex in meeting attachment needs and influencing perceptions of the overall relationship, we predicted that worsening sexual well-being would be associated with larger drops in life satisfaction for individuals who were more anxiously attached.

In summary, the present study had a number of aims and hypotheses. First, we attempted to replicate the cross-sectional association between sexual well-being (both sexual satisfaction and sexual distress) and overall life satisfaction in a sample of women experiencing sexual difficulties that varied in both their type and severity. Our hypothesis was that this association would be significant and that the degree to which sexual well-being predicted life satisfaction would be comparable to other known predictors such as satisfaction with the overall relationship (e.g., O'Rourke, 2005) and attachment orientation (Mikulincer & Shaver, 2007). Second, we attempted to expand on past findings using daily diary data. Our hypothesis was that the intraindividual association between sexual well-being and life satisfaction would be significant. However, we also predicted that there would be variability in this association—that sexual well-being would be strongly associated with life satisfaction for some women and weakly related for others. In particular, we hypothesized that high satisfaction with the overall relationship and low levels of attachment anxiety would serve as protective factors wherein decreases in sexual well-being would have smaller deleterious effects on life satisfaction for these women.

METHOD

Participants and Procedures

We recruited 90 participants from the community using advertisements posted in numerous locations throughout the local southern metropolitan area. We also used online advertisements on www.craigslist.org and on our lab website. The advertisements included inclusion criteria for the study: female, older than 18 years of age, currently in an exclusive heterosexual relationship, and experiencing one or more of the following sexual difficulties in the past month: low sexual desire, low sexual arousal, difficulty reaching orgasm, or pain or discomfort during or following sexual activity. Advertisements also stated that study participation involved answering questions

regarding current and past sexual experiences, and that participants would be compensated. Interested individuals received additional information about the study and were screened over the phone. Participants were excluded if they expressed a serious aversion to sex, were unwilling to engage in sexual activity during the following month, were not healthy enough to engage in sexual activity, or had an untreated serious mental health condition (schizophrenia, bipolar, and/or severe depression that was not managed with therapy and/or medication).

Participants attended an initial session at the Sexual Psychophysiology Lab on The University of Texas at Austin campus in which they provided informed consent, completed a number of self-report measures, and engaged in a face-to-face semi-structured interview to assess for sexual dysfunction based on *DSM-IV-TR* (American Psychiatric Association, 2000) criteria performed by a master's-level clinician with experience in providing sex therapy to individuals and couples. After this initial session, participants filled out online measures once per day regarding their sexual experiences for 4 weeks. Participant agreed to engage in sexual activity with their partners at least five times over these 4 weeks. At the conclusion of this period, participants were provided with monetary compensation, information regarding the treatment of female sexual dysfunction, and referral information for a number of sexual health care providers in the local community. All study protocol was approved by the University of Texas at Austin Institutional Review Board.

The initial sample comprised 90 women; of these, 3 were excluded for not meeting inclusion criteria, resulting in a final sample of 87 women. The average age of participants was 27.44 years ($SD = 6.74$ years), with an average relationship length of 45.60 months ($SD = 63.38$ months). Of the participants, 23 (26.4%) were married and the remaining were in monogamous sexual relationships. Two (2.3%) participants had a high school diploma only, 27 (31%) had completed some college, 35 (40.2%) had completed an undergraduate degree, and 23 (26.4%) had completed an advanced degree. Of the participants, 31 met criteria for hypoactive sexual desire disorder, 21 for female sexual arousal disorder–subjective subtype, 13 for female sexual arousal disorder–physiological subtype, and 27 for female orgasmic disorder. In addition, 17 participants appeared to meet criteria for dyspareunia or vaginismus (8 were likely vaginismus).[2] Thirty-four participants reported likely partner sexual dysfunction including premature ejaculation, erectile dysfunction, and low sexual desire. Overall, 57 participants (66%) met criteria for one or more diagnoses of sexual dysfunction.

Intake Measures

Sexual Well-Being

The Sexual Satisfaction Scale for Women (Meston & Trapnell, 2005) is a 30-item self-report measure of female sexual well-being that provides scores on three domains of sexual satisfaction and two of sexual distress, as well as a total score. The Sexual Satisfaction Scale for Women full-scale score and each of the domain scores have been shown to reliably discriminate sexually dysfunctional from control women. Internal consistency and test–retest reliabilities are within the acceptable range. In the present study, the personal concern subscale was used as the primary

[2]Diagnosis of both of these conditions requires a physical examination, which was beyond the scope of the present study. As such, these diagnoses should be considered very tentative.

TABLE 1
Variable Means, Standard Deviations, and Correlations

Variable	*M*	*SD*	Possible range	*1*	*2*	*3*	*4*	*5*	*6*
1. Life satisfaction	22.84	7.41	5–35	1	.214*	.425**	.426**	–.427**	–.242*
2. Sexual satisfaction	14.42	5.77	6–30		1	.719**	.381**	–.206	–.185
3. Sexual distress	15.75	5.26	6–30			1	.339**	–.324**	–.115
4. Relational satisfaction	59.99	16.26	0–81				1	–.597**	–.329**
5. Attachment avoidance	14.64	8.15	6–36					1	.132
6. Attachment anxiety	23.11	7.66	6–36						1

*$p < .05$. **$p < .01$. ***$p < .001$.

measure of sexual distress. Cronbach's alpha in our sample was .83. The contentment subscale was used as the primary measure of sexual satisfaction. Alpha in our sample was .92.

Relationship Satisfaction

Relationship satisfaction was measured using the Couples Satisfaction Index (Funk & Rogge, 2007). The Couples Satisfaction Index consists of 16-items and has been shown to be reliable ($\alpha =$ .98) and valid, exhibiting significant correlations with multiple scales of relationship satisfaction and effectively differentiate distressed from nondistressed couples. Items were scored such that higher scores indicated higher levels of satisfaction with the relationship. The full scale score was obtained by summing individual items. Alpha in the present study was .98.

Attachment Orientation

The Experiences in Close Relationships Scale–Revised (Sibley, Fischer, & Liu, 2005; Sibley & Liu, 2004) is a 12-item measure of adult attachment orientation. Although there has been debate as to the appropriateness of using self-report scales to measure attachment orientation (Mikulincer & Shaver, 2003), the Experiences in Close Relationships Scale–Revised has been shown to be one of the most reliable and valid measures of this type. Cronbach's alpha in our sample was .86 for attachment anxiety and .71 for attachment avoidance.

Life Satisfaction

Overall life satisfaction was assessed using the Satisfaction With Life Scale (Diener et al., 1985). The Satisfaction With Life Scale is a 7-point Likert scale that ranges from 1 (Strongly Disagree) to 7 (Strongly Agree). Cronbach's alpha for the Satisfaction With Life Scale has ranged from .79 to .89, with a 1-month test–retest reliability of .86 (Pavot & Diener, 2008). The Satisfaction with Life Scale has been found to be significantly associated with the measures of depression and negative affect. Cronbach's alpha in the present study was .90. See Table 1 for means and standard deviations for all measures.

Daily Measures

Daily sexual satisfaction was measured with a single item: "How satisfied have you been with your overall *sexual life* today?" Daily sexual distress was measured with the item, "My sexual difficulties today were distressing to me personally." Daily life satisfaction was measured using a single item: "Overall, I am satisfied with life today." The life satisfaction daily measure was rated on a 7-point scale; other daily items used 5-point scales.

RESULTS

To compare the strength of association between life satisfaction and other factors, we first computed Pearson product-moment correlations comparing life satisfaction to other study variables. We then performed a series of correlation coefficient *t*-tests to determine if the strength of association differed between life satisfaction and these other factors in turn. Life satisfaction was significantly correlated with sexual satisfaction, sexual distress, relational satisfaction, attachment avoidance, and attachment anxiety (see Table 1 for correlations). Life satisfaction was more strongly related to relational satisfaction than sexual satisfaction, $t(85) = 1.91$, $p < .05$. Life satisfaction was also more strongly related to attachment avoidance than sexual satisfaction, $t(85) = 1.71$, $p < .05$. Other than these results, life satisfaction was similarly related to all five factors. It is notable that sexual distress was as strongly related to life satisfaction as relational satisfaction and both aspects of attachment orientation.

We used multiple linear regression to determine whether sexual well-being was predictive of life satisfaction independently of attachment orientation and relational satisfaction. Sexual satisfaction was no longer significantly associated to life satisfaction after controlling for attachment orientation and relational satisfaction, $F(4, 80) = 6.57$, $p < .001$; $\beta = .06$, *ns*. However, sexual distress remained a significant predictor of life satisfaction after controlling for these other factors, $F(4, 81) = 9.24$, $p < .001$; $\beta = .29$, $p < .01$, suggesting that it is related to life satisfaction independent of wider relational dynamics and attachment orientation.

We then used hierarchical linear modeling (Raudenbush & Bryk, 2002) to assess the average intraindividual association between sexual well-being and life satisfaction within individuals over time. This analytic procedure typically consists of two steps (Raudenbush & Bryk, 2002). In the first, a random coefficient model is constructed wherein the average intra-individual association between independent variable and dependent variable is estimated. Also estimated is the interindividual variability (i.e., Do individuals significantly vary in how strongly the independent variable and dependent variable covary over time?) If significant individual differences are present, a second conditional model is constructed wherein person-level factors (e.g., attachment orientation) are tested as predictors of the strength of the association between event-level factors. Following these guidelines, we first constructed two random coefficient models including either daily sexual satisfaction or sexual distress as predictors of daily life satisfaction.[3]

[3]We slightly modified these basic models in a number of ways. First, we used group-mean centering of independent variables, meaning that variations in sexual well-being were measured in relation to each individual's average level of sexual well-being. Second, we specified a continuous first-order autoregressive covariance structure, which is often appropriate when the multiple observations within individuals are not evenly spaced (as was the case in the current data set given that participants would occasionally skip days). Autoregressive coefficients (phi) were generally moderate (.36

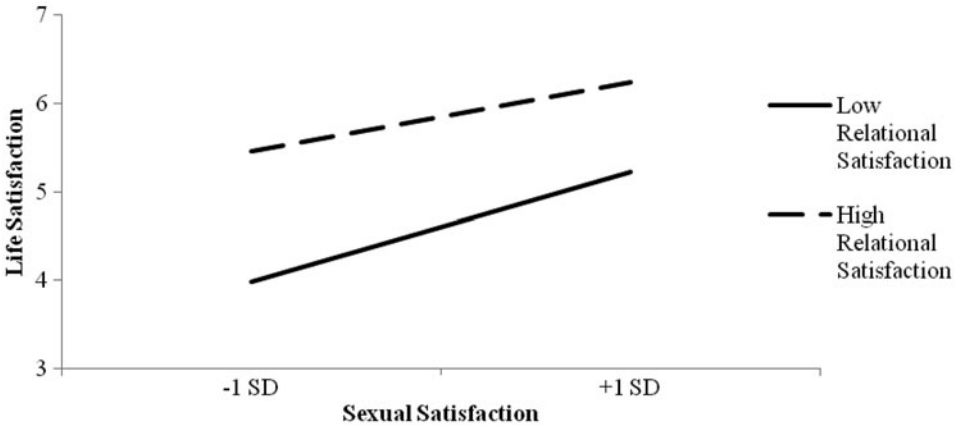

FIGURE 1 Intraindividual association between sexual satisfaction and life satisfaction as a function of relationship satisfaction.

The results of hierarchical linear models using sexual satisfaction as a predictor are summarized in Table 2.[4] Sexual satisfaction was significantly associated with life satisfaction ($t = 8.73$, $p < .001$) and there was significant individual variation in the strength of this association, $\chi^2(73) = 171.65$, $p < .001$. Similarly, sexual distress was significantly associated with life satisfaction ($t = –6.22$, $p < .001$) and there was significant individual variation in the strength of this association, $\chi^2(60) = 105.08$, $p < .001$. Given the individual differences in each case, relational satisfaction and attachment orientation (both attachment anxiety and avoidance) were tested as predictors of the strength of association between daily sexual well-being and life satisfaction. Relational satisfaction significantly predicted the association between life satisfaction and both sexual satisfaction ($t = –2.03$, $p < .05$) and sexual distress ($t = –2.02$, $p < .05$).

In each case, worsening in an individual's sexual well-being (i.e., lower sexual satisfaction or higher sexual distress) was associated with smaller drops in life satisfaction for women reporting higher levels of relational satisfaction as compared to women reporting low relational satisfaction (see Figure 1). Attachment anxiety also predicted these associations. Specifically, drops in sexual satisfaction ($t = 2.15$, $p < .05$) and increases in sexual distress ($t = –2.64$, $p < .01$) were associated with smaller concurrent drops in life satisfaction for women with lower levels of attachment anxiety (see Figure 2).

to .43; possible range: –1 to 1) and the use of an autoregressive covariance structure resulted in lower Akaike information criterion values as compared to standard covariance structures, indicating improved model fit. Third, we controlled for a dichotomous variable indicating whether the participant engaged in sexual activity for each day to assure that we were examining the effects of sexual well-being in particular, not simply whether sexual activity took place.

[4]Results for models using sexual distress as a predictor were similarly structured and produced almost identical results. As such, tables are not included in the interest of conciseness. Please contact the corresponding authors for full models.

TABLE 2
Hierarchical Linear Models of the Intraindividual Association Between Sexual Satisfaction and Life Satisfaction

Random Coefficients Model					
Fixed effects		*Coefficient*	SE	t	p
Overall mean life satisfaction (γ_{00})		5.178	0.131	39.631	<.001
Overall sexual activity–life satisfaction slope (γ_{10})		0.115	0.058	1.964	.052
Overall sexual satisfaction–life satisfaction slope (γ_{20})		0.432	0.049	8.660	<.001
Random effects	Variance component	*df*		χ^2	*p*
Mean outcome (u_{0i})	1.299	73		1521.286	<.001
Linear independent variable–dependent variable slope (u_{1i})	0.110	73		171.648	<.001
Level 1 error (r_{ti})	0.880				
Conditional model—Relational Satisfaction					
Fixed effects		*Coefficient*	SE	*t*	*p*
Model for mean life satisfaction (γ_{00})					
	Intercept (γ_{00})	5.176	0.115	44.969	<.001
	Relational satisfaction (γ_{01})	0.038	0.006	6.045	<.001
Model for sexual activity–life satisfaction slop (γ_{10})					
	Intercept (γ_{10})	0.115	0.059	1.944	.055
Model for sexual satisfaction–life satisfaction slope (γ_{1i})					
	Intercept (γ_{20})	0.431	0.049	8.795	<.001
	Relational satisfaction (γ_{21})	–0.006	0.003	–2.033	<.050
Random effects	Variance component	*df*		χ^2	*p*
Mean life satisfaction (u_{0i})	0.983	72		1194.768	<.001
Linear independent variable–dependent variable slope (u_{1i})	0.100	72		176.867	<.001
Level 1 error (r_{ti})	0.873				

DISCUSSION

The overarching goal of the present project was to examine the association between sexual well-being and life satisfaction in women. Although a number of studies have suggested a link between

these two factors, ours is one of the first to examine this relation in a sample of women presenting with a wide range of sexual difficulties, to use repeated-measures data, and to examine the specific contexts within which these factors are more strongly or weakly related. We began with cross-sectional analyses and found that sexual well-being, especially distress regarding sexual difficulties, was as predictive of life satisfaction as other important factors such as satisfaction with the overall relationship and attachment orientation. In addition, sexual distress predicted life satisfaction over and above these other factors, suggesting that evaluations of one's sex life may contribute to quality of life independently of wider interpersonal dynamics. These findings are in line with earlier studies suggesting that sexual activity in particular (as opposed to general interpersonal interaction) is one of the strongest predictors of subjective happiness (Killingsworth & Gilbert, 2010).

Sexual well-being and life satisfaction were also associated within individuals over time. This unique finding strengthens (though by no means confirms) the case for a causal relation between these two factors by helping to rule out third variables that are static or change more slowly over time. For example, given only cross-sectional findings, one could argue that high neuroticism may predict both lower sexual satisfaction (Costa et al., 1992) and lower life satisfaction (Judge et al., 2002) giving rise to a spurious relation between these two factors. However, such explanations are inconsistent with the findings of the present study wherein daily changes in life and sexual satisfaction mirrored one another, presumably independently of notable changes in more stable aspects of personality.

However, sexual well-being was not equally predictive of life satisfaction in all cases—high relational satisfaction and low levels of attachment anxiety seemed to serve protective roles. For women reporting high satisfaction with the overall relationship or low levels of attachment anxiety, decreases in sexual well-being were associated with smaller decreases in life satisfaction. In other words, the potential negative effects of poor sexual experiences may be suppressed for these women. The effects of poor sexual experiences may be more powerful for women who are chronically plagued by fear of abandonment and/or are in unsatisfactory relationships.

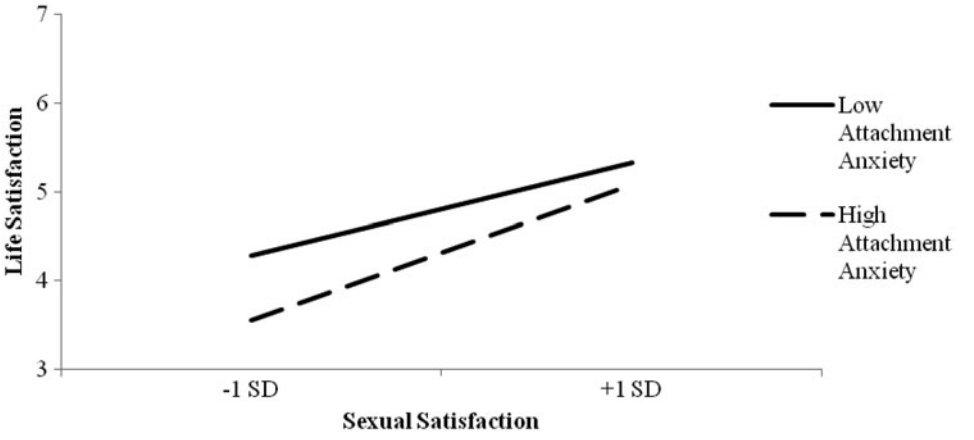

FIGURE 2 Intraindividual association between sexual satisfaction and life satisfaction as a function of attachment anxiety.

These findings are in line with previous research suggesting a protective role for both relationship quality and secure attachment (Birnbaum et al., 2006; Stephenson & Meston, 2010b), and compliment findings regarding the possibility of positive sexual experiences protecting against the negative effects of attachment insecurity. With regards to the latter, Little and colleagues (2010) found that high levels of daily sexual satisfaction neutralized the negative effects of attachment anxiety on relational satisfaction. It may be that positive sexual experiences can play a role similar to secure attachment in regulating distressing emotions (Dewitte, 2012), and that the presence of either a highly satisfying sex life, or a secure attachment bond may be sufficient to maintain this emotional regulation within relationships. Of course, further research that more fully assesses relational dynamics and attachment is needed to confidently draw such a conclusion.

The present results are limited in a number of ways. First and foremost, the methodology and statistical analyses used were correlational. Although hierarchical models using repeated measures data address some of the typical limitations of these methods, it is still impossible to make strong claims regarding causality without well-controlled experimental studies. In addition, although we used well-validated measures wherever possible, self-report scales come with a number of drawbacks including possible social desirability bias. Also, the sample was restricted in a number of ways, including a small number of older women, and women with only a high school education. Another potentially biasing factor was that participants were recruited through public advertisements. As such, although a majority of the sample met full criteria for sexual dysfunction, these women cannot be described as treatment seeking.[5] Last, although this study was generally observational, participants did participate in a structured clinical interview before completing self-report measures. The experience of discussing one's sexual difficulties with a trained master's-level therapist may have had an effect on participants' views of their sexual experiences.

Despite these limitations, the present findings have a number of potential practical implications. First, they speak to the potential importance of sex in shaping overall quality of life, and suggest that the importance of sex may rival that of factors that have been the target of sustained research interest for decades, such as attachment orientation. The relative scarcity of high-quality randomized clinical trials for treatments of female sexual dysfunction is only one indicator of the difficulty in funding and performing studies in this subfield (Heiman, 2002). Our hope is that the present study represents a step toward greater acknowledgment of sexual difficulties as important influences on well-being, and the subsequent distribution of research funds to expand our scientific understanding of the effect of these conditions. The present findings also imply the existence of weak to moderate associations between sexual well-being and life satisfaction in some instances. If important moderating factors are not taken into account, this variability between individuals may potentially mask the strong relation between sexual and life satisfaction present in many cases. Given this possibility, we urge caution in using population-based studies

[5]Upon completion of the study, participants were provided with information regarding sexual health care providers in the local community. At this point, many participants noted that they had not previously been aware of either the existence or availability of treatment for their sexual difficulties. As such, it is likely that many women in this sample had not previously sought out treatment simply because a lack of knowledge, rather than other factors such as fear or lack of motivation. However, as we did not explicitly assess motivation for treatment in this study, this conclusion should be considered very tentative.

focused on main effects to draw firm conclusions regarding the link between quality of sex and quality of life.

The present findings also have important implications for treatment in cases of sexual dysfunction. They primarily suggest the existence of factors that can protect against the negative effects of sexual difficulties on overall subjective well-being. Although attachment orientation is thought to be a relatively stable trait (Bowlby, 1973), it is often amenable to change through powerful interpersonal experiences in the context of therapeutic or other close relationships (Gillath, Selcuk, & Shaver, 2008). There is likewise a large body of literature suggesting that relational satisfaction can be reliably improved through a number empirically validated treatments (e.g., Christensen, Atkins, Baucom, & Yi, 2010). The present findings suggest that the effect of even highly distressing sexual problems on overall quality of life may be lessened by improving the attachment or relational context within which they are occurring.

These findings are particularly important in the context of female sexual dysfunction given the moderate efficacy of many treatments in this area (Stinson, 2009). For example, psychological treatments for the most common female sexual dysfunctions—hypoactive sexual desire disorder and female sexual arousal disorder—exhibit modest success rates ranging from 40–60% (McCabe, 2001; Stinson, 2009; Trudel et al., 2001). In addition, at present there are no Food and Drug Administration–approved pharmacological treatments for low sexual desire and arousal in women. There is the possibility that some pharmacological agent will be identified with effectiveness on par with Viagra for men. However, even in this best-case scenario, many cases of erectile dysfunction are resistant to this pharmacological treatment (Rosen, 2007) suggesting that, even if more effective treatments are identified, many cases of female sexual dysfunction may not be amenable to such treatment. In these cases, the best option available to treatment providers may be to improve contextual factors surrounding sexual activity. The present study represents an important step forward in identifying the contextual factors that may be of most interest to healthcare providers.

REFERENCES

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington DC: Author.

Atlantis, E., & Sullivan, T. (2012). Bidirectional association between depression and sexual dysfunction: A systematic review and meta-analysis. *Journal of Sexual Medicine*, *9*, 1497–1507.

Balon, R. (2008). In pursuit of (sexual) happiness and well-being: A response. *Journal of Sex & Marital Therapy*, *34*, 298–301.

Bancroft, J., Loftus, J., & Long, S. (2003). Distress about sex: A national survey of women in heterosexual relationships. *Archives of Sexual Behavior*, *3*, 193–208.

Birnbaum, G. (2007). Attachment orientations, sexual functioning, and relationship satisfaction in a community sample of women. *Journal of Social and Personal Relationships*, *24*, 21–35.

Birnbaum, G., Reis, H. T., Mikulincer, M., Gillath, O., & Opraz, A. (2006). When is sex more than just sex: Attachment orientations, sexual experience, and relationship quality. *Journal of Personality and Social Psychology*, *91*, 929–943.

Bowlby, J. (1973). *Attachment and loss: Volume II: Separation, anxiety and anger*. London: Hogarth Press and Institute of Psycho-Analysis.

Christensen, A., Atkins, D. C., Baucom, B., & Yi, J. (2010). Marital status and satisfaction five years following a randomized clinical trial comparing traditional versus integrative behavioral couple therapy. *Journal of Consulting and Clinical Psychology*, *78*, 225–235.

Costa, J., Fagan, P., Peidmont, R., Ponticas, Y., & Wise, T. (1992). The five-factor model of personality and sexual functioning in outpatient men and women. *Psychiatric Medicine*, *10*, 199–215.

Davis, D., Shaver, P., & Vernon, M. (2004). Attachment style and subjective motivations for sex. *Personality and Social Psychology Bulletin*, *30*, 1076–1090.

Davison, J., & Huntington, A. (2010). "Out of sight": Sexuality and women with enduring mental illness. *International Journal of Mental Health Nursing*, *19*, 240–249.

Davison, S. L., Bell, R. J., LaChina, M., Holden, S. M., & Davis, S. R. (2009). The relationship between self-reported sexual satisfaction and general well-being in women. *Journal of Sexual Medicine*, *6*, 2690–2697.

Dewitte, M. (2012). Different perspectives on the sex-attachment link: Towards an emotion-motivational account. *Journal of Sex Research*, *49*, 105–124.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment*, *49*, 71–75.

Funk, J. L., & Rogge, R. D. (2007). Testing the ruler with item response theory: Increasing precision of measurement for relationship satisfaction with the Couples Satisfaction Index. *Journal of Family Psychology*, *21*, 572–583.

Ganong, K., & Larson, E. (2011). Intimacy and belonging: The association between sexual activity and depression among older adults. *Society and Mental Health*, *1*, 153–172.

Gillath, O., Selcuk, E., & Shaver, P. R. (2008). Moving toward a secure attachment style: Can repeated security priming help? *Social and Personality Psychology Compass*, *2*, 1651–1666.

Graham, C. (2011). Does more money make you happier? Why so much debate? *Applied Research in Quality of Life*, *6*, 219–239.

Hayes, R., Dennerstein, L., Bennet, C., & Fairley, C. (2008). What is the "true" prevalence of female sexual dysfunctions and does the way we assess these conditions have an impact? *Journal of Sexual Medicine*, *5*, 777–787.

Heiman, J. R. (2002). Sexual dysfunction: Overview of prevalence, etiological factors, and treatments. *Journal of Sex Research*, *39*, 73–78.

Judge, T., Erez, A., Bono, J., & Thoresen, C. (2002). Are measures of self-esteem, neuroticism, locus of control, and generalized self-efficacy indicators of a common core construct? *Journal of Personality and Social Psychology*, *83*, 693–710.

Kahneman, D., Krueger, A. B., Schkade, D. A., Schwarz, N., & Stone, A. A. (2004). A survey method for characterizing daily life experience: The day reconstruction method. *Science*, *306*, 1776–1780.

Killingsworth, M. A., & Gilbert, D. T. (2010). A wandering mind is an unhappy mind. *Science*, *330*, 932.

Kobau, R., Seligman, M. E. P., Peterson, C., Diener, E., Zack, M. M., Chapman, D., & Thompson, W. (2011). Mental health promotion in public health: Perspectives and strategies from positive psychology. *American Journal of Public Health*, *101*, 1–9.

Laumann, E. O., Paik, A., Glasser, D. B., Kang, J.-H., Wang, T., Levinson, B., ... Gingell, C. (2006). A cross-national study of subjective sexual well-being among older women and men: Findings from the Global Study of Sexual Attitudes and Behaviors. *Archives of Sexual Behavior*, *35*, 145–161.

Lawrance, K., & Byers, E. (1992). Development of the interpersonal exchange model of sexual satisfaction in long term relationships. *Canadian Journal of Human Sexuality*, *1*, 123–128.

Leiblum, S. R. (2007). *Principles and practice of sex therapy* (4th ed.). New York, NY: Guilford Press.

Little, K. C., McNulty, J. K., & Russell, V. M. (2010). Sex buffers intimates against the negative implications of attachment insecurity. *Personality and Social Psychology Bulletin*, *36*, 484–498.

MacNeil, S., & Byers, E. (1997). The relationships between sexual problems, communication, and sexual satisfaction. *Canadian Journal of Human Sexuality*, *6*, 277–283.

McCabe, M. P. (2001). Evaluation of a cognitive behavior therapy program for people with sexual dysfunction. *Journal of Sex & Marital Therapy*, *27*, 259–271.

McNulty, J. K., & Fincham, F. D. (2012). Beyond positive psychology? Toward a contextual view of psychological processes and well-being. *American Psychologist*, *67*, 101–110.

Meston, C., & Trapnell, P. (2005). Development and validation of a five-factor sexual satisfaction and distress scale for women: The Sexual Satisfaction Scale for Women (SSS-W). *Journal of Sexual Medicine*, *2*, 66–81.

Mikulincer, M., & Shaver, P. (2003). The attachment behavioral system in adulthood: Activation, psychodynamics, and interpersonal processes. In M. P. Zanna (Ed.), *Advances in experimental social psychology.* New York, NY: Academic Press.

Mikulincer, M., & Shaver, P. (2007). *Attachment in adulthood: Structure, dynamics, and change*. New York, NY: Guilford Press.

Moore, D. R., & Heiman, J. R. (2006). Women's sexuality in context: Relationship factors and female sexual dysfunction. In I. Goldstein, C. M. Meston, S. R. Davis, & A. M. Traish (Eds.), *Women's sexual function and dysfunction: Study, diagnosis, and treatment* (Vol. 1, pp. 63–84). Oxford, England: Taylor & Francis.

Mulhall, J. P., Incrocci, L., Goldstein, I., & Rosen, R. C., Wassersug, R. (Eds.). (2012). *Cancer and sexual health*. New York, NY: Humana Press.

O'Rourke, N. (2005). Personality, cognitive adaptation, and marital satisfaction as predictors of well-being among older married adults. *Canadian Journal on Aging*, *24*, 211–224.

Pavot, W., & Diener, E. (2008). The Satisfaction With Life Scale and the emerging construct of life satisfaction. *Journal of Positive Psychology*, *3*, 137–152.

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Thousand Oaks, CA: Sage.

Rosen, R. C. (2007). Erectile dysfunction: Integration of medical and psychological approaches. In S. R. Leiblum (Ed.), *Principles and practice of sex therapy* (4th ed., pp. 277–310). New York, NY: Guilford Press.

Rosen, R. C., & Bachmann, G. A. (2008). Sexual well-being, happiness, and satisfaction, in women: The case for a new conceptual paradigm. *Journal of Sex & Marital Therapy*, *34*, 291–297.

Seligman, M. E. P. (2000). Positive psychology. In J. E. Gillham (Ed.), *The science of optimism and hope: Research essays in honor of Martin E. P. Seligman* (pp. 415–429). West Conshohocken, PA: Templeton Foundation Press.

Shifren, J., Monz, B., Russo, P., Segreti, A., & Johanes, C. (2008). Sexual problems and distress in United States women: Prevalence and correlates. *Obstetrics & Gynecology*, *112*, 970–978.

Sibley, C., Fischer, R., & Liu, J. (2005). Reliability and validity of the Revised Experiences in Close Relationships (ECR-R) self-report measure of adult romantic attachment. *Personality and Social Psychology Bulletin*, *31*, 1524–1536.

Sibley, C., & Liu, J. (2004). Short-term temporal stability and factor structure of the Revised Experiences in Close Relationships (ECR-R) measure of adult attachment. *Personality and Individual Differences*, *36*, 969–975.

Stephenson, K. R., & Meston, C. M. (2010a). Differentiating components of sexual well-being in women: Are sexual satisfaction and sexual distress independent constructs? *Journal of Sexual Medicine*, *7*, 2458–2468.

Stephenson, K. R., & Meston, C. M. (2010b). When are sexual difficulties distressing for women? The selective protective value of intimate relationships. *Journal of Sexual Medicine*, *7*, 3683–3694.

Stephenson, K. R., Rellini, A. H., & Meston, C. M. (2013). Relationship satisfaction as a predictor of treatment response during cognitive behavioral sex therapy. *Archives of Sexual Behavior*, *42*, 143–152.

Stinson, R. (2009). The behavioral and cognitive-behavioral treatments of female sexual dysfunction: How far we have come and the path left to go. *Sexual and Relationship Therapy*, *24*, 271–285.

Thompson, I. M., Tangen, C. M., Goodman, P. J., Probstfield, J. L., Moinpour, C. M., & Coltman, C. A. (2005). Erectile dysfunction and subsequent cardiovascular disease. *JAMA*, *294*, 2996–3002.

Thompson, W. K., Charo, L., Vahia, I. V., Depp, C., Allison, M., & Jeste, D. V. (2011). Association between higher levels of sexual function, activity, and satisfaction and self-rated successful aging in older postmenopausal women. *Journal of the American Geriatrics Society*, *59*, 1503–1508.

Tripoli, T. M., Sato, H., Sartori, M. G., de Araujo, F. F., Girão, M. J. B. C., & Schor, E. (2011). Evaluation of quality of life and sexual satisfaction in women suffering from chronic pelvic pain with or without endometriosis. *Journal of Sexual Medicine*, *8*, 497–503.

Trudel, G., Marchand, A., Ravart, M., Aubin, S., Turgeon, L., & Fortier, P. (2001). The effect of a cognitive-behavioral group treatment program on hypoactive sexual desire in women. *Sexual & Relationship Therapy*, *16*, 145–164.

Walters, A. S., & Williamson, G. M. (1998). Sexual satisfaction predicts quality of life: A study of adult amputees. *Sexuality and Disability*, *16*, 103–115.

Woloski-Wruble, A. C., Oliel, Y., Leefsma, M., & Hochner-Celnikier, D. (2010). Sexual activities, sexual and life satisfaction, and successful aging in women. *Journal of Sexual Medicine*, *7*, 2401–2410.