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Marital Processes, Neuroticism, and Stress as Risk Factors for Internalizing Symptoms

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Abstract

Objective—Marital discord has a robust association with depression, yet it is rarely considered within broader etiological frameworks of psychopathology. Further, little is known about the particular aspects of relationships that have the greatest impact on psychopathology. The purpose of the present study was to test a novel conceptual framework including neuroticism, specific relationship processes (conflict management, partner support, emotional intimacy, and distribution of power and control), and stress as predictors of internalizing symptoms (depression and anxiety).

Method—Questionnaire and interview data were collected from 103 husbands and wives 5 times over the first 7 years of marriage.

Results—Results suggest that neuroticism (an expression of the underlying vulnerability for internalizing disorders) contributes to symptoms primarily through high levels of non-marital stress, an imbalance of power/control in one's marriage, and poor partner support for husbands, and through greater emotional disengagement for wives.

Conclusions—Marital processes, neuroticism, and stress work together to significantly predict internalizing symptoms, demonstrating the need to routinely consider dyadic processes in etiological models of individual psychopathology. Specific recommendations for adapting and implementing couple interventions to prevent and treat individual psychopathology are discussed.

Keywords

couples; marriage; internalizing; depression; neuroticism

Marital discord is robustly linked to depression (Whisman & Kaiser, 2008), yet relationship factors are rarely considered within broader etiological frameworks of individual psychopathology. This omission is problematic because no single risk factor explains the development of a disorder, and overlooking marital processes undoubtedly limits the predictive utility of existing etiological frameworks. For example, the diathesis-stress framework posits that stress activates an underlying vulnerability which leads to the development of psychopathology (Ingram & Luxton, 2004); however, it is unclear whether

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Although data from this sample have been published elsewhere (e.g., Brock & Lawrence, 2011; Brock & Lawrence, 2009), this is the first article in which neuroticism and stress were examined as predictors of depression and anxiety symptoms. Portions of this article were presented at the Association for Behavioral and Cognitive Therapies Convention, November 2009, New York City, New York.

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relationship processes represent prominent risk factors for depression and anxiety when considered in combination with diathesis and stress. Accordingly, the overarching goal of the present study was to examine how marital processes transact with neuroticism (the phenotypic expression of the underlying vulnerability for internalizing disorders) and chronic stress originating outside of the marital relationship to influence levels of internalizing symptoms. We aimed to establish that marital processes represent significant and clinically meaningful predictors of symptoms over the first 7 years of marriage and are thus critical to integrate into existing etiological models of psychopathology.

The Link between Marriage and Depression

For decades, researchers and clinicians have recognized the importance of the family context in individual psychopathology. A family systems framework suggests that individual functioning cannot be understood in isolation of the dynamic family system to which an individual belongs. Any dysfunction or disruption in the family system is expected to impact all members of the family unit; therefore, a consideration of interactions and processes among family members becomes essential for understanding the functioning of individual members. A marital discord model of depression (Beach, Sandeen, & O'Leary, 1990) recognizes the particular importance of interactions between married partners, and suggests that couples who become maritally discordant experience changes in their relationship which, in turn, play a key etiological role in depression. Considerable empirical evidence demonstrates that marital discord (i.e., dissatisfaction or maladjustment in one's marriage) is associated with an increased risk for depressive disorders (see Whisman, Weinstock, & Tolejko, 2006, and Whisman & Kaiser, 2008 for reviews). Meta-analyses have demonstrated medium to large effect sizes for the concurrent link between marital discord and depression (e.g., Whisman, 2001), and epidemiological studies reveal that this link persists even when controlling for key demographic variables (e.g., Whisman, 2007). Longitudinal studies demonstrate that marital discord is not only a correlate of depression, but also temporally precedes the onset of episodes (e.g., Whisman & Bruce, 1999) and predicts subsequent symptom levels (e.g., Beach, Katz, Kim, & Brody, 2003; Fincham, Beach, Harold, & Osborne, 1997).

The majority of research on the role of marriage in depression has been limited to examinations of global marital satisfaction or marital adjustment (which encompasses both satisfaction and underlying marital processes). More recently, investigators have begun to focus on specific relationship processes to provide a more refined and nuanced understanding of the role of intimate relationships in individual psychopathology. This shift is consistent with a key tenant of the marital discord model of depression which suggests that marital discord ultimately leads to depression through increased negative interactions (e.g., conflict) and reductions in positive processes (e.g., support; Beach, Sandeen, & O'Leary, 1990). Specifically, significant links have been demonstrated between depression and aspects of several key relationship processes:

Conflict Management: frequent and unresolved arguments (e.g., McGonagle & Schilling, 1992); greater hostility and criticism (e.g., Rehman, Gollan, & Mortimer,

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2008); psychological and physical aggression (e.g., Lawrence, Yoon, Langer, & Ro, 2009)

Partner Support: low levels of support received when one partner is feeling down or has a problem (e.g., Barry, Bunde, Brock, & Lawrence, 2009); mismatch between desired and received levels of support (e.g., Dehle, Larsen, and Landers, 2001)

Emotional Intimacy: absence of an intimate, confiding relationship (e.g., Horwitz, McLaughlin, & White, 1997); fewer displays of affection and dissatisfaction with time spent with one's partner (e.g., Hautzinger, Linden, & Hoffman, 1978)

Power/Control Dynamics: uneven distribution of power in one's relationship (e.g., Hautzinger et al., 1978); infringement upon one's personal rights (Smolen, Spiegal, & Martin, 1986); high levels of control (Schweitzer, Logan, & Strassberg, 1992)

Notably, much of this research has been cross-sectional, limiting our understanding of whether these processes function as risk factors per se; however, this body of work builds a compelling case for the argument that multiple facets of relationship quality (i.e., relationship processes) have implications for individual psychopathology.

In order to expand upon this rich literature linking marital discord and depression, it is essential to systematically examine the complex relations among marital processes and other key risk factors. Indeed, Kraemer et al. (2001) proposed that "the effect of no one risk factor can be fully understood except in the context of all the others" (p. 158). Only by understanding how *multiple* factors work together can we optimize interventions to meet the unique needs of at-risk individuals. Unfortunately, marital processes are rarely embedded in broader etiological frameworks, providing a restricted perspective of their contributions to psychopathology. Given that 90% of couples marry at some point in their lifetimes (Kreider & Fields, 2001), and that the marital relationship is the most central of all relationships (Beach, Martin, Blum, & Roman, 1993), a consideration of marital processes has the potential to reveal prominent and unique etiological pathways for psychopathology.

Considering the Bigger Picture: Etiological Models of Depression

Although multiple intrapersonal models of individual psychopathology exist, a diathesis-stress framework (Ingram & Luxton, 2004) is one of the most widely applied to the etiology of depression (e.g., Kendler & Prescott, 2006). Within this framework, individuals are viewed as possessing a diathesis (i.e., a stable trait that is endogenous to an individual) that is activated by stressors (i.e., reactions to outside threats) to produce psychopathology. Researchers have converged on the personality trait neuroticism as an expression of the underlying diathesis for depression (e.g., Hettema et al., 2006). Also referred to as negative emotionality or negative temperament, neuroticism is defined as "individual differences in the extent to which a person perceives and experiences the world as threatening, problematic, and distressing" (Watson et al., 1994; p. 26). Individuals scoring high on trait neuroticism are prone to experiencing negative emotions, a wide range of problems, self-blame, and high levels of stress. Existing empirical evidence "establishes neuroticism as a

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reasonable target endophenotype… for a range of internalizing disorders" (Hettema et al., p. 862). Further, neuroticism is a stable trait that is endogenous in nature, which is consistent with how a diathesis is conceptualized within a diathesis-stress framework (Ingram & Luxton, 2004).

Although critical, innate vulnerabilities are not sufficient for the development of depression. A wealth of research demonstrates that *stress* also plays a central etiological role (e.g., Kessler, 1997). *Stress* is a multifaceted construct, but has been more generally defined as "the reaction of an organism to some sort of outside threat" (Singer & Davidson, 1991, p. 37). Stress can originate from environmental events that range from unpredictable and acute in nature (i.e., significant life events) to chronic (i.e., minor hassles or socioeconomic factors). Further, the experience of stress in response to these events or circumstances varies across individuals. In order for an event to be considered stressful, the event must be appraised as threatening, and the person experiencing the event must perceive a lack of adequate resources for coping with the event (Lakey & Cronin, 2008). Thus, the degree of stress resulting from a particular event or strain will vary in intensity across individuals, depending in part on how the person perceives the event. Approximately 50–80% of cases of depression are preceded by major life events (Hammen, 2005). Further, higher levels of perceived threat associated with life events are strongly associated with a greater risk for subsequent depression (Kendler et al., 1998).

In light of research suggesting that both diathesis and stress contribute to the development of depression, multiple models have been developed to explain the complex transactions between these risk factors. An *additive model* (also referred to as a prekindling model) suggests that, to the extent that individuals have a greater vulnerability for depression, less stress is necessary for symptom development (e.g., Kendler, Thorton, & Gardner, 2001). A *stress-generation model* recognizes that a diathesis is an especially potent risk factor because vulnerable individuals have certain skill deficits that lead them to "select into" more stressful environments (Hammen, 1991). Thus, even though individuals possessing a high liability require less stress to develop symptoms, they are also more likely to experience stress. Given that neuroticism and stress are expected to transact in complex ways to contribute to depression, we propose systematically and simultaneously examining neuroticism, stress, and *marital processes* to clarify the unique contributions of these risk factors to internalizing symptoms for married individuals.

Potential Benefits of Considering Marital Processes within Etiological Models

In addition to recognizing that the effect of a risk factor cannot be fully understood in isolation, we propose several other advantages to considering marital processes within existing etiological frameworks of depression. First and foremost, there has been a call for research delineating the specific environmental pathways through which neuroticism leads to the development of psychopathology (e.g., Kendler & Prescott, 2006). Such an endeavor is essential for clarifying the aspects of one's environment *most* critical to mental health. By examining the relative contributions of marital processes and stress to psychopathology, we can begin to clarify the most salient environmental pathways through which one's diathesis

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ultimately leads to symptoms. It is anticipated that, for married individuals, functioning in the marital relationship will likely represent a prominent pathway, perhaps to a greater extent than stress originating outside of the marriage.

Second, consistent with a stress-generation model (Hammen, 1991), individuals possessing a greater liability for depression are more likely to *select* into stressful environments and develop maladaptive behavior repertoires. Accordingly, it is not surprising that individuals high in neuroticism experience more negative marital outcomes (Karney & Bradbury, 1995). Perhaps the robust link between marital discord and depression is simply an artifact of this selection process, such that individuals predisposed to develop depression select into more dysfunctional relationships. Beam et al. (2011) explored this possibility with 1566 pairs of same-sex married twins and found that the effect of marital support on depressive symptoms was not fully an artifact of nonrandom selection. Further, Whisman et al. (2006) demonstrated that the link between marital discord and depression remains significant when controlling for the big 5 personality traits. Notably, although marital discord does appear to play a unique role in depression, replication is necessary to more fully account for the possibility of selection effects.

Finally, from a clinical standpoint, it is important to examine marital processes in conjunction with other key risk factors for internalizing symptoms in order to identify targets for interventions. In particular, understanding how marital processes and stress contribute to symptoms *during the transition into marriage* has the potential to inform prevention efforts. Prevention programs targeting marital discord and dissolution are widely disseminated and are typically implemented around the transition into marriage (e.g., the Prevention and Relationship Enhancement Program (PREP); Markman, Stanley, & Blumberg, 1994). By identifying the aspects of the marital relationship most critical to mental health in the context of other key risk factors, these programs can be tailored to not only prevent marital discord but to also prevent individual psychopathology.

A Guide for Incorporating Marital Processes into Existing Etiological Frameworks

To clarify how marital processes might fit within existing etiological frameworks of depression and anxiety, we propose a theoretically-guided approach to model development. The vulnerability-stress-adaptation (VSA) theory of marriage (Bradbury, Cohan, & Karney, 1998; Karney & Bradbury, 1995) is particularly well-suited to guide this process as it is evidence-based and adapted from the diathesis-stress model. Proponents of the VSA theory assert that the vulnerabilities each spouse brings to a marriage, and the stressful events experienced by the couple, influence marital development. However, the specific ways in which couples adapt to stressors also influence their subsequent marital satisfaction. Thus, vulnerabilities (e.g., neuroticism), stress (e.g., work stress or conflict with family or friends), and dyadic or adaptive processes (e.g., relationship processes such as conflict management) transact to influence marital satisfaction and stability. In sum, the VSA theory provides a framework for beginning to conceptualize how relationship processes - representing a distinct class of risk factors - transact with neuroticism and stress.

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With regard to generating specific hypotheses, two aspects of the VSA model are particularly informative. First, the VSA model purports that vulnerabilities influence functioning in specific domains of marriage (i.e., relationship processes). Therefore, a direct effect of neuroticism on relationship processes is anticipated. This is also consistent with the stress generation theory of depression (Hammen, 1991). Second, within the VSA model, the relation between stress and relationship processes is conceptualized as reciprocal in nature. Specifically, a vicious cycle occurs for some couples such that stress contributes to poor relationship functioning (e.g., poor conflict management skills) which, in turn, increases the likelihood that the couple will experience greater stress. This cycle is most likely to occur among couples possessing certain vulnerabilities when they enter the marriage (e.g., high levels of neuroticism). Moreover, although the VSA model was developed to explain marital dysfunction, it is highly applicable to understanding individual dysfunction as well: a similar pattern of relations is likely to occur among risk factors of internalizing symptoms.

Finally, given that depression is more prevalent for women than men (Weissman, 1987), it seems plausible that the pathways through which neuroticism leads to symptoms may also differ as a function of sex. Prevalence rates of depression are quite similar for girls and boys until early adolescence, when a gender gap emerges (Wichstrom, 1999). Socialization processes that solidify traditional gender roles (e.g., men favor independence, women are nurturing) become pronounced during puberty and intensify throughout the lifespan (i.e., gender intensification hypothesis; Hill & Lynch, 1983). Researchers speculate that increasing pressure to conform to gender roles during adolescence may account for differences in prevalence rates that emerge during this developmental period. Specifically, girls tend to face greater psychosocial challenges related to gender role orientation which, in turn, contributes to depression (Wichstrom; Nolen-Hoeksema & Girgus, 1994). Perhaps throughout the lifespan, the environmental factors that play the most prominent roles in the etiology of psychopathology for men versus women are related to gender roles. For example, environmental events threatening one's autonomy may be more salient for men whereas more interpersonally-oriented factors may be more salient for women.

The Present Study

The principal goal of the present study was to explain how marital processes transact with neuroticism and chronic stress during the transition into marriage to impact internalizing symptoms over the first 7 years of marriage. We offer several hypotheses about specific pathways among variables. First, consistent with the stress-generation model (Hammen, 1991) and VSA theory (Bradbury, Cohan, & Karney, 1998; Karney & Bradbury, 1995), we hypothesized that neuroticism would predict higher levels of chronic stress and more maladaptive relationship processes. Second, we predicted that stress and relationship processes would be interrelated, also consistent with the VSA theory. Third, we predicted that relationship processes would significantly predict symptoms when controlling for neuroticism, replicating previous findings indicating that the link between marriage and depression is not purely an artifact of selection into more dysfunctional environments for those with greater vulnerability (Beam et al., 2011; Whisman et al., 2006).

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In accord with the gender intensification hypothesis (Hill & Lynch, 1983), we anticipated that certain sex differences would emerge. Specifically, we predicted that issues of power and control in the relationship (i.e., inability to negotiate control across a variety of areas, disrespect for autonomy and competency, asymmetry in decision-making and power) would emerge as a particularly salient risk factor for husbands given that such issues may reflect a threat to husbands' autonomy. In contrast, we predicted that a relative lack of emotional intimacy would be most salient for wives given that more interpersonally-oriented factors are expected to be most salient for women. Further, given the importance of relationships to women, we also predicted that marital functioning would be more prominent in the development of internalizing symptoms for wives relative to stressors generated outside of the marriage (e.g., work stress, strain in other interpersonal relationships, chronic health issues).

We also propose a series of methodological refinements. First and foremost, a multi-wave longitudinal design is necessary to identify and explore *risk factors* for internalizing disorders (correlates that temporally precede symptoms). Second, as highlighted in the *National Institute of Mental Health* research agenda for prevention research (Reiss & Price, 1996), risk factors need to be assessed during major life-transitions such as the transition into marriage. Third, given the high rates of comorbidity across and within disorders and the heterogeneity within diagnostic classes, it is essential to examine internalizing disorders dimensionally (at the symptom level) rather than categorically (at the diagnostic level; Watson, 2005). This approach also allows us to retain important information about subthreshold symptoms, which is particularly important given our goal of examining symptoms in normative samples that have lower rates of diagnoses yet still exhibit functional impairment.

Fourth, we propose examining *multiple* relationship processes simultaneously, an approach exemplified in a recent study. Brock & Lawrence (2011) demonstrated univariate associations among four relationship processes (conflict, support, emotional intimacy, power/control) and internalizing symptoms; however, when examining the simultaneous effects of these variables on symptoms, control was associated with husbands' symptoms whereas (low) emotional intimacy was associated with wives' symptoms. This study represents an important step in identifying the aspects of the marital relationship contributing to individual psychopathology; however, it is unclear whether these relationship processes represent predictors of symptoms when considered in the context of their complex relations with key diatheses and stressors (neuroticism and chronic stress).

Method

Participants and Procedures

Participants were recruited through marriage license records in the Midwest. Couples in which both spouses were at least 18 years of age were mailed letters inviting them to participate, and 350 couples responded. Interested couples were screened over the telephone to ensure that they were married less than 6 months and in their first marriages. The first 105 couples who completed the screening procedures, were deemed eligible, and were able to schedule appointments were included in the sample. Of the 105 couples who participated,

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one couple's data were deleted because it was revealed during the laboratory session that it was not the wife's first marriage. Data from the husband of another couple were removed because his responses were deemed unusable and unreliable. Analyses were conducted with 103 couples.

Couples dated an average of 44 months (*SD* = 27) prior to marriage, 76% cohabited premaritally, and 15% identified themselves as ethnic minorities. Modal annual joint income ranged from $40,001- $50,000. Husbands' average age was 25.82 (*SD* = 3.55), and wives' average age was 24.78 (*SD* = 3.67). Modal years of education were 14 for both spouses. Eligible couples completed questionnaires through the mail (as well as completing other procedures beyond the scope of this study) six times during the first 7 years of marriage: at 3–6 months (Time 1), 12–15 months (Time 2), 21–24 months (Time 3), 30–33 months (Time 4), 54–57 months (Time 5), and 75–77 months (Time 6) of marriage. At Time 1, couples also attended an appointment during which they were administered semi-structured interviews to assess relationship processes. Couples were paid between $25 and $100 at each time point, depending on the number of participation hours requested. By Time 6, 12 couples had permanently separated/divorced, and 5 couples had withdrawn from the study (95% retention rate).

Measures

Internalizing symptoms—The *Beck Anxiety Inventory* (*BAI;* Beck & Steer, 1990) is widely used in the assessment of anxiety symptoms (e.g., nervousness, inability to relax). Participants respond to 21 items on a 0 (not at all) to 3 (I could barely stand it) scale, with higher scores indicative of more symptoms. The *Beck Depression Inventory – 2* (*BDI-2;* Beck, Steer, & Brown, 1996) is one of the most widely used self-report measures of depressive symptoms (e.g., sadness, pessimism). Participants respond to 21 items on a scale ranging from 0 to 3. Brock & Lawrence (2011) conducted a factor analysis of items on the BAI and the BDI-2 in order to identify the higher-order factor shared by these items. Based on the results of this factor analysis (identifying 37 items representing a general internalizing dimension), sum scores were created such that higher scores were indicative of more symptoms (possible range: 0–111). Coefficient alphas ranged from .89 to .92 for husbands and from .88 to .93 for wives across the 5 waves of data. Notably, the BAI was not administered at Time 4 and, therefore, scores of symptoms were not computed at Time 4.

Neuroticism—The *Schedule for Nonadaptive and Adaptive Personality - 2nd Edition* (SNAP-2; Clark, Simms, Wu, & Casillas, in press) is a 375-item factor analytically derived self-report inventory designed to assess personality traits extending from the normal into the pathological range. The measure has a true/false response format. The SNAP-2 comprises three temperament scales (negative, positive, disinhibition), 12 trait scale (which measure more specific, primary traits of the three broad dimensions and may be viewed as stable over time) and 13 diagnostic scales. The SNAP-2 demonstrates good internal consistency, discriminant validity, and test–retest reliability across multiple samples (Reynolds & Clark, 2001). The Negative Temperament (i.e., neuroticism) scale comprises 28 items. Coefficient alphas were .91 for husbands and .92 for wives.

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Non-marital chronic stress—The *Chronic Strains Inventory* (*CSI*; Hammen, Adrian, Gordon, Burge, Jaenicke, et al., 1987) is a modification of an interview protocol developed by Hammen et al. and was used to assess chronic stress via a self-report, paper-and-pencil method. This modified version has been widely used in research (e.g., Karney, Story, & Bradbury, 2005) and involves a consideration of *multiple* domains of life from which chronic stress originates. Chronic role strain was examined (versus acute life events) given that (a) acute events tend to occur at minimal frequency and the majority of variance in one's total stress is accounted for by *chronic* stress alone (Brown & Harris, 1986), (b) chronic stress is a greater predictor of depression (McGonagle & Kessler, 1990), and (c) chronic stress is critical to understanding how stress contributes to the long-term course of a disorder (Monroe & Simmons, 1991).

The CSI covers numerous life domains including: child-rearing activities, relationships with one's own family, relationships with in-laws, relationships with friends, school, work, being a homemaker, financial status, and physical health. Participants rate their experiences over the previous 6 months for each domain using 9-point Likert scales such that 9 represents "absolutely no stress in that domain," 5 represents "some stress in that domain," and 1 represents "extremely high levels of stress in that domain." Composite scores were obtained by reverse scoring and averaging items so that high scores corresponded to greater stress. An average score was calculated because not all domains applied to everyone (e.g., school).

Relationship processes—Relationship processes were measured with the *Relationship Quality Inventory* (*RQI;* Lawrence et al., 2011, 2009, 2008), a 60-minute semi-structured interview designed to facilitate functional analyses across the following relationship processes which consistent of multiple facets that serve as indicators of overall functioning:

Conflict/problem-solving interactions: frequency and length of arguments; behaviors engaged in during conflicts; presence, levels and severity of negative affect, aggression or withdrawal during arguments; emotions and behaviors during arguments; recovery strategies after arguments

Support transactions: quality of support when one partner is feeling down or has a problem; match between desired and received levels of support; whether support is offered in a positive or negative manner; mutuality of support provided and received

Emotionally intimate transactions: mutual sense of closeness, warmth, interdependence and affection; comfort being emotionally vulnerable and being oneself with each other; quality of self-disclosures; friendship; demonstrations of love and affection (verbal and physical)

Balance of power and control in the relationship: couple's ability to negotiate control across a variety of areas (e.g., scheduling one's own day, finances); treatment of each other as competent, independent adults; a/symmetry in decision-making and power

When administering the RQI, spouses are interviewed separately and simultaneously. Open-ended questions—followed by closed-ended questions—are asked to allow novel contextual

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information to be obtained. Concrete behavioral indicators are solicited to facilitate more objective ratings than might be obtained based on spouses' perceptions alone. Interviewers make ratings to eliminate the possibility that spousal ratings may be biased by other factors (e.g., depression, social desirability). Ratings (on a scale of 1–5) are made for individual items reflecting different facets of a particular domain (e.g., frequency of arguments, level of physical aggression, conflict resolution strategies). We refer the reader to Lawrence et al. (2011) for detailed and comprehensive information about these facets. Ratings on individual items, along with other contextual information obtained during the interview, are then used to inform global ratings of each domain on scales from 1 (poor functioning) to 9 (high functioning). The RQI was administered at a mean of 3 months of marriage and assesses functioning over the "previous 6 months;" therefore, in the present study, the RQI captured processes during the transition into marriage. Ratings based on interviews with husbands versus wives did not differ significantly, so they were averaged to create scores of functioning at the couple level. Intraclass correlations ranged from .71–.94, demonstrating adequate inter-rater reliability. The RQI demonstrates strong convergent and divergent validity.

Data Analyses

Analyses were conducted with Mplus (Muthen & Muthen, 2010). Growth trajectories of symptoms over seven years were examined using latent trajectory modeling (LTM; Curran & Hussong, 2003) with five waves of data (Times 1, 2, 3, 5 and 6). Multiple indices were used to assess global model fit. The chi-square to degrees of freedom ratio ($\chi 2$/df; Wheaton, Muthen, Alwin, & Summers, 1977), the Comparative Fit Index (CFI; Bentler, 1990), the Tucker-Lewis Index (TLI; Tucker & Lewis, 1973), the Root Mean Square Error of Approximation (RMSEA; Browne & Cudeck, 1993), and the Standard Root Mean Residual (SRMR; Hu & Bentler, 1999) are reported. For the Chi-Square to degrees of freedom ratio, values below 2 indicate adequate fit. For the CFI and TLI values of .90 or greater reflect adequate fit of the model. For the RMSEA and SRMR, values of .05 or less indicate good fit, values up to .08 indicate reasonable fit, values ranging from .08–.10 indicate mediocre fit, and values greater than .10 indicate a poor fitting model (MacCallem, Browne, & Sugawara, 1996).

Results

All variables met multivariate normality assumptions. Means and *SD*s are reported in Table 1. Interspousal correlations (e.g., husband neuroticism and wife neuroticism) were generally small in magnitude (< .30; J. Cohen, Cohen, West, & Aiken, 1983). Predictors and outcomes, including each of the relationship processes, were sufficiently distinct to warrant examining them as separate (albeit related) constructs. Missing data were addressed via maximum likelihood estimation in Mplus.

Latent Trajectory Model

A structural equation modeling (SEM)-based LTM (Curran & Hussong, 2003) was tested in which repeated measures of symptoms were used as multiple indicators of two correlated latent factors including: (a) an intercept factor which was modeled as the midpoint of the

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assessment period such that it represented overall levels of internalizing symptoms, and (b) a slope factor which represented the linear slope of the trajectory or change in symptoms over time. The residual non-independence in outcome scores was represented by correlations between the error terms of the latent variables to account for the possibility of interdependence between husbands' and wives' data (Kenny, Kashy, & Cook, 2006).

Results indicated that, on average, husbands' symptoms decreased over the first 7 years of marriage (γ = −.50, *SE* = .21, $p < .05$), and there was significant variability for this factor (γ = 1.76, *SE* = .66, $p < .01$). However, wives' symptoms did not change systematically over time (γ = −.28, *SE* = .21, *p* = *ns*), nor was there significant variability (γ = .25, *SE* = .74, *p* = *ns*). Consequently, the variance for the wives' slope factor was fixed to zero and was not included as an outcome variable in the subsequent analyses. This model yielded satisfactory fit, $\chi 2(40, N= 103) = 56.387$, p <.05, $\chi 2/df = 1.41$, CFI = .94, TLI = .93, RMSEA = .063, SRMR = .077.

Testing the Hypothesized Model of Internalizing Symptoms

We specified and tested an integrated model including neuroticism, stress, and relationship processes (RPs) simultaneously predicting husband intercept, husband slope, and wife intercept latent variables. The final model included the following specifications: (a) each risk factor predicting each symptom variable, (b) husband neuroticism and wife neuroticism predicting each of the environmental risk factors (stress and the four relationship processes), and (c) covariance among environmental risk factors (stress and relationship processes). Estimation of this model yielded satisfactory fit, $\chi 2(96, N= 103) = 146.17$, p <.001, $\chi 2/df = 1.52$, CFI = .93, TLI = .88, RMSEA = .071, SRMR = .070. This model explained 56.6% of the variance in husbands' overall symptom levels, 23.5% of the variance in change in husbands' symptoms over time, and 55.5% of the variance in wives' overall symptom levels.

With regard to relations among risk factors, husband neuroticism and wife neuroticism did not significantly covary (γ = .09, *SE* = .11, *p* = *ns*), nor did husband stress and wife stress (γ = .13, *SE* = .10, *p* = *ns*). Neuroticism predicted greater stress and poorer relationship functioning. See Figure 1 for significant path coefficients between neuroticism and environmental risk factors. The one exception was that wife neuroticism did not significantly predict husband stress (γ = −.01, *SE* = .10, *p* = *ns*). Husband stress was not related to any of the relationship processes (γ s ranged from −.05 to .06). In contrast, wife stress was related to low intimacy (γ = −.20, *SE* = .10, $p < .05$), poor support (γ = −.34, *SE* = .09, $p < .001$), relational control (γ = −.33, *SE* = .09, $p < .001$), and poor conflict management (γ = −.17, *SE* = .10, $p < .10$). As expected, relationship processes significantly covaried with one another (γ s ranged from .48 to .69).

When accounting for the simultaneous effects of all risk factors on the outcomes, only certain variables emerged as uniquely linked to internalizing symptoms. See Figure 1 for significant path coefficients between risk factors and outcomes. For husbands, imbalance of power and control, greater (husband) stress, and higher levels of (husband) neuroticism each uniquely predicted greater overall levels of internalizing symptoms averaged across time. To the extent that there was greater partner support in the marriage there was steeper decline

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(improvement) in symptoms over time. Further, *higher* levels of (husband) neuroticism were also associated with greater decline in symptoms over the first 7 years of marriage; this may be an indicator of men at greater risk benefiting more from the protective effects of marriage. For wives, lack of emotional intimacy and higher degrees of neuroticism predicted wives' overall symptom levels. Further, greater conflict management actually predicted *more* symptoms.

Post-hoc Analyses: **Conflict management and wives' symptoms—**When examining the univariate association between conflict management and the wife intercept variable, greater conflict management was not associated with symptoms ($\alpha = -1.12$, SE = .66, p = ns). However, in the larger integrated model, an effect emerged such that greater conflict management (i.e., fewer arguments, less negative affect, lower levels of aggression) was actually associated with more symptoms ($\alpha = .35$, SE = .13, $p < .01$). A series of exploratory analyses revealed that it was the addition of wife neuroticism to the model that led to this suppression effect. Therefore, it appears that the unique variance in conflict management *not accounted for by wife neuroticism* is associated with more symptoms. Although global scores of relationship processes were examined in the primary analyses, we were able to use information collected during the semi-structured interviews to capture specific components of conflict management (e.g., level of physical aggression, frequency of arguments). Ratings of each individual component were made by interviewers using a Likert scale ranging from 1(poor functioning) to 5 (high functioning). These ratings were used to identify which aspects of conflict management were related to neuroticism. Correlations between wife neuroticism and specific components of the conflict management measure support suggest that higher levels of neuroticism are associated with greater psychological aggression ($r = .22$, $p < .05$) and physical aggression ($r = .23$, $p < .05$) during arguments; however, neuroticism was not associated with frequency of major arguments ($r = -.12$, p = ns) or minor arguments ($r = -.03$, p = *ns*). Therefore, one explanation for the observed suppression effect is that more frequent arguments indicate engagement and emotional connection (as opposed to disengagement and avoiding issues in the relationship) which may help to minimize internalizing symptoms for wives.

Discussion

The principal goal of the present study was to test an integrated conceptual framework to explain how marital functioning transacts with neuroticism and non-marital stress to impact internalizing symptoms over the first 7 years of marriage. Results indicate that the vulnerabilities individuals bring to their marriages (i.e., neuroticism), the stressors they encounter during the transition into marriage, and the relationship skills they possess at the onset of marriage each make unique and notable contributions to internalizing symptoms. Indeed, the model tested in the present study accounted for nearly half of the variance in husbands' and wives' symptoms.

Consistent with our hypotheses, neuroticism was associated with greater chronic stress and more maladaptive relationship processes with one exception: husbands' neuroticism was not associated with wives' stress. Also consistent with our hypotheses, wives' stress and relationship processes were interrelated. In contrast, husbands' stress was not significantly

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associated with any of the relationship processes under investigation. This finding was unexpected given theory and research suggesting that daily stress can lead to deterioration of the relationship (see Randall & Bodenmann, 2009 for a review of the literature). Indeed, research has demonstrated that greater role strain over the first five years of marriage is associated with linear decline in marital satisfaction for husbands (Brock & Lawrence, 2008). Nonetheless, this finding should be interpreted with caution. Given that stress and relationship processes were examined at the same point in time in the present study, conclusions about temporal relations cannot be made. Further, the deleterious effects of husbands' stress on marital functioning may take time to develop and may not be present during the transition into marriage. Finally, husbands' stress is significantly associated with wives' stress which, in turn, is related to all four relationship processes. This suggests that perhaps husbands' stress leads to relationship dysfunction by maximizing wives' experiences of stress.

Also consistent with our predictions, the effects of certain relationship processes on symptoms were significant after controlling for neuroticism, replicating research suggesting that the link between marital discord and depression is not simply an artifact of selection effects, and also expanding this finding to include the broad spectrum of internalizing symptoms (rather than depression alone).

By testing an integrated conceptual framework, we were able to explicate the specific environmental pathways through which neuroticism contributes to symptoms. For husbands, four prominent pathways emerged through which one's diathesis ultimately impacts symptoms:

> **Pathway #1**: Neuroticism has a ***direct effect*** on symptoms: higher levels of husbands' neuroticism were associated with greater symptoms during the early years of marriage.
>
> **Pathway #2**: Neuroticism contributes to symptoms ***through stress***: higher levels of neuroticism were associated with greater stress experienced by husbands which, in turn, was associated with greater symptoms.
>
> **Pathway #3**: Neuroticism contributes to symptoms ***through an imbalance of power and control*** in one's marriage (i.e., inability to negotiate control across a variety of areas, disrespect for autonomy and competency, asymmetry in decision-making and power): husbands high in neuroticism are more likely to experience disrespect or act disrespectfully toward their wives and be in relationships characterized by unbalanced decision-making and a lack of autonomy which, in turn, is associated with higher symptom levels.
>
> **Pathway #4:** Neuroticism contributes to symptoms ***through poor partner support*** in one's marriage: husbands high in neuroticism are more likely to report inadequate and unhelpful support from their spouses in response to stress which, in turn, contributed to less linear decline in symptoms over time.

There are several notable features of these pathways that warrant further consideration. First, the effects of power and control and partner support on symptoms were only marginally

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significant when accounting for non-marital stress. This suggests that, perhaps, stressors originating outside of the marriage play a more critical role than relationship functioning in psychopathology. Second, although we identified four distinct pathways, the direct effect of neuroticism on symptoms remained significant and large in magnitude. Finally, although four pathways emerged, there were also indirect pathways through which *wives* influenced husbands' symptoms. To the extent that wives were higher in neuroticism, they experienced greater stress which, in turn, was associated with an imbalance of power and control and poor partner support—two of the principal risk factors for husbands. This further demonstrates dyadic influences on psychopathology that are often overlooked in the literature.

For wives, there were two pathways through which neuroticism contributed to symptoms:

> **Pathway #1**: Neuroticism has a ***direct effect*** on symptoms: higher levels of wives' neuroticism were associated with greater symptoms during the early years of marriage.
>
> **Pathway #2**: Neuroticism contributes to symptoms ***through low levels of emotional intimacy***: higher neuroticism was associated with a lack of closeness, warmth, affection, and interdependence in one's relationship which, in turn, was associated with symptoms.

Again, several points warrant consideration. First, when accounting for the effect of intimacy on symptoms, wives' stress *did not* contribute to symptoms. Therefore, although chronic stress outside of one's marriage plays a salient role in men's psychopathology, marital functioning is more critical for women. The only role that wives' stress played was through its influence on intimacy: higher levels of stress were associated with lower levels of closeness and affection which directly influenced symptoms. Researchers have speculated that marital processes may play a more critical role in the mental health of women than men because women tend to be more interpersonally oriented (Nolen-Hoeksema & Girgus, 1994) and view their relationships as more central to their identities (Culp & Beach, 1998) whereas men are socialized to be more independent. Results of the present study provide support for this assertion and for our hypotheses. Second, although these results are compelling, it is important to note that, similar to men, neuroticism alone had a notable and *direct* effect on women's psychopathology. Husbands also appeared to indirectly influence wives: husbands' neuroticism was associated with lower levels of intimacy—a key risk factor for developing symptoms—and greater stress (which indirectly influences symptoms through its effect on intimacy in the marriage).

Third, another risk factor for wives' symptoms emerged that was independent of the effect of neuroticism: conflict management. High neuroticism contributes to poor conflict management; however, the components of conflict management that are not related to neuroticism (frequency of arguments) appear to be associated with symptoms. Perhaps women who sacrifice their own needs and desires by avoiding bringing up important topics in their relationships experience less frequent arguments, but this in turn has a negative impact on their mental health. This pattern of avoidance would be consistent with more traditional gender roles of women which are characterized by nurturance and affection as

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opposed to assertiveness and dominance (Hill & Lynch, 1983). Alternatively, women may attempt to assert their needs and opinions but their husbands may refuse to engage in these discussions, consistent with the typical gender structure of the demand-withdraw pattern observed during marital conflict (Christensen & Heavey, 1990). In both scenarios, women might be left with unresolved concerns and unmet needs that may contribute to higher levels of internalizing symptoms over time.

Finally, although balance of power and control and adequate partner support emerged as especially important for men, and emotional intimacy and frequency of arguments were most critical to women, it is important to recognize the interrelations among dyadic processes when interpreting these findings. Power and control, conflict management, partner support, and emotional intimacy are all facets of a higher-order construct of marital quality and were moderately correlated with one another in the present study. Therefore, even though certain relationship process did not play *direct* roles in husband versus wife symptoms, their indirect influences on psychopathology—through their associations with other aspects of marital functioning—should not be discounted.

Implications of the Present Study

Before turning to a discussion of study implications, we note various methodological limitations. First, although the sample size was comparable to many studies of marital couples, replication with a larger sample is recommended. Second, the sample consisted primarily of White non-Hispanic, well-educated, heterosexual married couples; such demographic factors limit the generalizability of our findings. Third, the study was not experimental; thus, causal conclusions cannot be drawn. Fourth, couples generally reported high levels of marital quality and relatively low levels of symptoms; associations may differ in clinical samples with greater marital discord and higher symptom levels that cross the threshold for diagnosable psychopathology. Finally, protective factors (e.g., social support from sources other than the marital relationship, individual coping styles) mitigating the effects of risk factors identified in the present study and potential interactions among relationship processes, were not examined. Investigation of moderation effects should be pursued in future research.

Theoretical and empirical implications—Results of the present study have numerous implications. First and foremost, they suggest that dyadic processes transact with other well-established risk factors (i.e., neuroticism and stress) to influence individual psychopathology. Indeed, in some cases, specific aspects of marriage were actually more influential than diathesis or stress. For example, wives' marital functioning represented the *central* pathway through which neuroticism contributed to symptoms, whereas non-marital stress did not impact symptoms when accounting for marital factors. Taken together, the results not only support principles consistent with a family systems perspective in general and with a marital discord model of depression specifically, but also suggest that etiological frameworks and research on risk factors for internalizing symptoms may be enhanced by recognizing the role of marital processes in psychopathology.

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Second, when considering the role of marriage within the context of a diathesis-stress framework, notable sex differences emerged. Consistent with the *gender intensification hypothesis* (Hill & Lynch, 1983), gender roles for women (nurturing, affectionate, and compassionate caregivers) and men (autonomous, dominant, and self-reliant) intensify with age. By the time individuals marry, these gender roles are expected to be prominent and have the potential to play a role in psychopathology. Results of the present study provide support for this assertion. For men, the primary pathway through which neuroticism influenced symptoms was through *non-marital* stress. Further, imbalance of power and control was associated with greater symptoms, and this relationship process is characterized by a *loss of independence* and freedom to make one's own decisions. In contrast, the principal pathway for women was through emotional intimacy. If women felt a lack of closeness, warmth, affection, and interdependence in their relationships, they experienced greater symptoms over the first 7 years of marriage. This provides evidence to be considered in the long-standing debate that marriage may be more important to the mental health of women than men (Beach, Smith, & Fincham, 1994). In particular, taking into account non-marital stress helped to exemplify the relative importance of the marital relationship for women.

Clinical implications—Existing marital preparation programs target the transition into marriage; therefore, examining marital processes at the onset of marriage has implications for adapting these programs to not only prevent marital discord, but also internalizing symptoms. Specifically, targeting marital processes would likely weaken some of the prominent pathways through which neuroticism influences psychopathology, especially for women. This is particularly advantageous because marital processes have been successfully targeted in existing interventions (e.g., PREP; Markman, Stanley, & Blumberg, 1994). In contrast, stressors are relatively unpredictable and uncontrollable, and neuroticism is stable in nature, making them less ideal clinical targets.

Second, identifying risk factors for a *range* of disorders is especially critical for preventive efforts given that (a) it is unclear which specific disorders individuals participating in prevention programs might ultimately develop and (b) substantial comorbidity among disorders suggests that individuals will likely develop *multiple* forms of psychopathology. In this context, intervention components narrowly focused on preventing a specific disorder will have limited utility. Results of the present study indicate that marital dysfunction functions as a *general* risk factor for the *broad* range of internalizing disorders, even when accounting for other well-established risk factors. Thus, results suggest that helping couples develop healthy relationship skills during the transition into marriage has the potential to broadly promote mental health.

Third, it appears that the aspects of one's marital relationship most critical include balance of power and control and adequate partner support for men and emotional intimacy and opportunities to resolve disagreements for women. Existing marital preparation programs are largely focused on developing conflict management and resolution skills. Tailoring these programs to also prioritize other key components (e.g., teaching couples how to preserve and respect one another's autonomy while simultaneously promoting interdependence and close intimate bonds, helping couples to be more skillful at soliciting and providing

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adequate and helpful support) has the potential to maximize the scope of influence of such programs to not only prevent marital discord and divorce, but also individual psychopathology.

Although we propose that it important to help couples build healthy relationship skills, this is not sufficient for preventing psychopathology. Indeed, our results highlight the importance of helping individuals learn strategies for coping with stress originating outside of the marriage (especially for men) and promoting distress tolerance and emotion regulation (especially for individuals high in neuroticism) for men and women. One of the notable strengths of marital preparation programs is that they are widely disseminated and present a unique opportunity to teach skills that will broadly promote mental health. Indeed, there are few alternative occasions throughout the lifespan when individuals will have this opportunity. Marital preparation programs may be the only occasion for some to participate in a psychological education program. Accordingly, we propose expanding the scope of these programs to include components that target a range of core skills for promoting both dyadic and individual well-being.

We conclude with tentative recommendations for tertiary interventions. Results of the present study suggest the potential benefits of having couple therapists routinely assess multiple domains of the relationship (e.g., partner support, emotional intimacy) as opposed to focusing exclusively on the presenting problem (e.g., conflict). Helping couples enhance functioning in multiple domains appears highly relevant to effectively targeting dysfunction in the problem area given the strong relations among distinct relationship processes. Moreover, enhancing relationship functioning more globally serves to strengthen the couple relationship, which results suggest may decrease the risk of individual psychopathology.

Results also have implications in the context of individual therapy. If clients report dysfunction in their intimate relationships, a referral to couple therapy as an adjunct to individual therapy may prove beneficial; however, even when there is not apparent relationship dysfunction, depressed or anxious individuals may benefit from participating in couple counseling to promote more adequate support for coping with individual problems, greater emotional intimacy, better conflict management, and more balanced power and control dynamics in the relationship. Enhancement of relationship functioning while simultaneously promoting intrapersonal changes in individual therapy may result in more effective and efficient treatment of depression and anxiety.

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References

Barry RA, Bunde M, Brock RL, Lawrence E. Validity and utility of a multidimensional model of received support in intimate relationships. Journal of Family Psychology. 2009; 23:48–57. [PubMed: 19203159]

Beach SRH, Katz J, Kim S, Brody GH. Prospective effects of marital satisfaction on depressive symptoms in established marriages: A dyadic model. Journal of Social and Personal Relationships. 2003; 20:355–371.

Beach SRH, Martin JK, Blum TC, Roman PM. Effects of marital and co-worker relationships on negative affect: testing the central role of marriage. The American Journal of Family Therapy. 1993; 21:313–323.

Beach, SRH.; Sandeen, EE.; O'Leary, KD. Depression in marriage. NY: Guilford; 1990.

Beach SRH, Smith DA, Fincham FD. Marital interventions for depression: Empirical foundation and future prospects. Applied & Preventive Psychology. 1994; 3:233–250.

Beck, AT.; Steer, RA. Manual for the Beck Anxiety Inventory. TX: Psych. Corp.; 1990.

Beck, AT.; Steer, RA.; Brown, GK. Manual for Beck Depression Inventory-II. San Antonio, TX: Psychological Corporation; 1996.

Bentler PM. Comparative fit indexes in structural models. Psychological Bulletin. 1990; 107:238–246. [PubMed: 2320703]

Bradbury, TN.; Cohan, CL.; Karney, BR. Optimizing longitudinal research for understanding and preventing marital dysfunction. In: Bradbury, TN., editor. The developmental course of marital dysfunction. Cambridge Press; 1998. p. 279-311.

Brock RL, Lawrence E. A longitudinal investigation of stress spillover in marriage: does spousal support adequacy buffer the effects? Journal of Family Psychology. 2008; 22:11–20. [PubMed: 18266528]

Brock RL, Lawrence E. Marriage as a risk factor for internalizing disorders: clarifying scope and specificity. Journal of Consulting and Clinical Psychology. 2011; 79:577–89. [PubMed: 21823784]

Browne, MW.; Cudeck, R. Alternative ways of assessing model fit. In: Bollen, KA.; Long, JS., editors. Testing structural equation models. Newbury Park: Sage; 1993. p. 445-455.

Brown GW, Harris TO. Crises and life changes and the onset of schizophrenia. Journal of Health and Social Behavior. 1986; 9:203–214. [PubMed: 5676853]

Christensen A, Heavey CL. Gender and social structure in the demand/withdraw pattern of marital conflict. Journal of Personality and Social Psychology. 1990; 59:73–81. [PubMed: 2213491]

Clark, LA.; Simms, LJ.; Wu, KD.; Casillas, A. Schedule for Nonadaptive and Adaptive Personality. 2nd ed.. MN: University of Minnesota; in press

Cohen, J.; Cohen, P.; West, SG.; Aiken, LS. Applied multiple regression/correlation analysis for the behavioral sciences. 2nd ed.. Hillsdale, NJ: Erlbaum; 1983.

Culp LN, Beach SRH. Marriage and depressive symptoms: The role and bases of self-esteem differs by gender. Psychology of Women Quarterly. 1998; 22:647–663.

Curran PJ, Hussong AM. The use of latent trajectory models in psychopathology research. Journal of Abnormal Psychology. 2003; 112:526–544. [PubMed: 14674867]

Dehle C, Larsen D, Landers JE. Social support in marriage. American Journal of Family Therapy. 2001; 29:307–324.

Fincham FD, Beach SRH, Harold GT, Osborne LN. Marital satisfaction and depression. Psychological Science. 1997; 3:351–357.

Hammen C. Generation of stress in the course of unipolar depression. Journal of Abnormal Psychology. 1991; 100:555–561. [PubMed: 1757669]

Hammen C. Stress and depression. Annual Review of Clinical Psychology. 2005; 1:293–319.

Hammen C, Adrian C, Gordon D, Burge D, Jaenicke C, Hiroto D. Children of depressed mothers: Maternal strain and symptom predictors of dysfunction. Journal of Abnormal Psychology. 1987; 96:190–198. [PubMed: 3680756]

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Hautzinger M, Linden N, Hoffman N. Distressed couples with and without a depressed partner: An analysis of their verbal interaction. Journal of Behavioral Therapy and Experimental Psychiatry. 1982; 13:307–314.

Hettema JM, Neale MC, Myers JM, Prescott CA, Kendler KS. A population-based twin study of the relationship between neuroticism and internalizing disorders. American Journal of Psychiatry. 2006; 163:857–864. [PubMed: 16648327]

Hill, JP.; Lynch, ME. The intensification of gender-related role expectations during early adolescence. In: Brooks-Gunn, J.; Petersen, AC., editors. Girls at puberty. New York: Academic Press; 1983. p. 201-228.

Horwitz AV, McLaughlin J, White HR. How the negative and positive aspects of partner relationships affect the mental health of young married people. Journal of Health and Social Behavior. 1997; 39:124–136. [PubMed: 9642903]

Hu, LT.; Bentler, PM. Evaluating model fit. In: Hoyle, RH., editor. Structural equation modeling: Concepts, issues, and applications. Thousand Oaks, CA: Sage; 1995. p. 76-99.

Ingram, RE.; Luxton, DD. Vulnerability-stress models. In: Hankin, BL.; Abela, JRZ., editors. Development of psychopathology: A vulnerability-stress perspective. Newbury Park, CA: Sage; 2005. p. 32-46.

Karney BR, Bradbury TN. The longitudinal course of marital quality and stability: A review of theory, methods, and research. Psychological Bulletin. 1995; 118:3–34. [PubMed: 7644604]

Karney, BR.; Story, LB.; Bradbury, TN. Chronic and acute stress among newlyweds. In: Revenson, TA.; Kayser, K.; Bodenmann, G., editors. Couples coping with stress. DC: APA; 2005. p. 13-32.

Kendler, KS.; Prescott, CA. Genes, environment, and psychopathology: Understanding the causes of psychiatric and substance use disorders. NY: Guilford; 2006.

Kendler KS, Prescott CA, Myers J, Neale MC. The structure of genetic and environmental risk factors for common psychiatric and substance use disorders in men and women. Archives of General Psychiatry. 2003; 60:929–937. [PubMed: 12963675]

Kendler KS, Thorton LM, Gardner CO. Genetic risk, number of previous depressive episodes, and stressful life events in predicting onset of major depression. American Journal of Psychiatry. 2001; 158:582–586. [PubMed: 11282692]

Kenny, DA.; Kashy, DA.; Cook, WL. Dyadic data analysis. NY: Guilford Press; 2006.

Kessler RC. The effects of stressful life events on depression. Annual Review of Psychology. 1997; 48:191–214.

Kraemer HC, Stice E, Kazdin A, Offord D, Kupfer D. How do risk factors work together? Mediators, moderators, and independent, overlapping, and proxy risk factors. American Journal of Psychiatry. 2001; 158:848–856. [PubMed: 11384888]

Kreider, RM.; Fields, JM. Current population reports. Washington, DC: US Census Bureau; 2001. Number, timing, and duration of marriages and divorces: Fall 1996; p. 70-80.

Lawrence E, Barry R, Brock RL, Bunde M, Langer A, Ro E, Dzankovic S. The relationship quality interview: Evidence of reliability, convergent and divergent validity, and incremental utility. Psychological Assessment. 2011; 23:44–63. [PubMed: 21280953]

Lawrence, E.; Brock, RL.; Barry, R.; Langer, A.; Bunde, M. Assessing relationship quality: Development of an interview and implications for couple assessment and intervention. In: Cuyler, E., editor. Psychology of relationships. New York, NY: Nova Science Publishers, Inc; 2009. p. 173-189.

Lawrence E, Pederson A, Bunde M, Barry R, Brock RL, Fazio E, Dzankovic S. Objective ratings of relationship skills across multiple domains as predictors of marital satisfaction trajectories. Journal of Social and Personal Relationships. 2008; 25:445–466. [PubMed: 19122752]

Lawrence E, Yoon J, Langer A, Ro E. Is psychological aggression as detrimental as physical aggression? Violence and Victims. 2009; 24:20–35. [PubMed: 19297883]

MacCallem RC, Browne MW, Sugawara HM. Power analysis and determination of sample size for covariance structure modeling. Psychological Methods. 1996; 1:130–149.

Markman, HJ.; Stanley, SM.; Blumberg, SL. Fighting for your marriage: Positive steps for preventing divorce and preserving a lasting love. San Francisco, CA: Jossey-Bass; 1994.

NIH-PA Author Manuscript

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NIH-PA Author Manuscript

McGonagle KA, Kessler RC. Chronic stress, acute stress, and depressive symptoms. American Journal of Community Psychology. 1990; 18:681–706. [PubMed: 2075897]

McGonagle KA, Schilling EA. The frequency and determinants in a community sample. Journal of Social and Personal Relationships. 1992; 9:507–524.

Muthen, LK.; Muthen, BO. Mplus User's Guide. Sixth Edition. Los Angeles, CA: Muthen & Muthen; 1998–2010.

Nolen-Hoeksema S, Girgus JS. The emergence of gender differences in depression during adolescence. Psychological Bulletin. 1994; 115:424–443. [PubMed: 8016286]

Randall A, Bodenmann G. The role of stress on close relationships and marital satisfaction. Clinical Psychology Review. 2009; 29:105–115. [PubMed: 19167139]

Rehman US, Gollan J, Mortimer AR. The marital context of depression: Research, limitations, and new directions. Clinical Psychology Review. 2008; 28:179–198. [PubMed: 17573169]

Reiss D, Price RH. National research agenda for prevention research: The national institute of mental health report. American Psychologist. 1996; 51:1109–1115. [PubMed: 8937258]

Schweitzer RD, Logan GP, Strassberg DS. The relationship between marital intimacy and postnatal depression. Australian Journal of Marriage & Family. 1992; 13:19–23.

Smolen RC, Spiegal DA, Martin CJ. Patterns of marital interaction associated with marital dissatisfaction and depression. Journal of Behaviour Therapy and Experimental Psychiatry. 1986; 17:261–266.

Sullivan PF, Neale JM, Kendler KS. Genetic epidemiology of major depression: Review and meta-analysis. American Journal of Psychiatry. 2000; 157:1552–1562. [PubMed: 11007705]

Tucker LR, Lewis C. A reliability coefficient for maximum likelihood factor analysis. Psychometrika. 1973; 38:1–10.

Watson D. Rethinking the mood and anxiety disorders: A quantitative hierarchical model for DSM-V. Journal of Abnormal Psychology. 2005; 114:522–536. [PubMed: 16351375]

Weissman MM. Advances in psychiatric epidemiology: Rates and risks for major depression. American Journal of Public Health. 1987; 77:445–451. [PubMed: 3826462]

Wheaton, B.; Muthen, B.; Alwin, DF.; Summers, GF. Assessing reliability and stability in panel models. In: Heise, DR., editor. Sociological methodology 1977. San Francisco: Jossey-Bass; 1977. p. 84-136.

Whisman MA. Marital dissatisfaction and psychiatric disorders: Results from the national comorbidity survey. Journal of Abnormal Psychology. 1999; 108:701–706. [PubMed: 10609435]

Whisman, MA. Depression and marital distress: Findings from clinical and community studies. In: Beach, SRH., editor. Marital and family processes in depression. Washington, DC: American Psychological Association; 2001. p. 3-24.

Whisman MA. Marital distress and DSM-IV psychiatric disorders in a population-based national survey. Journal of Abnormal Psychology. 2007; 116:638–643. [PubMed: 17696721]

Whisman MA, Bruce ML. Marital dissatisfaction and incidence of major depressive episode in a community sample. Journal of Abnormal Psych. 1999; 108:674–678.

Whisman, MA.; Kaiser, R. Marriage and relationship issues. In: Dobson, KS.; Dozois, DJA., editors. Risk factors in depression. San Diego, CA: Academic Press; 2008. p. 363-384.

Whisman, MA.; Weinstock, LM.; Tolejko, N. Marriage and depression. In: Keyes, CLM.; Goodman, SH., editors. Women and depression: A handbook for the social, behavioral, and biomedical sciences. New York: Cambridge Press; 2006. p. 219-240.

Wichstrom L. The emergence of gender difference in depressed mood during adolescence: The role of intensified gender socialization. Developmental Psychology. 1999; 35:232–245. [PubMed: 9923478]

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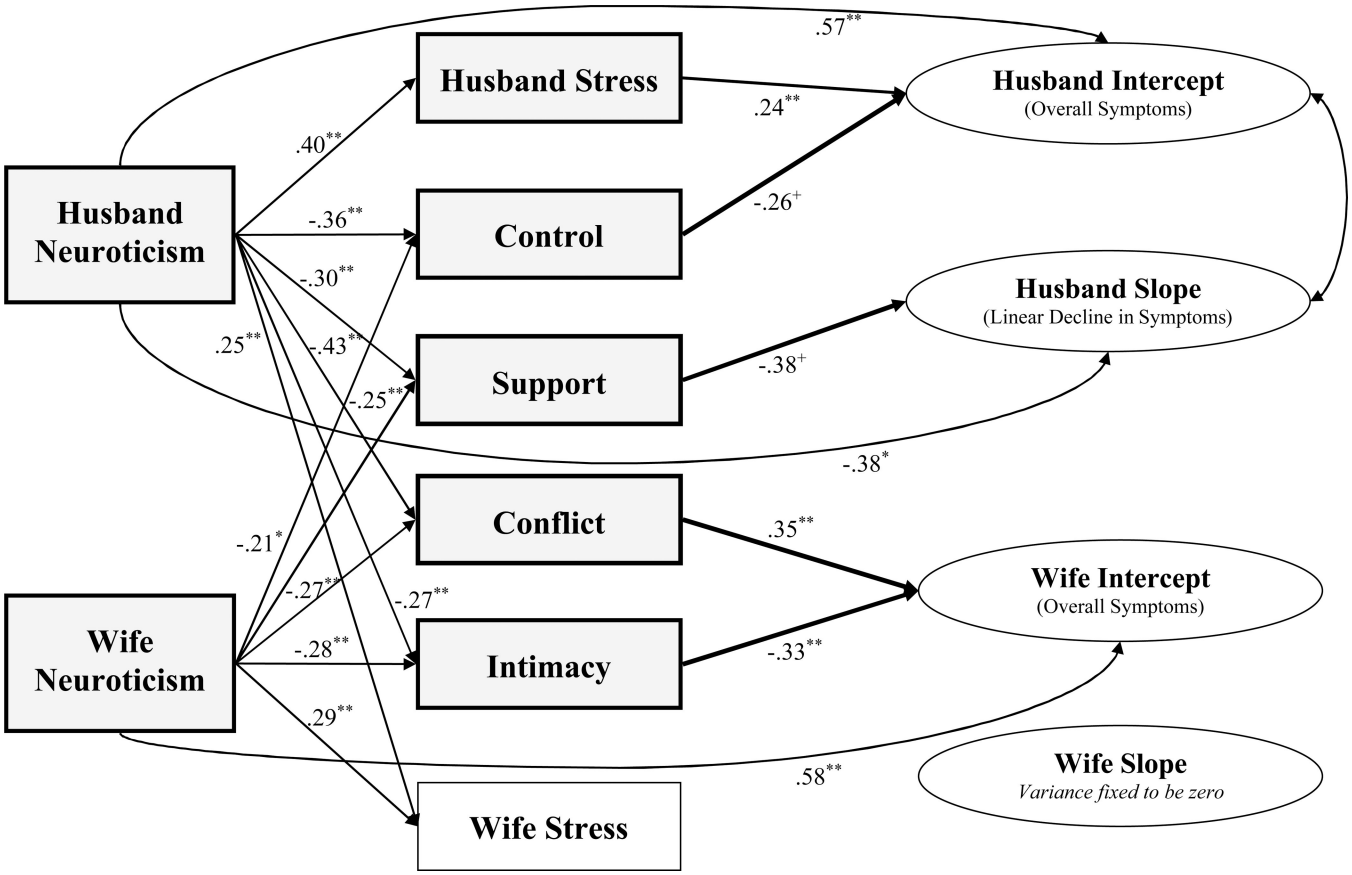

Figure 1.

Final Integrated Model. Standardized coefficients for significant pathways between risk factors and symptoms are shown. + p < . 10, * p < .05, ** p < .01. Relations among environmental risk factors include significant covariation among wife stress and each of the relationship processes, and significant covariation among each of the relationship processes.

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Table 1

Descriptive Statistics for Individual and Dyadic Variables

	Husbands		Wives	
Individual Variables	***M***	***SD***	***M***	***SD***
Neuroticism *Possible range (0 – 28)*	7.42	6.46	10.83	7.26
Non-Marital Stress *Possible range (0 – 9)*	3.14	0.93	3.19	0.82
Internalizing Symptoms *Possible range (1 – 111)*				
Time 1 (3–6 months)	10.06	9.90	12.24	9.01
Time 2 (12–15 months)	9.17	9.17	13.79	12.16
Time 3 (21–24 months)	9.98	8.78	14.01	12.64
Time 5 (54–57 months)	7.71	9.02	10.92	10.36
Time 6 (75–77 months)	7.98	7.39	11.18	10.19
Dyadic Variables	***M***		***SD***	
Relationship Processes *Possible range (1–9)*				
Conflict Management	6.48		1.23	
Partner Support	6.92		0.79	
Emotional Intimacy	7.28		0.76	
Power and Control	6.93		0.82	

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Table 2

Correlations among Risk Factors and Internalizing Symptoms

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Husband Neuroticism	-																	
2. Wife Neuroticism	.10	-																
3. Husb Stress	**.40**	.04	-															
4. Wife Stress	**.27**	**.31**	**.22**	-														
5. Conflict	**−.47**	**−.31**	−.15	**−.33**	-													
6. Support	**−.33**	**−.27**	−.10	**−.44**	**.59**	-												
7. Intimacy	**−.31**	**−.30**	−.07	**−.33**	**.57**	**.65**	-											
8. Control	**−.38**	**−.24**	−.19	**−.44**	**.68**	**.74**	**.58**	-										
9. Time 1 Husb Symptoms	**.55**	−.05	**.34**	**.25**	**−.27**	**−.21**	−.15	**−.33**	-									
10. Time 2 Husb Symptoms	**.70**	.06	**.39**	.14	**−.36**	−.18	**−.26**	**−.34**	**.50**	-								
11. Time 3 Husb Symptoms	**.55**	.10	**.35**	**.28**	**−.30**	**−.24**	**−.23**	**−.34**	**.56**	**.58**	-							
12. Time 5 Husb Symptoms	**.47**	−.06	**.32**	.16	−.11	−.10	−.07	−.19	**.35**	**.51**	**.57**	-						
13. Time 6 Husb Symptoms	**.41**	−.08	**.40**	.04	−.19	−.18	−.06	**−.25**	**.41**	**.52**	**.57**	**.76**	-					
14. Time 1 Wife Symptoms	**.20**	**.35**	.04	.11	−.17	**−.30**	**−.34**	−.19	.19	.08	.12	.02	.09	-				
15. Time 2 Wife Symptoms	.13	**.69**	−.01	**.32**	−.15	**−.31**	**−.43**	**−.23**	−.06	.09	.03	−.11	−.11	**.53**	-			
16. Time 3 Wife Symptoms	**.21**	**.42**	.10	**.36**	**−.22**	**−.28**	**−.31**	**−.26**	.06	.15	.10	.08	−.08	**.42**	**.57**	-		
17. Time 5 Wife Symptoms	.06	**.33**	.17	**.37**	.02	−.18	**−.23**	**−.21**	−.05	−.01	.02	.17	−.03	**.37**	**.51**	**.61**	-	
18. Time 6 Wife Symptoms	.04	**.25**	−.07	**.25**	−.18	−.17	−.17	−.14	.06	−.04	.07	−.09	.02	**.49**	**.38**	**.63**	**.42**	-

Note. N = 103 couples. Correlations were estimated in Mplus to address missing data. Significant correlations ($p < .05$) are in bold.