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# The role of marriage in the development of internalizing disorders : an integrated conceptual framework

Rebecca Leigh Brock  
*University of Iowa*

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THE ROLE OF MARRIAGE IN THE DEVELOPMENT OF  
INTERNALIZING DISORDERS: AN INTEGRATED CONCEPTUAL FRAMEWORK

by

Rebecca Leigh Brock

An Abstract

Of a thesis submitted in partial fulfillment of the  
requirements for the Doctor of Philosophy degree  
in Psychology in the Graduate College of  
The University of Iowa

July 2012

Thesis Supervisor: Associate Professor Erika Lawrence

## ABSTRACT

The primary goal of the present research was to clarify the role of marriage in the developmental course of internalizing symptoms (i.e., depression and anxiety). Aims were pursued in a community sample of 103 couples assessed five times over the first seven years of marriage, and results are presented in two separate parts.

Although marital discord has been linked to both depression and anxiety, our understanding of how marriage contributes to the development of internalizing symptoms is limited in scope and lacking specificity. First, it is unclear whether the marital relationship contributes to the broad dimension of internalizing symptoms as opposed to specific diagnoses. Second, it is unclear *how* the marital relationship contributes to internalizing symptoms: through global marital dissatisfaction or through specific relationship processes (and which processes). The purpose of the research presented in Part 1 was to address these two issues. Further, marital discord is rarely incorporated into broader etiological frameworks of psychopathology (e.g., a diathesis-stress framework). The purpose of research presented in Part 2 was to develop and test a novel conceptual framework clarifying how specific marital processes (i.e., conflict management, partner support, emotional intimacy, and power and control), neuroticism, and stress work together to impact the development of internalizing symptoms over time.

Results suggest that neuroticism contributes to the development of internalizing symptoms primarily through non-marital stress and an imbalance of power and control in one's marriage for husbands and through greater emotional disengagement for wives. Whereas stress originating outside of the marriage was more critical to the mental health of men, the marital relationship played a more central role for women. Marital processes

remain significant predictors of internalizing symptoms when controlling for other well-established risk factors, demonstrating the need to routinely consider marital factors in etiological models of individual psychopathology. Further, results allow for the identification of specific clinical targets that can be prioritized in interventions aimed at preventing internalizing disorders. Specific recommendations for adapting marital preparation programs to prevent individual psychopathology are discussed.

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Graduate College  
The University of Iowa  
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CERTIFICATE OF APPROVAL

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PH.D. THESIS

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This is to certify that the Ph.D. thesis of

Rebecca Leigh Brock

has been approved by the Examining Committee for the  
thesis requirement for the Doctor of Philosophy degree in  
Psychology at the July 2012 graduation.

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## GENERAL INTRODUCTION

In any given year, approximately 1 in 4 adults suffers from some form of psychopathology (Kessler, Chiu, Demler, & Walters, 2005), and more than \$99 billion is spent annually on the treatment of mental disorders (Mark, McKusick, King, Harwood, & Genuardi, 1998). Depression has been identified as the leading cause of disability worldwide for individuals ages 15-44 (The World Health Organization, 2004) and is associated with substance abuse problems later in life (Conway, Compton, Stinson, & Grant, 2006). Highly comorbid with depressive disorders, anxiety disorders are the most prevalent form of psychopathology, affecting almost 18% of adults in the US (Kessler et al., 2005). Given the substantial burden of depression and anxiety to individuals, families, and society, it is imperative that we gain a better understanding of risk factors for these disorders so that, in turn, we may develop more efficacious and effective interventions.

Within the couple research field, it is widely recognized that marital discord (i.e., dissatisfaction with or maladjustment in one's marriage) has consequences for individual psychopathology (Whisman & Kaiser, 2008); however, notable gaps in the existing literature limit our conceptual understanding of the role of marriage in mental illness. First, the scope of the contribution of marriage to individual psychopathology is unclear. Existing research has failed to clarify whether marital discord functions as a *global* risk factor for the broad range of internalizing disorders or if it is merely associated with one or two disorders. Second, the specific nature of this risk is unknown. The particular aspects of the marital relationship (e.g., poor conflict management skills or inadequate partner support) that put individuals at *greatest* risk for developing symptoms have yet to be identified. Third, it is unclear whether there are sex differences in this risk. Given the central role of intimate relationships to the identity of women (Culp & Beach, 1998),

many researchers speculate that marital discord may play a particularly salient role in women's mental health (Beach, Smith, & Fincham, 1994).

Finally, researchers have yet to examine how relationship processes fit into broader etiological frameworks of individual psychopathology. Not only does this omission limit our conceptual understanding of the role of marriage in individual psychopathology, but it also raises the question of whether marital discord plays a *unique* role in the development of internalizing disorders when accounting for other well-established risk factors. For example, existing models of psychopathology identify genetic vulnerabilities and environmental stressors as key risk factors for depression and anxiety (i.e., a diathesis-stress framework; Ingram & Luxton, 2004; Williams, Reardon, Murray, & Cole, 2005). Incorporating marital factors into a diathesis-stress framework might demonstrate the unique and salient role of marital processes relative to genes and stress, and lead to the refinement of theories regarding the developmental course of psychopathology.

Gaining a more comprehensive yet refined understanding of how marriage contributes to internalizing disorders not only has important theoretical implications, but also has considerable clinical significance. Entry into a marital relationship is a life transition experienced by 90% of the general population of the United States (Kreider & Fields, 2001). Further, marital preparation programs aimed at preventing marital discord and dissolution are already widely disseminated (e.g., PREP; Markman, Stanley, & Blumberg, 1994). Research clarifying how exactly marriage contributes to symptom development has the potential to inform these marital preparation programs. Specifically, clinicians can target the aspects of marital functioning that have the biggest impact on the

symptom development. Such an approach would not only reduce marital discord and dissolution, but also prevent individual psychopathology.

The primary goal of the present research was to clarify the role of marriage in the developmental course of internalizing symptoms. This research is critical for refining existing etiological models of mental illness and informing marital preparation programs so that they might promote both relationship *and individual* well-being. Aims were pursued in a community sample of 103 couples assessed 5 times over the first 7 years of marriage, and results are presented in two separate parts.

In Part 1, I aimed to attain a more comprehensive and refined understanding of the role that marriage plays in individual psychopathology by (a) clarifying whether marital discord is a *global* risk factor for the broad class of internalizing symptoms, (b) examining the relative contributions of marital dissatisfaction and specific relationship processes to the subsequent development of symptoms, and (c) implementing a series of methodological refinements to previous approaches to examining the link between marriage and psychopathology (e.g., a multi-wave longitudinal design, an examination of cross-spouse paths, an assessment of subthreshold symptoms). Clarifying the scope and specificity of the role of marriage in internalizing symptoms was an essential step for building upon prior research focused almost exclusively on the concurrent association between marital dissatisfaction and depression.

In Part 2, I expanded upon the results of Part 1 by developing and testing an integrated conceptual framework to explain how marital processes transact with enduring vulnerabilities (i.e., neuroticism) and environmental stress to impact the developmental course of internalizing symptoms. Examining the role of marriage within a diathesis-

stress framework served to clarify (a) whether marital processes have significant and notable effects on individual psychopathology when accounting for other well-established risk factors, (b) the mechanisms through which marital processes transact with other risk factors to lead to the development of internalizing symptoms, and (c) sex differences in these pathways.



PART 1

MARRIAGE AS A RISK FACTOR FOR INTERNALIZING DISORDERS:

CLARIFYING SCOPE AND SPECIFICITY

## CHAPTER I

## INTRODUCTION

A wealth of research demonstrates a strong and consistent link between marital discord and depression (Whisman, Weinstock, & Tolejko, 2006). However, our understanding of the role of marriage in the development of psychopathology is narrow in scope and lacking specificity. Most notably, research has been focused primarily on examinations of either depressive *or* anxiety disorders rather than on the general *internalizing dimension* shared by these disorders (e.g., Watson, 2005). Focusing on this shared dimension—rather than on the unique and frequently redundant features of specific DSM disorders—would presumably greatly enhance theoretical models of individual psychopathology (e.g., Krueger, 1999). Further, although it is well established that marital discord is associated with psychopathology, it is still unclear *how* marital discord increases one's risk. Both global marital dissatisfaction and specific relationship processes (e.g., supportive interactions) have been associated with depression and anxiety, but their relative influences have yet to be examined. Moreover, investigations of relationship processes have been limited almost entirely to conflictual interactions, with limited attention paid to domains such as emotional intimacy or power and control. These omissions are particularly problematic because they prevent researchers from clarifying -- and clinicians from targeting -- the specific aspects of marriage most strongly influencing individual psychopathology. The purpose of the present study was to attain a more comprehensive yet refined understanding of the role of marriage in individual psychopathology by (a) determining whether marital discord at the onset of marriage is a risk factor for the general dimension of internalizing symptoms and (b) clarifying the

relative contributions of marital dissatisfaction and specific relationship processes to symptom development over the first 7 years of marriage (the high risk period of marriage when over half of all divorces occur; Gottman & Levenson, 2000).

### **Marriage as a Risk Factor for Psychopathology:**

#### **Clarifying the Scope of this Risk**

Countless book chapters, review articles, and empirical studies demonstrate a robust concurrent association between marital discord and depression in community and clinical samples. (See Whisman et al., 2006, and Whisman & Kaiser, 2008 for recent reviews.) Changes in marital satisfaction are associated cross-sectionally with changes in depressive symptoms over the early years of marriage (Davila, Karney, Hall, & Bradbury, 2003; Karney, 2001). Further, marital discord predicts higher levels of subsequent depressive symptoms 6 months (O'Hara, 1986), 12 months (e.g., Beach, Katz, Kim, & Brody, 2003), 18 months (e.g., Fincham, Beach, Harold, & Osborne, 1997), and 24 months (Whisman & Uebelacker, 2009) later. Far less research has focused on the link between marital discord and anxiety, though existing research does suggest an association between marital discord and anxiety disorders and symptoms (e.g., McLeod, 1994; Whisman, 1999, 2007; Whisman, Sheldon, & Goering, 2000; Whisman, Uebelacker, & Weinstock, 2004).

Though informative, there are three primary limitations to this literature, minimizing the utility of this knowledge to inform theoretical models and intervention efforts. First, whereas a great deal of research has focused on the association between marriage and depression, there is a dearth of knowledge regarding the link between marriage and *anxiety*. Research examining both depression and anxiety would greatly

improve the scope of our understanding of the influence of marriage on individual psychopathology. Second, the majority of marital research conducted on depression or anxiety has been cross-sectional. Though an important first step, it does not speak to the issue of whether marital discord is a *risk factor* for symptoms (defined as a correlate that *temporally precedes* an outcome; Kraemer, Stice, Kazdin, Offord, & Kupfer, 2001). In order to develop or enhance prevention programs targeting psychopathology, longitudinal designs are needed to clarify whether marriage is indeed a *risk factor*, as opposed to a consequence, and to rule out the possibility that such an association is spurious in nature.

Third, prior studies predominantly have comprised examinations of depression or anxiety separately, implicitly suggesting that these disorders represent distinct entities. However, rates of comorbidity are extremely high among mood and anxiety disorders (Barlow, 2000; Clark, 2005; Mineka, Watson, & Clark, 1998; Watson, 2005), so it is unlikely that individuals will develop only one disorder. Indeed, depression and anxiety are increasingly conceptualized as manifestations of a higher-order class of disorders (e.g., Watson, 2005). This broader conceptual approach fits well within the literature on predictors of psychopathology. That is, we know that individuals inherit a genetic vulnerability for experiencing negative affectivity in general rather than a specific disorder (Mineka et al., 1998). Consequently, researchers and clinicians are unable to predict which disorder(s) will ultimately develop (e.g., dysthymia versus panic disorder) for an individual possessing this innate vulnerability. Accordingly, studies examining marriage as a risk factor for the *broad class* of internalizing disorders—as opposed to a risk factor for an individual mood or anxiety disorder—would enhance the scope and explanatory power of conceptual models of psychopathology.

## **Marriage as a Risk Factor for Psychopathology:**

### **Clarifying the Specific Nature of this Risk**

Establishing that marriage is a global risk factor for the *general* dimension of internalizing symptoms is a critical endeavor; however, it does not clarify the specific nature of the effects of marriage on psychopathology. This problem is due primarily to the tendency to narrow “marriage” down to global satisfaction in prior studies. Focusing exclusively on marital satisfaction provides a limited perspective of how marriage contributes to individual psychopathology (Beach & O’Leary, 1993), and has prompted calls for investigations into the roles of specific relationship processes (e.g., conflictual interactions, supportive transactions) in the developmental course of psychopathology (e.g., Beach, 2002). Researchers and clinicians recognize that existing interventions for treating psychopathology would be greatly enhanced by identifying new clinical targets: “An increased understanding of the links between marital *processes* and depression” is critical for enhancing the efficacy and effectiveness of these interventions (emphasis added; Beach, Fincham, & Katz, 1998, p. 650).

Shifting the focus to relationship processes would enhance the specificity of theoretical models and interventions in several ways. First, it would allow researchers to capture specific aspects of the relationship not accounted for by global satisfaction measures (Beach, 2002). Second, relationship processes fit well into theories of marriage and individual psychopathology. For example, the *marital discord model of depression* (Beach, Sandeen, & O’Leary, 1990) suggests that couples who become maritally discordant experience changes in their relationships that, in turn, contribute to depression. Specifically, spouses experience increased negative interactions (e.g., conflict) that

induce stress and decreased positive functioning (e.g., support) which, in turn, leads to a reduced ability to cope with relationship challenges. A key tenet of this model is that relationship processes account for the link between marital discord and depression. Third, if relationship processes account for variance in symptoms when controlling for global satisfaction, we can refine prevention programs to target those processes. Such program refinements would presumably enhance the efficacy of those programs, as relationship processes can be directly targeted in interventions, whereas global satisfaction is targeted indirectly by altering marital functioning (e.g., teaching conflict management skills).

Based on Lawrence and colleagues' work (Lawrence, Brock, Barry, Langer & Bunde, 2009; Lawrence et al., 2008; Lawrence et al., 2011), and existing research demonstrating links between marital processes and psychopathology, four relationship processes were identified as particularly relevant to the present study:

**Conflict/problem-solving interactions:** frequency and length of arguments; behaviors engaged in during conflicts; presence, level and severity of 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 across both partners

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

**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

One of the most widely examined relationship processes in relation to depression and

anxiety is *conflict/problem-solving interactions*. Behavioral marital therapy—focused on enhancing communication and conflict management skills—is an empirically-supported treatment for major depression and dysthymia (Nathan & Gorman, 1998). Further, a considerable amount of research focused on various facets of conflict management—including frequency of arguments, problem-solving behaviors, and psychological and physical aggression—has demonstrated that conflict is associated with internalizing symptoms and disorders (Beach & Fincham, 1998; Cascardi, O’Leary, & Schlee, 1999; O’Leary & Cano, 2001; Rehman, Gollan, & Mortimer, 2007). Finally, there is a small body of literature indicating that conflict is also associated with anxiety (e.g., Lange & van Dyck, 1992; McLeod, 1994).

Relative to the literature on conflict and problem-solving, research focused on associations between other relationship processes and psychopathology is limited. Existing research has demonstrated that *support* is linked to internalizing disorders such that a lack of support is associated with depression (e.g., Barry, Bunde, Brock, & Lawrence, 2009; Brown, Andrews, Harris, Adler, & Bridge, 1986). Indeed, partner support appears to play a protective role in the mental health of individuals coping with a range of problems from chronic illness (e.g., Pistrang & Barker, 1995) to financial concerns (e.g., Lorenz, Conger, Montague, & Wickrama, 1993). In particular, to the extent that spouses receive adequate support from their partners, they also experience fewer depressive symptoms (Dehle, Larsen, & Landers, 2001).

Depression is also associated with lower levels of *emotional intimacy* (e.g., Costello, 1982; Waring & Patton, 1984; Waring, Patton, Neron, & Linker, 1986) and a less confiding relationship (e.g., Horwitz, McLaughlin, & White, 1998). Further, greater

displays of affection and satisfaction with time spent with one's partner have been linked to fewer depressive symptoms experienced by wives (Hautzinger, Linden, and Hoffman, 1982). Uneven distributions of *power* in a relationship (Hautzinger et al.) and infringement upon one's personal rights (Smolen, Spiegel, & Martin, 1986) are associated with higher rates of depression. High levels of *control* in the marital relationship have been linked to a greater risk for postnatal depression (Schweitzer, Logan, & Strassberg, 1992). Further, depressed women are more likely to report dissatisfaction with decision-making, control of finances, and household task distribution (Byrne & Carr, 2000; Byrne, Carr, & Clark, 2004).

### **Further Methodological Refinements**

In addition to the suggestions above, a series of methodological refinements are also necessary to clarify the role of marriage in the development of internalizing disorders. First, leaders in the field of psychology (e.g., Watson, 2005) have argued that internalizing disorders should be examined *dimensionally* (at the symptom level) as opposed to categorically (at the diagnostic level) in order to account for (a) comorbidity across and within mood and anxiety diagnoses and (b) heterogeneity within diagnostic classes (e.g., mood disorders) and disorders (e.g., major depressive disorder). A dimensional approach is advantageous because important information about subthreshold symptoms is retained (Trull & Durrett, 2005), and more sensitive analyses of the early developmental course of psychopathology can be conducted.

Second, to best inform prevention efforts, risk factors for internalizing disorders should be examined during a clinically meaningful period of time. The *National Institute of Mental Health* research agenda for prevention research (Reiss & Price, 1996)



highlights the importance of examining risk factors during major life transitions (i.e., periods of time associated with rapid change and adjustment). An ideal transitional period within which to examine marital discord as a risk factor is *the transition into marriage* itself. This transition is experienced by 90% of the U.S. population (Kreider & Fields, 2001); as such, any findings will be highly generalizable. Additionally, the transition into marriage is widely recognized as one of the most important and influential transitions a person will experience in his or her lifetime (Leonard & Roberts, 1998). Finally, prevention programs targeting marital discord and dissolution already exist, 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). If we can establish that discord during this life transition places couples at risk for a broad range of internalizing disorders, then these programs have the potential to not only prevent marital discord but also to prevent individual psychopathology.

Third, sex differences and cross-spouse associations should be routinely examined. Depression is more prevalent for women than for men, yet data are inconclusive with respect to sex differences in the association between marital discord and depression (Whisman et al., 2006). Further, prior research has been focused primarily on the link between one's own marital discord and one's own depression; however, marital relationships are dynamic and dyadic (Beach et al., 2003). Whereas some researchers have identified cross-spouse links between marital discord and depression (e.g., Beach et al., 2003; Whisman et al., 2004), others have not found significant associations (e.g., Whisman & Uebelacker, 2009). In order to understand the nature of these associations, within-spouse and cross-spouse effects should be considered and

clarified.

### **Overview of the Present Study**

The first aim was to establish the presence of a higher-order factor of internalizing symptoms in a community sample of couples. Accordingly, I factor analyzed items of the *Beck Depression Inventory – II* (BDI-II; Beck, Steer, & Brown, 1996) and the *Beck Anxiety Inventory* (BAI; Beck & Steer, 1990). This aim expands upon previous research demonstrating both a higher-order factor shared among symptoms and specific dimensions of depressive and anxiety symptoms (Clark, Steer, & Beck, 1994; Steer, Clark, & Beck, 1995). Researchers have demonstrated this factor structure in a sample of undergraduate students (Clark et al.) and in a clinical sample of outpatients (Steer et al.). I sought to replicate this factor structure in a community sample and with couples rather than individuals. More importantly, I sought to create composite scores of internalizing symptoms to examine the developmental trajectories of these symptoms longitudinally (over the first 7 years of marriage). To my knowledge, no one has published such trajectories to date. Consistent with research focused exclusively on depressive symptoms (Davila et al., 2003), I hypothesized that symptoms would fluctuate (versus systematically increasing or decreasing) over time.

The second aim was to examine whether marital discord is a *risk factor* for the general dimension of internalizing symptoms. Consistent with results of prospective *two-wave* designs indicating that marital discord predicts subsequent *depressive* symptoms (e.g., Beach et al, 2003), I predicted that lower levels of marital satisfaction during the transition into marriage would predict higher levels of internalizing symptoms across the first 7 years of marriage. The third aim was to examine the relative contributions of

global marital dissatisfaction and specific relationship processes to the development of internalizing symptoms. Consistent with the *marital discord model of depression* (Beach et al., 1990) -- which suggests that relationship processes account for the link between marital discord and depressive symptoms -- I hypothesized that relationship processes would be significant predictors of symptoms when controlling for the effects of marital dissatisfaction.

## CHAPTER II

### METHOD

#### **Participants and Procedures**

All procedures were approved by the university IRB. Participants were recruited through marriage license records in Linn and Johnson Counties of Iowa. Couples in which both spouses were at least 18 years of age were mailed letters inviting them to participate. Of the 1,698 letters that were sent, 358 (21%) were answered by couples who expressed interest by sending an e-mail, leaving a telephone message, or returning the stamped postcard included with the letter. Interested couples were screened over the telephone to ensure that they were married less than 6 months, in their first marriages, and that both partners were willing to participate. The first 105 couples who completed the screening procedures, were deemed eligible, and were able to schedule their initial laboratory appointments were included in the sample. Of the 105 couples who participated, one couple's data were deleted because it was revealed 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. One couple was dropped from the analyses because they did not complete the measure of marital satisfaction during the first wave of data collection. Thus, analyses were conducted with a final sample of 102 couples. Couples dated an average of 44 months ( $SD = 27$ ) prior to marriage, 76% cohabited premaritally, and 15% were ethnic minorities. (The proportion of non-Caucasians in Iowa is 7%; U.S. Census, 2005). Modal annual joint income ranged from \$40,001- \$50,000. Husbands' average age was 25.82 ( $SD = 3.55$ ), and wives' was 24.78 ( $SD = 3.67$ ). Modal years of education were 14 for both spouses. At the start of the study,

58% of couples reported that they had participated in either a marital preparation program or couples therapy. The majority of the sample (97%) included couples in which at least one spouse was employed.

Eligible couples completed Informed Consent Documents at Times 1 and 6. (Time 1 ICDs covered Times 1-5). They also 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: 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) after the wedding. At Time 1, couples also attended a laboratory appointment during which they were administered the Relationship Quality Interview (RQI; Lawrence et al., 2008; 2009; 2011) to assess relationship processes. Couples were paid \$25 to \$100 at each time point, depending on the number of participation hours requested. By Time 6, 12 couples had permanently separated or divorced and 5 couples had withdrawn from the study (a 95% retention rate); available data from these couples were included in the present study.

### Measures

**Questionnaires:** *The Beck Anxiety Inventory (BAI;* Beck & Steer, 1990) is a widely used measure of anxiety symptoms. Participants respond to 21 items with a 0 (not at all) to 3 (I could barely stand it) scale, with higher scores indicative of greater symptoms. *The Beck Depression Inventory – II (BDI-II;* Beck et al., 1996) is one of the most widely used self-report measures of depressive symptoms. Participants respond to each of 21 items on a scale ranging from 0 (e.g., “I do not feel worthless”) to 3 (e.g., “I feel utterly worthless”). Higher scores indicate greater symptoms. The *Quality of*

*Marriage Index (QMI; Norton, 1983)* is a 6-item self-report questionnaire designed to assess the “essential goodness of a relationship.” Participants indicate the extent to which they agree or disagree with 5 items using a scale from 1 (very strong disagreement) to 7 (very strong agreement), and rate their global marital “happiness” on a scale from 1 (very unhappy) to 10 (perfectly happy). Scores were summed to create a composite score of global marital satisfaction. Alpha coefficients ranged from .91 to .97.

**Semi-structured interview:** *The Relationship Quality Interview (RQI; Lawrence et al., 2008; 2009; 2011)*. Relationship processes were measured with a 60-minute semi-structured interview designed to allow interviewers to conduct functional analyses of couples’ relationships across a variety of relationship processes. Spouses are interviewed separately and simultaneously. Open-ended questions—followed by closed-ended questions—are asked to allow novel contextual information to be obtained. Concrete behavioral indicators are obtained to facilitate more objective ratings than might be obtained based on spouses’ perceptions alone. Interviewer ratings are also obtained to eliminate the possibility that associations between poor functioning in a key domain and other factors (e.g., depression) are due to reporting biases. Interviewers independently rate each domain on scales from 1 (poor functioning) to 9 (high functioning), which are specific to each domain. See Appendix D for examples of ratings for each domain.

The RQI was administered at a mean of 3 months of marriage and assesses functioning over the “past 6 months;” therefore, in the present study, the RQI captured relationship processes during the transition into marriage. Interviewer ratings based on interviews with husbands versus wives did not differ significantly from one another; thus, they were averaged to create composite scores of functioning at the couple level (as

opposed to the individual level). The RQI demonstrates strong reliability, convergent validity, and divergent validity (Lawrence et al., 2008; 2009; 2011). All interviews were audio-taped, and inter-rater reliability was assessed using a random sample of scores from 20% of the interviews. Intraclass correlations ranged from .71-.94.

### **Data Analyses**

To examine a higher-order structure of internalizing symptoms, I used a method consistent with procedures outlined by Clark et al. (1994) and Steer et al. (1995). A principal axis factor analysis (FA) was conducted with a Schmid-Leiman transformation using the 42 items of the BAI and BDI-2. Separate FAs were conducted with data collected at Times 1, 2, 3, 5, and 6. (The BAI was not administered at Time 4.) Before conducting these analyses, several preliminary steps were taken. First, to account for possible interdependence between spouses of a dyad, item-level correlations were examined (e.g., husbands' BAI item 1 correlated with wives' BAI item 1). Second, parallel factor analyses (O'Connor, 2000) were conducted to determine the maximum number of factors to be extracted for each FA at each time point.

For all other analyses, growth curve modeling techniques (GCM; Raudenbush & Bryk, 2002) were used.<sup>1</sup> GCM allows for a two-stage process in data analysis. The first stage (Level 1) estimates a trajectory of change (growth curve) for a variable that is described by two parameters: intercept and slope. Time was measured in months from the midpoint between Times 1 and 6 in order to model the intercept as overall levels of symptoms across time. The second stage of GCM (Level 2) allows for the examination of between-subjects differences in associations between time-invariant covariates and outcomes; that is, individual or couple-level characteristics can be examined as predictors

of the intercepts and slopes. At Level 2, Level 1 coefficients were modeled as a function of time-invariant predictors (i.e., marital satisfaction and specific relationship processes at Time 1). The possibility of interdependence between husbands' and wives' data was incorporated into the analyses in four ways. First, when dyad members are distinguishable, as in this sample of heterosexual married couples, there are potentially two actor effects and two partner effects; all four paths were included in analyses. Second, correlations between husbands' and wives' predictors were estimated in all equations. Third, the residual non-independence in outcomes was represented by the correlation between the error terms in husbands' and wives' outcomes. Fourth, if chi-square tests assessing the homogeneity of husbands' versus wives' Level 1 variance were significant for baseline models, residual terms were entered as simultaneous outcomes of all relevant predictors in subsequent models.



## CHAPTER III

### RESULTS

Means and standard deviations were computed for relationship processes and husbands' and wives' global marital satisfaction and are reported at the bottom of Table 1. Husbands' and wives' satisfaction scores were not significantly different at Time 1 ( $t(101) = 1.60$ , *ns*; 95% CI [-.14, 1.34]; husbands,  $M = 41.29$ ,  $SD = 4.65$ ; wives,  $M = 40.69$ ,  $SD = 4.87$ ). On average, and as expected at the onset of marriage, scores for relationship processes at Time 1 (analyzed at the couple level; possible range = 1-9) indicate that relationship quality was relatively high, but not as high as one might expect among couples married for only 3 months: conflict,  $M = 6.47$ ,  $SD = 1.24$ ; support,  $M = 6.91$ ,  $SD = 0.79$ ; intimacy,  $M = 7.27$ ,  $SD = 0.77$ ; power and control,  $M = 6.92$ ,  $SD = 0.83$ ).

#### **Identifying First- and Second-Order Dimensions of the BAI and BDI-II**

Only two of the 210 inter-spouse item correlations (i.e., 42 items x 5 waves of data) were greater than .30 (< 1%). Based on recommendations made by Kenny (1995), husbands' and wives' data were combined and factor analyzed simultaneously ( $N = 206$ ). Results of parallel analyses indicated that a maximum number of 3 factors could be extracted at Times 1 and 2 and that a maximum of 4 factors could be extracted at Times 3, 5, and 6. Closer examination of 3- and 4-factor solutions suggested that a 2-factor model be retained across the 5 waves of data.

First-order principal axis FAs were conducted for each of the 5 waves of data and oblique (promax) rotated factor solutions were obtained. Based on results of parallel

analyses, two factors were extracted at each time point. Correlations between the two first-order factors ranged from .42-.53 across the 5 waves of data, suggesting the presence of a higher-order factor. Thus, *second*-order principal axis FAs were conducted next to obtain a single, higher-order factor of internalizing symptoms. Eigenvalues, variances, and factor loadings were all comparable to results obtained by Clark et al. (1994) and Steer et al. (1995).

Next, Schmid-Leiman solutions were obtained using factor loadings from the first-order and second-order principal axis FAs (Wolff & Preising, 2005). A Schmid-Leiman solution serves to orthogonalize factor patterns to facilitate identification of first-order factors (anxiety and depression) representing dimensions that are independent from the general (shared) internalizing dimension. Congruence coefficients (Gorsuch, 1983) were examined from each pair of factor loadings (e.g., factor loadings for the higher-order internalizing factor at Times 1 and 2). Coefficients ranged from .94-.97 suggesting that there was factorial invariance over time.

Closer examination of factor loadings across the five time points indicated that item loadings were very similar in magnitude across first-order and second-order factors which prevented the selection of pure factor markers representative of general versus specific dimensions of symptoms. (See Table 2 for average factor loadings). Given these results, composite scores of “internalizing symptoms” were computed such that items were retained if: (a) the item had a factor loading of .30 or greater at 4 out of the 5 time points for the second-order factor or (b) the mean factor loading for that item (averaging across time) was .30 or greater.

## Descriptives for Symptoms and Bivariate Correlations among Measures

The 37 items loading on the higher-order internalizing factor were summed to create composite scores of internalizing symptoms. Coefficient alphas ranged from .89 to .92 for husbands and from .88 to .93 for wives across the 5 waves of data. Mean levels of husbands' internalizing symptoms (possible range: 0-111) were  $M = 9.99$  ( $SD = 9.98$ ) at Time 1,  $M = 9.17$  ( $SD = 9.23$ ) at Time 2,  $M = 9.98$  ( $SD = 8.83$ ) at Time 3,  $M = 7.71$  ( $SD = 9.08$ ) at Time 5, and  $M = 7.77$  ( $SD = 7.39$ ) at Time 6. Mean levels of wives' symptoms were  $M = 12.30$  ( $SD = 9.07$ ) at Time 1,  $M = 13.79$  ( $SD = 12.23$ ) at Time 2,  $M = 14.01$  ( $SD = 12.72$ ) at Time 3,  $M = 10.92$  ( $SD = 10.43$ ) at Time 5, and  $M = 11.43$  ( $SD = 10.86$ ) at Time 6. Averaged across time, wives reported significantly more internalizing symptoms than husbands ( $t(101) = 3.11, p < .005$ ; 95% CI [1.25, 5.66]; husbands,  $M = 9.33, SD = 8.17$ ; wives,  $M = 12.78, SD = 8.74$ ).

**Symptom trajectories.** To test my hypothesis that, on average, symptoms would fluctuate over time, I employed a mean-and-variance model of internalizing symptoms:

$$\text{Level 1: } Y_{ij} (\text{Internalizing Symptoms}) = \beta_{1j} (\text{Husband}) + \beta_{2j} (\text{Wife}) + r_{ij},$$

where  $Y_{ij}$  represents symptoms for individual  $j$  at Time  $i$ ;  $\beta_{1j}$  represents the intercept of husband  $j$  (i.e., the overall level of symptoms);  $\beta_{2j}$  represents the intercept of wife  $j$  (i.e., the overall level of symptoms); and  $r_{ij}$  represents the residual variance in repeated measures for individual  $j$ , which is assumed to be independent and normally distributed. In GCM, the coefficients can be understood as functionally similar to unstandardized regression coefficients, and they represent the degree of association between two variables. In these Level 1 equations, each parameter includes a constant and a unique error term such that:

$$\text{Level 2: } \beta_{1j} = \gamma_{10} + \mu_{1j} \quad \text{and} \quad \beta_{2j} = \gamma_{20} + \mu_{2j}.$$

Coefficients were modeled as random; that is, a random error parameter ( $\mu$ ) was estimated for each coefficient. There was significant between-subject variability in husband ( $\chi^2(101) = 387.35, p < .001$ ) and wife ( $\chi^2(101) = 596.87, p < .001$ ) Level 1 parameters.

We also tested a linear model to account for the possibility that internalizing symptoms increase or decrease systematically over time by adding husband and wife *time* parameters:

$$\begin{aligned} \text{Level 1: } Y_{ij} (\text{Symptoms}) &= \beta_{1j} (\text{Husband}) + \beta_{2j} (\text{Wife}) + \beta_{3j} (\text{H Time}) + \beta_{4j} (\text{W Time}) + r_{ij} \\ \text{Level 2: } \beta_{1j} &= \gamma_{10} + \mu_{1j} & \beta_{2j} &= \gamma_{20} + \mu_{2j} & \beta_{3j} &= \gamma_{30} + \mu_{3j} & \beta_{4j} &= \gamma_{40} + \mu_{4j} \end{aligned}$$

On average, internalizing symptoms decreased over time for husbands,  $t(101) = -2.13, p < .05$ ; however, there was not significant between-subject variability among husbands' slopes,  $\chi^2(91) = 106.40, ns$ . Internalizing symptoms did not change systematically over time for wives,  $t(101) = -1.52, ns$ ; however, there was significant between-subject variability among wives' slopes,  $\chi^2(91) = 118.31, p < .05$ . Reliability estimates measuring the amount of true variance accounted for in each parameter were low for husband (.18) and wife (.21) time parameters, suggesting a diminished ability to detect significant predictors of these parameters. Due to poor reliability estimates for both husband and wife slope parameters, the nonsignificant variance of the husband slope parameter, and prior research and theory suggesting that symptoms wax and wane over time (e.g., Davila et al., 2003), I chose to adopt the more parsimonious and theoretically meaningful mean-and-variance model. A test of the homogeneity of Level-1 variance across husband and wife parameters for the mean-and-variance model was significant,  $\chi^2(91) = 387.86, p < .001$ ; therefore, residual terms were entered as simultaneous outcomes of all relevant

predictors in subsequent models.

**Correlations among measures.** Bivariate correlations among husbands' and wives' internalizing symptoms (averaged across time), marital satisfaction at Time 1, and the four relationship processes at Time 1 are reported in Table 1. The inter-spousal correlation between husband and wife internalizing symptoms was small ( $r = .10$ ) whereas, consistent with the literature on newlywed couples (e.g., Karney & Bradbury, 1995a), levels of marital satisfaction between spouses were highly correlated ( $r = .68$ ). Predictors (marital satisfaction and four relationship processes at Time 1) and outcomes (average internalizing symptoms) were sufficiently distinct from each other to warrant examining them as separate (albeit related) constructs. Correlations between specific relationship processes and marital satisfaction suggested that, although global marital satisfaction is significantly associated with specific relationship processes, these are still distinct constructs with potentially unique contributions to internalizing symptoms ( $r$ s ranged from .40-.48).

### **Marital Discord as a Risk Factor for Internalizing Symptoms**

To examine whether global marital satisfaction at the onset of marriage predicts symptoms over the first 7 years of marriage, time-invariant covariates (husbands' and wives' Time 1 marital satisfaction) were grand-mean centered at Level 2 as predictors of Level 1 husband and wife parameters:

$$\text{Level 1: } Y_{ij} (\text{Internalizing Symptoms}) = \beta_{1j} (\text{Husband Intercept}) + \beta_{2j} (\text{Wife Intercept}) + r_{ij}$$

$$\text{Level 2: } \beta_{1j} = \gamma_{10} + \gamma_{11} (\text{Husband Time 1 Satisfaction}) + \gamma_{12} (\text{Wife Time 1 Satisfaction}) + u_{1j}$$

$$\beta_{2j} = \gamma_{20} + \gamma_{21} (\text{Husband Time 1 Satisfaction}) + \gamma_{22} (\text{Wife Time 1 Satisfaction}) + u_{2j}$$

As presented in Table 3, husbands' satisfaction was significantly associated with their

own internalizing symptoms,  $t(99) = -2.99, p < .005$ , but not with their wives' symptoms,  $t(99) = -1.77, ns$ . Wives' satisfaction was *not* significantly associated with their own symptoms,  $t(99) = -0.68, ns$ , nor with their husbands' symptoms,  $t(99) = 0.42, ns$ . To the extent that husbands (but not wives) were less satisfied at the beginning of their marriages, they also experienced more internalizing symptoms across the first 7 years of marriage.

### Global Satisfaction versus Specific Relationship Processes

To examine the relative contributions of global marital satisfaction (QMI) and specific relationship processes at the onset of marriage to levels of internalizing symptoms over the first 7 years of marriage, time-invariant covariates were grand-mean centered at Level 2 as predictors of Level 1 husband and wife parameters:

$$\text{Level 1: } Y_{ij} (\text{Internalizing Symptoms}) = \beta_{1j} (\text{Husband Intercept}) + \beta_{2j} (\text{Wife Intercept}) + r_{ij}$$

$$\begin{aligned} \text{Level 2: } \beta_{1j} &= \gamma_{10} + \gamma_{11}(\text{Hqmi}) + \gamma_{12}(\text{Wqmi}) + \gamma_{13}(\text{Conf}) + \gamma_{14}(\text{Support}) + \gamma_{15}(\text{Intimacy}) + \gamma_{16}(\text{Control}) + u_{1j} \\ \beta_{2j} &= \gamma_{20} + \gamma_{21}(\text{Hqmi}) + \gamma_{22}(\text{Wqmi}) + \gamma_{23}(\text{Conf}) + \gamma_{24}(\text{Support}) + \gamma_{25}(\text{Intimacy}) + \gamma_{26}(\text{Control}) + u_{2j} \end{aligned}$$

As presented in Table 4, husbands' satisfaction ( $t(95) = -2.62, p < .05$ ) and power and control ( $t(95) = -2.09, p < .05$ ) were significantly associated with husbands' symptoms. To the extent that husbands were more satisfied with their marriages and there was greater symmetry of power and control across spouses at the beginning of the marriage, husbands experienced fewer symptoms during the first 7 years of marriage. For wives, emotional intimacy was associated with wives' symptoms,  $t(95) = -2.74, p < .01$ . To the extent that couples were more emotionally intimate at the onset of marriage, wives experienced fewer symptoms over time.<sup>2</sup>

### Sensitivity Analyses

A series of sensitivity analyses were conducted to ensure that results were not

biased by (a) violations of model assumptions or (b) missing data due to divorce.

Residual analyses indicated that there was some degree of non-normality of residuals and heteroskedasticity of variances. As a result, all analyses were repeated using natural logarithm transformed scores of internalizing symptoms. The general pattern of results reported above was replicated, suggesting that mild violations of assumptions did not bias the results. Nonetheless, robust SEs have been reported for all model parameters. To address missing data due to divorce, pattern-mixture models for non-ignorable missing data were conducted (Atkins, 2005; Little, 1995). Results of these analyses indicated that the effects of relationship variables on internalizing symptoms did not vary as a function of missing data due to divorce.

## CHAPTER IV

### DISCUSSION

The principal goal of the present study was to attain a more comprehensive and refined understanding of the role that marriage plays in individual psychopathology. I sought to achieve this goal by (a) clarifying whether marital discord is a *global* risk factor for the broad class of internalizing symptoms, (b) examining the relative contributions of marital dissatisfaction and specific relationship processes during the transition into marriage to the subsequent development of internalizing symptoms, and (c) implementing a series of methodological refinements (i.e., multi-wave longitudinal design, examination of cross-spouse paths, assessment of subthreshold symptoms).

#### **Summary and Interpretation of Results**

Results of Aim 1 provide evidence of a higher-order factor shared among depressive and anxiety symptoms—a general internalizing dimension—in a community sample of couples. The factor structure obtained from Aim 1 provided a psychometrically sound assessment scheme for creating composite scores of internalizing symptoms. Additionally, expanding upon previous research demonstrating the fluctuation of *depressive* symptoms over time (e.g., Davila et al., 2003; Karney, 2001), growth curve analyses suggested that internalizing symptoms wax and wane over the early years of marriage.

Results of Aim 2 indicated that marital dissatisfaction during the transition into marriage is a risk factor for subsequent internalizing symptoms over the first 7 years of marriage for husbands but not for wives. This finding is in contrast to research and theory suggesting that marital discord may be a greater risk factor for *depression* for wives than



for husbands (e.g., Davila et al., 2003; Whisman et al., 2006). There are two possible explanations for this surprising finding. First, perhaps the importance of marriage for husbands versus wives varies during different life transitions. Based on the results of the present study, global marital satisfaction during the transition into marriage appears critical to men's subsequent mental health; however, the impact of satisfaction on wives' psychopathology may become more salient at a different transitional point (e.g., during the transition into parenthood when women are at risk for post-partum depression). Second, one of the novel contributions of this study is the examination of a higher-order internalizing dimension. Perhaps for wives, marital satisfaction is not a risk factor for internalizing symptoms in general but rather represents a specific risk for the development of depressive symptoms (a lower-order dimension of the internalizing spectrum). This interpretation is consistent with prior research indicating that marital satisfaction is more strongly associated with *depressive* symptoms for wives than for husbands.

Results of Aim 3 suggest that the extent to which marriages are characterized by disrespect, power asymmetry and partner control at the onset of marriage is just as detrimental to husbands' mental health as is global marital dissatisfaction. Disrespectful behaviors (e.g., being belittled by one's wife, not being treated as an equal partner in the marriage) may contribute to low self-esteem and feelings of worthlessness, which are key features of depression. Spousal control may be manifested in two ways. First, it may be in the form of husbands being the "head of the household" such that they have the majority of the responsibilities in the relationship, leading them to feel anxious and overwhelmed. Alternatively, issues of power and control may be characterized in the opposite manner,

with husbands having little say over what happens in their relationships and little control over how they spend their time, how the household is run, or how money is spent which, in turn, may lead to feelings of helplessness or hopelessness and isolation. Indeed, in the present study, exactly half of couples with imbalance of power and control in the relationship included husbands with more control whereas the other half included wives with more control. Behavioral theories suggest that losing touch with naturally reinforcing activities in one's environment is a major contributing factor in depression (Dimidjian, Martell, Addis, & Herman-Dunn, 2008). Thus, it is not surprising that a lack of freedom to engage in individual interests and pursue personal goals—as the result of having excessive responsibilities or little personal freedom— may lead husbands to experience symptoms of depression.

For wives, a lack of closeness, warmth, affection, and interdependence in one's relationship (emotional intimacy) at the onset of marriage was a risk factor for subsequent internalizing symptoms. Researchers have speculated that *close* relationships are especially central to the identities of women (Culp & Beach, 1998); thus, it is not surprising that a lack of intimacy and closeness in one's marital relationship—the most central of all close relationships—is associated with greater symptoms during the first 7 years of marriage. Nevertheless, the question remains: Why was emotional intimacy associated with symptoms but global marital satisfaction was not? One possible explanation is that, at least for wives, global satisfaction and specific relationship processes differ with regard to the *immediacy of their effects* on individual psychopathology. That is, perhaps global satisfaction has more immediate yet short-term effects on symptoms whereas relationship processes have delayed yet lasting effects. For

example, previous research has only demonstrated that marital discord is linked to subsequent depressive symptoms up to *two years* later (Whisman & Uebelacker, 2009); however, in the present study, symptoms were assessed over *seven years*. When examining this considerably longer period of time, marital satisfaction did not emerge as a long-term predictor of wives' symptoms despite the *concurrent* association between satisfaction and symptoms at Time 1 ( $r = -.25, p < .05$ ). In sum, marital dissatisfaction appears to have an acute effect on wives' symptoms whereas low levels of emotional intimacy play a more chronic, perhaps insidious role in women's mental health.

### **Implications of the Present Study**

Before I turn to study implications, I note various methodological limitations. First, although the sample size was comparable to many studies of newlyweds (e.g.,  $N = 90$  couples; Kiecolt-Glaser et al., 1996), replication with a larger sample is recommended. Second, the sample consisted primarily of White, well-educated, heterosexual married couples; such demographic factors limit the generalizability of the findings. Third, the study was not experimental; thus, causal conclusions cannot be drawn. Fourth, although couples were in the early years of marriage, they were not necessarily in new relationships at the start of the study. Fifth, couples generally reported satisfaction with their marriages at Time 1, more adaptive relationship processes, and relatively low levels of symptoms. Indeed, I chose a community sample at the transition to marriage for the express purpose of yielding such levels, as they are highly generalizable and ideal for informing prediction and prevention efforts. Nevertheless, associations between marital discord and symptoms may differ in clinical samples. Finally, although response rates were comparable to other published studies (e.g., Kurdek, 2005), it is possible that

couples at greatest risk for marital discord and dissolution were less likely to respond to the recruitment efforts and, consequently, were excluded from the sample.

There are numerous empirical, clinical, and theoretical implications of the research presented in this article. To begin, a dimensional approach to examining psychopathology is largely preferred to a categorical approach, and research indicates that depression and anxiety belong to a higher-order class of internalizing symptoms (e.g., Watson, 2005). The results of Aim 1 demonstrate the presence of this higher-order factor in a community sample, in men and women, and longitudinally. To maximize construct validity, researchers should routinely examine composite scores of internalizing symptoms rather than conducting separate examinations of depressive and anxiety symptoms or limiting their examinations to diagnoses.

Results of the present study also highlight the importance of examining the specific aspects of the marital relationship that have the greatest impact on psychological symptoms – as opposed to simply examining global relationship satisfaction. First, if I had overlooked relationship processes, I might have concluded that relationship functioning at the onset of marriage only affects men’s mental health over the first 7 years of marriage (results of Aim 2). However, examining specific processes in Aim 3 revealed that marital functioning does affect women’s long-term mental health and, more specifically, that high levels of intimacy, trust and emotional closeness are critical. Second, results demonstrate the utility of examining the impact of *multiple* relationship processes on psychopathology rather than focusing on only one or two aspects of the relationship (e.g., conflict). Past research has demonstrated that each of the four relationship processes under investigation is associated with depression (and, in some

cases, with anxiety) when examined separately. Further, supplementary univariate analyses conducted in the present study demonstrated significant associations between each relationship process and internalizing symptoms for both husbands and wives. Though informative, univariate analyses limit specificity of findings. By examining relationship processes simultaneously, I was able to identify the aspects of the marital relationship that are *most* critical to mental health.

The present study also helps to explain sex differences in the role that marriage plays in individual psychopathology. Depression is more prevalent in women than in men, and researchers have speculated that marriage plays a greater role in women's mental health as they tend to be more interpersonally oriented (Whisman et al., 2006). The results of the present study support the notion that sex differences do exist in the marital discord-internalizing symptoms link, but challenge current conceptualizations of the nature of these sex differences. For example, global marital dissatisfaction *at the onset of marriage* appears to be a risk factor for husbands but not for wives. Specifically, marital dissatisfaction seems to have an acute and temporary effect on wives' symptoms, and a more insidious and persistent impact on husbands' symptoms (over the first 7 years of marriage).

A more notable finding regarding sex differences is that the *specific aspects* of the marital relationship most influential to mental health differ for husbands and wives. Asymmetry in power and control is a risk factor for men (regardless of the direction of the asymmetry) whereas low levels of emotional intimacy represent a risk factor for women. This finding challenges the assumption that one's marital relationship is more important to wives than husbands and, consequently, that wives benefit more from

marriage with regard to their mental health. Rather, marital relationships are important to the mental health of both men and women, but in different ways. I call for researchers to conduct more sophisticated research focused on specific relationship processes to further clarify the nature of these sex differences.

With regard to clinical implications, relationship processes can be directly targeted in interventions, whereas global satisfaction must be indirectly targeted by enhancing marital functioning; therefore, results of the present study have tremendous clinical utility. I was able to identify specific clinical targets for interventions aimed at preventing internalizing disorders. For wives, it may be sufficient to focus on enhancing emotional intimacy to prevent the development of symptoms. For husbands, maximizing global satisfaction may be important, but helping couples build relationships characterized by mutual respect and a balance of control and decision-making appears to be an optimal starting point.

Finally, the current study has important theoretical implications. One of the most widely applied frameworks of mental illness—the *diathesis-stress framework* (Ingram & Luxton, 2004)—does not recognize the unique role of the marital relationship in the developmental course of psychopathology. Results of the present study indicate that incorporating relationship factors such as power and control and emotional intimacy into this model may greatly enhance its explanatory power. Understanding how marital processes fit into a diathesis-stress framework is particularly important given that enduring vulnerabilities are stable and environmental stressors are largely uncontrollable whereas relationship processes can be -- and have been -- successfully targeted in interventions (e.g., behavioral marital therapy for depression; Beach et al., 1998).

Accordingly, I call for researchers to examine how marital processes interact with diatheses and stressors that originate outside of the marital relationship to influence the developmental course of internalizing symptoms. To the extent that relationship processes are more routinely incorporated into existing etiological theories, these theories—and the interventions that they inform—are likely to be far more effective.

### Notes

<sup>1</sup> This data analytic approach was chosen because it is particularly well-suited to examining longitudinal and dyadic data (Karney & Bradbury, 1995b). HLM 6.0 was used because it provides reliable estimates of within-subject parameters in relatively small samples (Davila, Karney, Hall, & Bradbury, 2003). I used a multivariate 2-level model in which husband and wife parameters are modeled simultaneously—as originally proposed by Raudenbush, Brennan, and Barnett (1995)—in order to examine associations between marriage and symptoms separately for husbands and wives. This model is closely related to an actor-partner interdependence model, allowing us to model within-spouse and cross-spouse effects.

<sup>2</sup> I also examined the univariate effects of each relationship process on symptoms (through a series of separate analyses). Each relationship process significantly predicted husband (*ts* ranged from -4.18 to -2.32) and wife symptoms (*ts* ranged from -4.46 to -2.85) with one exception: conflict was only marginally associated with wives' symptoms ( $t = -1.695, p = .10$ ).



Table 1. Means, Standard Deviations, and Bivariate Correlations of Predictor and Outcome Variables

	Husband Symptoms	Wife Symptoms	Husband Mar Sat	Wife Mar Sat	Conflict	Partner Support	Emotional Intimacy	Power & Control
Husband Symptoms <i>Averaged across time</i>	---							
Wife Symptoms <i>Averaged across time</i>	<b>.10</b>	---						
Husband Time 1 Marital Satisfaction	-.43 <sup>****</sup>	-.32 <sup>***</sup>	---					
Wife Time 1 Marital Satisfaction	-.28 <sup>**</sup>	-.26 <sup>**</sup>	<b>.68<sup>****</sup></b>	---				
Time 1 Conflict	-.34 <sup>****</sup>	-.18	.40 <sup>****</sup>	.42 <sup>****</sup>	---			
Time 1 Partner Support	-.25 <sup>*</sup>	-.33 <sup>***</sup>	.47 <sup>****</sup>	.47 <sup>****</sup>	.59 <sup>****</sup>	---		
Time 1 Emotional Intimacy	-.22 <sup>*</sup>	-.42 <sup>****</sup>	.42 <sup>***</sup>	.45 <sup>****</sup>	.57 <sup>****</sup>	.65 <sup>****</sup>	---	
Time 1 Power & Control	-.36 <sup>****</sup>	-.26 <sup>**</sup>	.48 <sup>****</sup>	.45 <sup>****</sup>	.68 <sup>****</sup>	.74 <sup>****</sup>	.57 <sup>****</sup>	---
<i>M</i>	9.33	12.78	41.29	40.69	6.47	6.91	7.27	6.92
<i>SD</i>	8.17	8.74	4.65	4.87	1.24	0.79	0.77	0.83

Note.  $N = 102$  couples. Interspousal correlations are in bold. \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .005$ . \*\*\*\*  $p < .001$ .

Table 2. Factor Loadings (Averaged Across Time) for First-Order and Second-Order Factors

	Second-Order	First-Order	
	Internalizing	Anxiety	Depression
<b>Beck Anxiety Inventory</b>			
numbness or tingling	<b>0.373</b>	0.070	<b>0.345</b>
feeling hot	<b>0.354</b>	0.044	<b>0.335</b>
wobbliness in legs	<b>0.365</b>	0.004	<b>0.392</b>
unable to relax	<b>0.495</b>	0.176	<b>0.360</b>
fear of the worst	<b>0.550</b>	0.246	<b>0.362</b>
dizzy or lightheaded	<b>0.429</b>	0.062	<b>0.405</b>
heart pounding or racing	<b>0.423</b>	0.089	<b>0.371</b>
unsteady	<b>0.435</b>	0.016	<b>0.453</b>
terrified	<b>0.380</b>	0.112	0.298
nervous	<b>0.539</b>	0.169	<b>0.419</b>
feelings of choking	0.198	-0.009	0.220
hands trembling	<b>0.318</b>	-0.066	<b>0.421</b>
shaky	<b>0.408</b>	-0.083	<b>0.527</b>
fear of losing control	<b>0.455</b>	0.186	<b>0.305</b>
difficulty breathing	<b>0.321</b>	0.039	<b>0.307</b>
fear of dying	0.248	0.106	0.168
scared	<b>0.487</b>	0.197	<b>0.332</b>
indigestion	<b>0.453</b>	0.186	<b>0.311</b>
faint	<b>0.304</b>	0.112	0.219
face flushed	<b>0.339</b>	-0.040	<b>0.403</b>
sweating	<b>0.412</b>	0.017	<b>0.434</b>
<b>Beck Depression Inventory-II</b>			
sadness	<b>0.386</b>	<b>0.340</b>	0.071
pessimism	<b>0.394</b>	<b>0.375</b>	0.059
past failure	<b>0.379</b>	<b>0.351</b>	0.066
loss of pleasure	<b>0.456</b>	<b>0.420</b>	0.080
guilty feelings	<b>0.409</b>	<b>0.366</b>	0.079
punishment feelings	0.277	0.266	0.029
self-dislike	<b>0.455</b>	<b>0.476</b>	0.028
self-criticalness	<b>0.481</b>	<b>0.411</b>	0.119
suicidal thoughts	0.227	0.230	0.014
crying	0.299	<b>0.308</b>	0.009
agitation	<b>0.472</b>	0.288	0.228
loss of interest	<b>0.486</b>	<b>0.466</b>	0.065
indecisiveness	<b>0.394</b>	<b>0.394</b>	0.034
worthlessness	<b>0.471</b>	<b>0.513</b>	0.008
loss of energy	<b>0.423</b>	<b>0.476</b>	-0.016
changes in sleep	<b>0.304</b>	0.265	0.063
irritability	<b>0.444</b>	<b>0.381</b>	0.095
changes in appetite	<b>0.372</b>	<b>0.305</b>	0.112
concentration difficulty	<b>0.437</b>	<b>0.398</b>	0.076
tiredness or fatigue	<b>0.429</b>	<b>0.420</b>	0.047
loss of interest in sex	<b>0.300</b>	0.256	0.070

*Note.* Factor loadings > .30 are in bold. Composite scores of “internalizing symptoms” were computed by aggregating scores on items with factor loadings > .30 for the second-order factor.

Table 3. Results of Aim 2: Initial Marital Satisfaction Predicting Internalizing Symptoms over Time

	Predictors of Husbands' Internalizing Symptoms ( $\beta_{1j}$ )					Predictors of Wives' Internalizing Symptoms ( $\beta_{2j}$ )				
	$\gamma$	<i>SE</i>	95% CI $\gamma$	<i>t</i> (99)	Stand. Effect	$\gamma$	<i>SE</i>	95% CI $\gamma$	<i>t</i> (99)	Stand. Effect
Husbands' Satisfaction	<b>-0.71</b>	<b>.24</b>	<b>(-1.17, -0.24)</b>	<b>-2.99***</b>	<b>-.11</b>	-0.46	.26	(-0.96, 0.05)	-1.77	-0.06
Wives' Satisfaction	0.09	.20	(-0.31, 0.49)	0.42	.01	-0.16	.23	(-0.62, 0.30)	-0.68	-0.02

\*\*\* $p < .005$ .  $\gamma$  = unstandardized coefficient; *SE* = standard error; 95% CI  $\gamma$  = 95% confidence interval of unstandardized coefficient; Stand. Effect =  $\gamma_{p1}/\sqrt{\tau_{pp}}$  (i.e., standardized change in symptoms for each 1 unit increase in the predictor).

Table 4. Results of Aim 3: Marital Satisfaction and Relationship Processes Predicting Internalizing Symptoms

	Predictors of Husbands' Internalizing Symptoms ( $\beta_{1j}$ )					Predictors of Wives' Internalizing Symptoms ( $\beta_{2j}$ )				
	$\gamma$	<i>SE</i>	95% CI $\gamma$	<i>t</i> (95)	Stand. Effect	$\gamma$	<i>SE</i>	95% CI $\gamma$	<i>t</i> (95)	Stand. Effect
Husbands' Satisfaction	<b>-0.59</b>	<b>0.23</b>	<b>(-1.03, -0.15)</b>	<b>-2.62*</b>	<b>-.09</b>	-0.31	0.23	(-0.76, 0.13)	-1.37	-.04
Wives' Satisfaction	0.17	0.18	(-0.18, 0.52)	0.94	.03	0.00	0.22	(-0.42, 0.42)	-0.01	.00
Conflict	-0.65	0.91	(-2.44, 1.13)	-0.72	-.10	1.17	0.92	(-0.64, 2.98)	1.26	.15
Partner Support	1.25	1.16	(-1.01, 3.52)	1.09	.20	-1.07	1.55	(-4.10, 1.95)	-0.70	-.14
Emotional Intimacy	0.27	1.07	(-1.83, 2.37)	0.25	.04	<b>-4.05</b>	<b>1.48</b>	<b>(-6.96, -1.15)</b>	<b>-2.74**</b>	<b>-.51</b>
Power and Control	<b>-2.52</b>	<b>1.21</b>	<b>(-4.90, -0.15)</b>	<b>-2.09*</b>	<b>-.40</b>	-0.15	1.29	(-2.67, 2.37)	-0.11	-.02

\* $p < .05$  ; \*\* $p < .01$ .  $\gamma$  = unstandardized coefficient; *SE* = standard error; 95% CI  $\gamma$  = 95% confidence interval of unstandardized coefficient; Stand. Effect =  $\gamma_{p1}/\sqrt{\tau_{pp}}$  (i.e., standardized change in symptoms for each 1 unit increase in the predictor).

PART 2

EXPLAINING THE ROLE OF MARRIAGE IN

THE DEVELOPMENT OF INTERNALIZING DISORDERS:

AN INTEGRATED CONCEPTUAL FRAMEWORK

## CHAPTER V

### INTRODUCTION

Marital discord is robustly linked to depression (Whisman & Kaiser, 2008), yet relationship factors are rarely incorporated into broader etiological frameworks of individual psychopathology. This omission is problematic because the effect of a given risk factor can only be fully understood in the context of others (Kraemer, Stice, Kazdin, Offord, & Kupfer, 2001), and overlooking marital processes undoubtedly limits the predictive utility of existing etiological frameworks as applied to married couples. For example, the diathesis-stress framework posits that environmental stress activates an underlying vulnerability which leads to the development of psychopathology (Ingram & Luxton, 2004); however, it is unclear how marriage fits within this framework. Accordingly, the overarching goal of the present study was to examine how specific relationship processes transact with neuroticism (the phenotypic expression of the underlying vulnerability for internalizing disorders) and stress to influence the developmental course of internalizing symptoms. More specifically, I aimed to establish that marital processes remain significant and notable predictors of internalizing symptoms over the first 7 years of marriage and are thus critical to integrate into etiological models of psychopathology. Perhaps more importantly, I also sought to identify the specific and complex pathways through which these risk factors lead to the development of symptoms.

#### **A Brief Review of Research Examining Marriage and Depression**

The extent to which individuals experience discord in their marital relationships has consequences for their mental health. Marital discord (i.e., dissatisfaction or maladjustment in one's marriage)<sup>1</sup> is associated with an increased risk for depressive symptoms and disorders (see Goldfarb, Trudel, Boyer, & Preville, 2007; 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 large-scale epidemiological studies demonstrate that this link persists when controlling for key demographic variables (e.g., gender, age, education, and race/ethnicity; Whisman, Sheldon, & Goering, 2000; Whisman, 2007). Further, longitudinal studies have demonstrated that marital discord is not only a correlate of depression, but also temporally precedes the onset of depressive episodes (e.g., Whisman & Bruce, 1999) and predicts subsequent symptom levels (e.g., Beach, Katz, Kim, & Brody, 2003; Beach & O'Leary, 1993; Fincham, Beach, Harold, & Osborne, 1997; Fincham & Bradbury, 1993). In sum, there exists a plethora of cross-sectional, epidemiological, and longitudinal research indicating that marital discord is not only concurrently associated with depressive symptoms and diagnoses, but is also a *risk factor* for depression.

The majority of research explicating 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 marriage in mental health. Specifically,

depressive symptoms and disorders are associated with the following facets of several key relationship processes<sup>2</sup>:

**Poor Conflict Management:** frequent and unresolved arguments (e.g., McGonagle & Schilling, 1992); greater hostility and criticism (e.g., Rehman, Gollan, & Mortimer, 2008); psychological and physical aggression (e.g., Lawrence, Yoon, Langer, & Ro, 2009; O’Leary & Cano, 2001)

**Inadequate 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)

**Lack of Emotional Intimacy/Emotional Disengagement:** absence of an intimate, confiding relationship (e.g., Horwitz, McLaughlin, & White, 1998); fewer displays of affection and dissatisfaction with time spent with one’s partner (e.g., Hautzinger, Linden, & Hoffman, 1978)

**Issues Regarding Power and Control:** uneven distribution of power in one’s relationship (e.g., Hautzinger et al., 1978); infringement upon one’s personal rights (Smolen, Spiegel, & Martin, 1986; high levels of control (Schweitzer, Logan, & Strassberg, 1992)

Notably, much of this research has been cross-sectional in nature, limiting our understanding of whether these processes function as risk factors for depression; however, this body of work builds a compelling case for the argument that *numerous* facets of relationship quality have implications for individual psychopathology.

In order to expand upon this rich literature linking marital discord and depression, I argue that it is essential to systematically examine the complex relations among marital processes and other key risk factors. Indeed, Kraemer and colleagues (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* risk factors work together to produce psychopathology can researchers and clinicians understand how to optimize interventions to meet the unique needs of at-risk individuals. Unfortunately, marital processes are rarely embedded in the context of broader etiological frameworks,



providing a restricted perspective of their roles in the development of individual 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 interpersonal relationships (Acitelli, 1996; Beach, Martin, Blum, & Roman, 1993), the consideration of marital processes within etiological models has the potential to reveal prominent and unique etiological pathways for psychopathology.

### **Considering the Bigger Picture:**

#### **A Diathesis-Stress Framework**

Although multiple models of psychopathology exist, a diathesis-stress framework of mental illness (Ingram & Luxton, 2004) is one of the most widely applied in research examining the etiology of depression (e.g., Kendler & Prescott, 2006). Within this framework, individuals are viewed as possessing a diathesis (i.e., a latent trait that is endogenous to an individual and stable in nature) that is activated by environmental stressors (i.e., reactions to outside threats) to produce psychopathology.

There is overwhelming evidence from family, twin, and adoption studies that the vulnerability for depressive disorders is genetic (see Kendler & Prescott, 2006, and Wallace, Schneider, & McGuffin, 2002, for reviews; see Sullivan, Neale, & Kendler, 2000, for meta-analysis), and this genetic risk appears to be polygenic in nature (Kendler & Prescott) such that *multiple* genes contribute to the diathesis. Further, researchers have extensively examined the nature of this vulnerability and have converged on the personality trait neuroticism as a phenotypic expression of the underlying genetic diathesis for depression (e.g., Hettema, Neale, Myers, Prescott, & Kendler, 2006; Khan, Jacobson, Gardner, Prescott, & Kendler, 2005). Indeed, genetic researchers have

concluded that existing empirical evidence “establishes neuroticism as a 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 the diathesis-stress framework (Ingram & Luxton, 2004).

Although critical, genetic vulnerabilities are not sufficient for the development of depression. If genes account for approximately 31-42% of risk for depression (Sullivan et al., 2000), then a notable proportion of the variance in this risk is accounted for by factors other than genes. A wealth of research demonstrates that *stress* also plays a central etiological role (e.g., Kessler, 1997). For example, approximately 50-80% of cases of depression are preceded by major life events (Hammen, 2005; Mazure, 1998). Higher levels of perceived threat associated with life events are strongly associated with a greater risk for subsequent depression (Brown & Harris; 1978; Kendler, Karkowski, & Prescott; 1998). (See Hammen, 2005, for an extensive review of research indicating that stress plays a key role in the development of depression.)

In light of research suggesting that both genes and stress contribute to the development of depression, multiple models have been developed to explain the transaction 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 their diathesis to be activated and for symptoms to develop (e.g., Kendler, Thornton, & Gardner, 2001). Nonetheless, a greater diathesis is conceptualized as an especially potent risk factor for depression. Individuals possessing a greater vulnerability for depression have certain skill deficits

that lead them to “select into” more stressful environments (i.e., *stress-generation model*; Hammen, 1991). Thus, even though individuals possessing a high genetic liability require low levels of 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 the development of depression, I propose systematically examining the interplay of neuroticism, stress, and *marital processes* to clarify how exactly these risk factors work together to influence the development of symptoms over time.

### **Potential Benefits of Incorporating Marital Processes into a Diathesis-Stress Framework**

In addition to recognizing that the effect of a given risk factor cannot be fully understood except in the context of all the others, I propose several other key advantages to examining marital processes within a diathesis-stress framework. First, although the majority of research aimed at explicating the role of marriage in individual psychopathology has been focused on depression, emerging research indicates that discord is also associated with anxiety (e.g., McLeod, 1994; Whisman, 1999; Whisman et al., 2000; Whisman et al., 2004; Whisman, 2007). Within a diathesis-stress framework, the diathesis constitutes a broad genetic liability for both depressive *and anxiety* disorders (e.g., Kendler, Prescott, Myers, & Neale, 2003). Given that depression and anxiety appear to share a common diathesis, they are often conceptualized as belonging to a higher class of *internalizing* disorders that are often examined simultaneously in etiological research (e.g., Clark, & Watson, 2006; Watson, 2005; Watson, O’Hara, & Stuart, 2008; Widiger & Clark, 2000). Thus, examining the role of marriage within a diathesis-stress framework serves to unify existing research demonstrating links between marriage and both

depression and anxiety. Examining how neuroticism, stress, and marital processes work together to contribute to the broad dimension of internalizing symptoms also helps to clarify the breadth of the contribution of marriage to the development of these disorders. That is, it will be possible to determine whether risk factors constitute general risk factors for a broad range of symptoms as opposed to relatively specific risk factors for just one or two disorders.

Second, consistent with a stress-generation model (Hammen, 1991), individuals possessing a genetic liability for psychopathology 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 that has been documented between marital discord and depression is simply an artifact of this selection process, such that individuals genetically pre-disposed to develop depression select into more dysfunctional relationships. Beam et al. (2011) explored this possibility in a sample of 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, Uebelacker, Tolejko, Chatav, & McKelvie (2006) demonstrated that the link between marital discord and depression (in addition to other indicators of well-being) remains significant when controlling for the big 5 personality traits. Notably, although marital discord does appear to play a *unique* role in depression, replication of this finding is necessary to more fully account for the possibility of selection effects.

Third, there has been a call for research delineating the specific environmental pathways through which neuroticism leads to the development of psychopathology (e.g.,

Kendler, Gardner, & Prescott, 2002; Kendler & Prescott, 2006). Such an endeavor is essential for clarifying the aspects of one's environment *most* critical to mental health. Research consistent with this goal will aid in the identification of aspects of the environment to be prioritized in research and targeted in clinical practice. By examining the relative contributions of marital processes and stress, we can begin to clarify the most salient environmental pathways through which genes contribute to the development of symptoms for married individuals.

### **A Guide for Incorporating Marital Processes into a Diathesis-Stress Framework**

To clarify how marital processes fit into a diathesis-stress framework, I propose a theoretically-guided and systematic approach to model development. One theory that is particularly well-suited to guide this process is the vulnerability-stress-adaptation (VSA) theory of marriage (Bradbury, Cohan, & Karney, 1998; Karney & Bradbury, 1995). The VSA theory is evidence-based, adapted from the diathesis-stress model, and provides a framework within which to understand the developmental course of *marriage* specifically. Proponents of the VSA theory assert that the vulnerabilities that each spouse brings to the marriage, and the stressful events or life transitions experienced by the couple, influence marital development. However, the specific ways in which couples adapt to stressors also influence their subsequent marital satisfaction. Thus, enduring 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.

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, of course, 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. That is, a vicious cycle might occur for some couples such that stress contributes to poor relationship functioning (e.g., inadequate partner support, 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 in the development of internalizing disorders.

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 should favor independence whereas women should be more 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 develop and test an integrated conceptual framework to explain how marital processes transact with neuroticism and stress during the transition into marriage to impact internalizing symptoms over the first 7 years of marriage. Although model development was exploratory in nature, I offer several hypotheses about specific pathways among variables. First, consistent with the stress-generation (Hammen, 1991) and VSA models (Bradbury, Cohan, & Karney, 1998; Karney & Bradbury, 1995), I hypothesized that neuroticism would predict higher levels of stress and more maladaptive relationship processes. Second, I predicted that stress and relationship processes would be interrelated, also consistent with the VSA model (Bradbury et al.; Karney & Bradbury). Third, I 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 genetic liabilities (Beam et al., 2011; Whisman et al., 2006)

Fourth, based on results of Brock and Lawrence (2011), I anticipated that issues of power and control in the relationship would emerge as a particularly salient predictor of symptoms for husbands, whereas a relative lack of emotional intimacy would be most salient for wives. Fifth, in accord with the gender intensification hypothesis (Hill & Lynch, 1983), I predicted that stressors generated outside of the marriage (e.g., work stress, strain in other interpersonal relationships, chronic health issues) would play a more prominent role in men's symptoms whereas marital functioning itself would be more salient for wives.

To maximize the utility of the proposed integration of marital research into the diathesis-stress framework, I 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 my goal of examining the development of symptoms in normative samples that have lower rates of diagnoses yet still exhibit significant functional



impairment. Further, structural analyses of DSM-IV depressive and anxiety disorders reveal a higher-order factor shared by these disorders (Watson). Examining this shared dimension of internalizing symptoms allows for clarification of factors putting individuals at risk for internalizing disorders more generally.

Fourth, I propose examining *multiple* relationship processes simultaneously, an approach exemplified in a recent study. Brock and Lawrence (2011) demonstrated significant univariate associations among four relationship processes (conflict, support, intimacy, 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 specific aspects of the marital relationship contributing to individual psychopathology; however, it is unclear whether these relationship processes represent unique predictors of symptoms when accounting for other well-established risk factors (i.e., neuroticism and stress), nor is it clear how these relationship processes transact with neuroticism and stress to contribute to symptom development.

## CHAPTER VI

### 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, 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 (e.g., “I do not feel worthless”) to 3 (e.g., “I feel utterly worthless”). 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. (The BAI was not administered at Time 4 and, therefore, composite scores of internalizing 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 Negative Temperament scale comprises 28 items such as “Little things upset me too much,” and “I often worry about things that I have done or said.” Coefficient alphas were .91 for husbands and .92 for wives.

**Non-marital 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 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 than acute stress (McGonagle & Kessler, 1990), and (c) chronic stress is especially relevant with regard to understanding how stress contributes to the long-term *developmental course* of a disorder (Monroe & Simmons, 1991).

The CSI covers nine 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, health, and the marital relationship. 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 – excluding the marital relationship domain – so that high scores corresponded to greater

stress. An average score was calculated because not all domains applied to everyone (e.g., school). Scores were calculated at Time 1 (corresponding to the stress during the transition into marriage).

**Relationship processes.** Relationship processes were measured with the *Relationship Quality Inventory (RQI)*; Lawrence, Brock, Barry, Langer & Bunde, 2009; Lawrence et al., 2008; Lawrence et al., 2011), a 60-minute semi-structured interview designed to allow interviewers to conduct functional analyses of couples' relationships across the following relationship processes:

**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 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, cognitive dissonance). Interviewers rate 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 relationship processes during the transition into marriage. Ratings based on interviews with husbands versus wives did not differ significantly, so they were averaged to create composite 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 (Lawrence, Brock, Barry, Langer & Bunde, 2009; Lawrence et al., 2011).

### **Data Analyses**

Analyses were conducted with Mplus (Muthen & Muthen, 2010). Growth trajectories of internalizing symptoms over the first 7 years of marriage were examined using latent growth modeling techniques with five waves of data (Times 1, 2, 3, 5 and 6). Actor partner interdependence modeling (APIM) for mixed independent variables (Kenny, Kashy, & Cook, 2006) was employed for all analyses to account for the possibility of interdependence between husbands’ and wives’ data. 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 a good fit, values up to .08 indicate a reasonable fit, values ranging from .08-.10 indicate a mediocre fit, and values greater than .10 indicate a poor fitting model (MacCallum, Browne, & Sugawara, 1996).

## CHAPTER VII

### RESULTS

All variables met multivariate normality assumptions. Means and *SDs* are reported in Table 5. Interspousal correlations were small in magnitude. Predictors and outcomes were sufficiently distinct to warrant examining them as separate (albeit related) constructs. Missing data were addressed via maximum likelihood estimation in Mplus. Prior analyses of the internalizing symptoms data (Brock & Lawrence, 2011) demonstrated that a mean-and-variance model (comprising husband and wife latent intercept variables) was the best fit for these data, such that symptoms fluctuate around an individual's mean level of symptoms rather than changing systematically over time. This model demonstrated satisfactory fit,  $\chi^2(44, N= 103) = 63.37, p <.05, \chi^2/df = 1.44, CFI = .93, TLI = .93, RMSEA = .07, SRMR = .09$ .

#### **A Systematic Approach to Model Development**

In order to clarify how any two risk factors work together to contribute to symptoms, I adapted guidelines suggested by Kraemer and colleagues (2001) and systematically examined each of the 15 pairs of risk factors included in the present study (e.g., neuroticism and stress) with regard to (1) temporal precedence, (2) correlations, and (3) predictive dominance for husbands' and wives' symptoms. (See Appendix A for a decision tree depicting how temporal precedence, correlations, and predictive dominance were applied to each pair of risk factors.)

**(1) Which risk factors demonstrate temporal precedence over other risk factors?** Research indicates that neuroticism is a relatively endogenous and stable trait in adulthood (Clark, 2005; Kendler, Neale, Kessler, Heath, & Eaves, 1993). Further, within



the diathesis-stress framework, the diathesis is conceptualized as temporally preceding any environmental influences that activate the underlying vulnerability (Ingram & Luxton, 2004). In contrast, there is no theoretical basis for establishing temporal precedence of stress relative to relationship processes (or vice versa). Finally, stress and relationship processes were assessed at the same time in the present study—during the transition into marriage—and, therefore, temporal precedence for these variables could not be determined. In sum, the only conclusion that could be drawn with regard to temporal precedence was that neuroticism temporally preceded both stress and the four relationship processes.

**(2) Which risk factors are significantly correlated?** Correlations among risk factors are reported in Table 6. First, husbands' neuroticism was significantly associated with husbands' stress and with each of the relationship processes. Similarly, wives' neuroticism was significantly associated with wives' stress and with each relationship process. Second, correlations between neuroticism and environmental variables (stress, relationship processes) were small to medium in magnitude. Third, husbands' stress was not correlated with any relationship processes, but wives' stress was significantly and moderately associated with all relationship processes. Fourth, correlations among relationship processes were significant and medium to large in magnitude, which is consistent with the conceptualization of relationship processes as distinct yet related facets of a higher-order dimension of relationship quality (Lawrence et al., 2008; 2009; 2011).

**(3) Which risk factors demonstrate predictive dominance over others?** Based on preliminary analyses, a mean-and-variance model was specified in Mplus modeling

overall (average) levels of symptoms across the first 7 years of marriage separately for husbands and wives. A series of analyses were conducted with each pair of risk factors predicting husbands' and wives' symptoms (a total of 15 models). For example, for neuroticism and stress, husbands' symptoms and wives' symptoms (latent variables) were regressed onto husbands' neuroticism, wives' neuroticism, husbands' stress, and wives' stress. Results of these 15 separate models are reported in Appendix B.

Next, for each separate model, I compared the relative fit of (a) the model with all paths free to be estimated to (b) that same model with the paths corresponding to the competing risk factors fixed to be equal (e.g., wives' neuroticism  $\rightarrow$  wives' symptoms *equal to* wives' stress  $\rightarrow$  wives' symptoms). The model with the lowest Bayesian Information Criterion (BIC) value was deemed to be the best fitting model. If the former model (*without* fixed pathways) was the better fitting model, I concluded that the coefficients significantly differed from one another, and the path with the larger standardized coefficient was deemed the more dominant path. If the latter model (with fixed pathways) was a better fit, I concluded that the coefficients corresponding to these two paths were not significantly different and, therefore, neither risk factor demonstrated predictive dominance. BIC values for free versus fixed models and a summary of predictive dominance for risk factor pair are reported in Appendix B.

**Model development.** Once I completed the three sets of preliminary analyses described above -- examining temporal precedence, correlations, and predictive dominance among each pair of risk factors -- I evaluated these results simultaneously in order to determine what paths to include in the integrated conceptual model, i.e., how each pair of risk factors transacts to influence symptoms. Kraemer and colleagues (2001)

identified five possible transactions between risk factors: (1) by proxy (one risk factor is an indicator of another more global risk factor), (2) overlapping (both risk factors predict symptoms and influence each other), (3) independent (both risk factors predict symptoms but do not influence each other), (4) mediation (one risk factor represents a pathway through which the other influences the illness), and (5) moderation (one risk factor influences the degree of association between the other risk factor and illness). Appendix C includes a summary of how I applied these principles to determine (a) which of these five transactions best represented how each pair of risk factors work together to influence symptoms and (b) how the relation between those two risk factors would be represented in the final model.

Results of predictive dominance analyses also allowed us to identify which variables should have *direct pathways* to symptoms in the final model. If a potential risk factor significantly predicted symptoms *at least once* in that set of preliminary analyses, that variable was included as a direct predictor of symptoms. Neuroticism, stress, power and control, and conflict management each significantly predicted *husbands'* symptoms (see Appendix B), so these variables were included as predictors of husbands' symptoms. For wives, conflict management was the only variable that did *not* predict wives' symptoms at least once in the series of analyses (see Appendix B); all other risk factors were included as predictors of wives' symptoms in the final model.

### **Testing the Final Integrated Model of Internalizing Symptoms**

Based on the series of preliminary analyses and resulting determinations regarding pairs of risk factor described above, I specified and tested an integrated model

including neuroticism, stress, and relationship processes (RPs) *simultaneously* predicting overall levels of symptoms during the first 7 years of marriage. The final model included the following specifications:

Husbands' Neuroticism → Husbands' Stress, Wives' Stress, the 4 RPs, and Husbands' Symptoms  
 Wives' Neuroticism → Wives' Stress, the 4 RPs, and Wives' Symptoms  
 Husbands' Stress → Husbands' Symptoms  
 Wives' Stress → Four Relationship Processes and Wives' Symptoms  
 Covariance of error terms of processes (to reflect higher-order dimension of relationship quality)  
 Power and Control and Conflict Management → Husbands' Symptoms  
 Emotional Intimacy, Partner Support, and Power and Control → Wives' Symptoms

Estimation of this model yielded satisfactory fit,  $\chi^2(120, N= 103) = 173.90, p <.005$ ,  $\chi^2/df = 1.45$ , CFI = .92, TLI = .90, RMSEA = .066, SRMR = .084. Significant path coefficients are reported in Figure 1. This model explained 69.6% of the variance in husbands' symptoms and 49.8% of the variance in wives' symptoms.

Notably, within this model, wives' stress significantly predicted each of the four relationship processes. However, there was no clear temporal precedence for these risk factors (see Preliminary Analyses); therefore, I expected them to have *reciprocal* effects on one another: not only would wives' stress impact functioning in each of these domains, but maladaptive relationship processes would impact overall levels of stress. Due to restrictions in model identification, reciprocal pathways could not be represented in the final model. I therefore tested an alternative model with reverse pathways *from* each of the four relationship processes *to* wives' stress. This model yielded adequate fit,  $\chi^2(120, N= 103) = 173.78, p <.005$ ,  $\chi^2/df = 1.45$ , CFI = .92, TLI = .90, RMSEA = .066, SRMR = .083. However, closer examination indicated that pathways to stress from emotional intimacy,  $\beta = -.01, ns$ , partner support,  $\beta = -.23, ns$ , power and control,  $\beta = -$

.20, *ns*, and conflict management,  $\beta = -.04$ , *ns*, were not significant. As a result, I retained the model with pathways representing stress predicting relationship processes.

## CHAPTER VIII

### DISCUSSION

Considering the unique role of the marital relationship within the broader context of a diathesis-stress framework serves to (a) unify research demonstrating that marital discord is associated with both depression and anxiety, (b) clarify whether the link between marital discord and symptoms is unique and not simply an artifact of the underlying shared vulnerability (i.e., neuroticism) for both relationship discord and psychopathology, and (c) delineate the most salient environmental pathways through which neuroticism contributes to internalizing symptoms for married individuals to inform both theory and practice. Accordingly, the principal goal of the present study was to develop and 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.

#### **Summary of Results**

Results indicate that the vulnerabilities individuals bring to their marriages (i.e., neuroticism), the stressors that they encounter during the transition into marriage, and the relationship skills that they possess at the onset of marriage each serve critical functions in the development of internalizing disorders. Indeed, the model developed in the present study accounted for nearly three-fourths of the variance in husbands' symptoms and nearly half of the variance in wives' symptoms. Results begin to clarify the role of marriage within the broader context of a diathesis-stress framework. Consistent with my hypotheses, neuroticism was associated with higher levels of stress and more maladaptive relationship processes, and (wives') stress and relationship processes were interrelated.

Also consistent with my predictions, the effects of certain relationship processes on symptoms remained significant after controlling for neuroticism, replicating previous 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 disorders.

By employing a systematic method of model development, I was able to explicate the specific environmental pathways through which neuroticism contributes to internalizing symptoms, pathways that appear to be idiosyncratic for husbands and wives. For husbands, there appear to be three distinct pathways through which the diathesis for internalizing disorders ultimately leads to 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 contributed to greater stress experienced by husbands which, in turn, was associated with greater symptoms.

**Pathway #3:** Neuroticism contributes to symptoms *through imbalance of power and control* in one's marriage: husbands high in neuroticism are more likely to experience disrespect, unbalanced decision-making, and relational control which, in turn, contributed to symptoms.

There are several notable features of these pathways that warrant further consideration.

First, the effect of power and control on symptoms was only marginally significant when accounting for non-marital stress. This suggests that, perhaps, stressors originating outside of the marriage may play a more critical role in the development of psychopathology for husbands than marital processes. Second, although there were two distinct pathways identified in the present study, the direct effect of neuroticism on symptoms remained significant and large in magnitude. This suggests that for husbands

who are relatively high in neuroticism, environmental pathways may be less salient: there is a relatively straight and narrow path through which this innate vulnerability progresses into symptoms. In contrast, environmental influences appear especially meaningful for husbands who are relatively low in neuroticism: these men require greater stress and imbalance of power and control in their relationships to develop symptoms. This finding is consistent with an additive model of psychopathology (Kendler, Thornton, & Gardner, 2001), which purports that a weaker diathesis requires more stress to produce psychopathology. Third, although three primary pathways emerged for husbands, there was also an indirect pathway through which *wives* influenced husbands' mental health. To the extent that wives were higher in neuroticism, they experienced greater stress which, in turn, contributed to an imbalance of power and control in the marital relationship—one 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 ultimately contributed to the development of 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 contributed to a lack of closeness, warmth, affection, and interdependence in one's relationship which, in turn, was associated with symptoms.

Notably, when accounting for the effect of emotional intimacy on symptoms, wives' non-marital stress *did not* contribute to symptoms. Although the broad context surrounding marriage plays a salient role in men's psychopathology, marital functioning appears to be most critical to the mental health of women. The only role that wives' stress played in



symptoms was through its influence on intimacy: higher levels of stress were associated with lower levels of closeness and affection in the relationship 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 appear to provide support for this assertion and for my hypotheses: marriage plays a fundamental role in the development of symptoms for women but is less prominent for men. 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. Therefore, women who are especially high in neuroticism may be prone to developing symptoms regardless of environmental influences, whereas marital functioning may be more prominent for women who are relatively low in neuroticism. Finally, husbands also appeared to indirectly influence wives' psychopathology: husbands' neuroticism contributed to both 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).

Finally, although balance of power and control emerged as especially important for men (relative to other marital processes) and emotional intimacy was most critical to wives, 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

partner support and conflict management did not play a *direct* role in symptoms, their indirect influences on psychopathology—through their effects on other aspects of marital functioning—should not be discounted.

### **Implications of the Present Study**

Before turning to a discussion of implications of the present study, I 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 the 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. I intentionally recruited a sample with these characteristics given that results of the present study were intended to inform prevention efforts. Nevertheless, associations may differ in clinical samples with greater marital discord and symptoms.

**Theoretical and empirical implications.** The results of the present study have numerous implications. First and foremost, they suggest that marriage influences the development of individual psychopathology even when taking into account risk factors that have been prioritized in past etiological research (i.e., neuroticism and stress). Indeed, in some cases, specific aspects of marriage were actually more influential. For example, wives' marital functioning represented the *central* environmental pathway through which neuroticism contributed to symptoms, whereas non-marital stress did not affect symptoms when accounting for marital factors. Taken together, the results suggest that etiological frameworks and research on risk factors for internalizing symptoms

would be greatly enhanced by recognizing the unique role of marital processes in psychopathology.

Second, results support both the *additive model of depression* (Kendler et al., 2001) and *stress generation theory* (Hammen, 1991) as they might be applied to the broad class of internalizing symptoms for married couples. That is, there was evidence that (a) environmental risk factors play more prominent roles for individuals with relatively low genetic liabilities (consistent with an additive model), and (b) highly vulnerable individuals are more likely to experience environmental risk factors (stress generation theory). For example, the final model suggests that more neurotic individuals are at greater risk for developing symptoms due to the notable direct effect of neuroticism, and that this risk is further intensified by the effects of neuroticism on environmental risk factors; however, given the magnitude of the direct effect of neuroticism on symptoms, the effects of stress and relationship processes become less prominent for individuals with relatively high genetic liabilities. In contrast, the direct path between neuroticism and symptoms indicates that less neurotic individuals will experience lower levels of symptoms. Therefore, for these individuals, higher levels of stress and more maladaptive relationship processes are necessary for the development of internalizing symptoms.

Third, 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 (i.e., as nurturing, affectionate, and compassionate care-givers) and men (i.e., as autonomous, dominant, ambitious, and self-reliant) intensify with age. By the time individuals marry,

these gender roles are expected to be quite prominent and have the potential to play a role in the development of 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* stressors. The only marital process that played a role in the development of symptoms was an imbalance of power and control, which is characterized by a *loss of independence* and freedom to make one's own decisions. In contrast, the principal environmental 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 helps to resolve the long-standing debate in the marital literature suggesting that marriage may be more important to the mental health of woman 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.** The present study was designed with the express purpose of informing preventative interventions. Specifically, a multi-wave, longitudinal design was employed such that potential risk factors for symptoms were examined during the transition into marriage as predictors of subsequent symptoms. Existing preventative interventions (e.g., marital preparation programs) target this important life transition; therefore, examining risk factors at the onset of marriage has important implications for adapting these programs to not only prevent marital discord and dissolution, but also individual psychopathology. Consequently, results have numerous implications for clinical practice. First, results indicate that targeting marital processes in intervention efforts would likely weaken some of the prominent environmental 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). Further, stressors are relatively unpredictable and uncontrollable, and neuroticism is generally stable in nature, making them less ideal clinical targets.

Second, identifying risk factors for a *range* of symptoms 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 symptoms (with some specificity for depressive symptoms for wives), 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 to the development of internalizing symptoms include balance of power and control for men and emotional intimacy for women. However, existing marital preparation programs are largely focused on developing conflict management and resolution skills while overlooking other important aspects of relationship quality. Tailoring these programs to incorporate other key components—such as teaching couples how to preserve and respect one another's autonomy and how to develop close, intimate bonds—has the potential to

maximize the scope of the influence of such programs so that they not only prevent marital discord and divorce, but also prevent individual psychopathology.

Finally, although I am arguing that it important to help couples build healthy relationship skills, I also acknowledge that this is not sufficient for preventing psychopathology. Indeed, results of the present study 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 strategies (especially for individuals high in neuroticism).

## Notes

<sup>1</sup> *Marital satisfaction* refers to global marital sentiment or marital happiness as a unitary construct. *Marital adjustment* is broader in scope, and includes a consideration of marital processes such as conflict management skills and marital outcomes such as marital satisfaction. *Marital quality* refers to marital processes alone, such as the quality of a couple's conflict management skills, supportive transactions, or emotional intimacy. Additionally, several terms have been used to describe low marital satisfaction or adjustment, including *marital discord*, *marital dissatisfaction*, *marital distress*, and *marital dysfunction*. Low marital satisfaction is also distinguished from *marital dissolution*, which refers to separation or divorce.

<sup>2</sup> Researchers have conducted examinations focused on specific facets (e.g., psychological and physical aggression) of more general relationship processes (e.g., conflict management). The research summarized for each relationship process does not represent the complete definition of each construct. In contrast, the semi-structured interview used in the present study was designed to assess relationship processes using more inclusive definitions (which are provided on pp. 62-63) and each relationship process was measured as a multi-faceted construct.

Table 5. Descriptive Statistics for Individual and Dyadic Variables

	Husbands		Wives	
<i>Individual Variables</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<b>Neuroticism</b> <i>Possible range (0 – 28)</i>	7.42	6.46	10.83	7.26
<b>Non-Marital Stress</b> <i>Possible range (0 – 9)</i>	3.14	0.93	3.19	0.82
<b>Internalizing Symptoms</b> <i>Possible range (1 – 111)</i>				
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
<i>Dyadic Variables</i>	<i>M</i>		<i>SD</i>	
<b>Relationship Processes</b> <i>Possible range (1-9)</i>				
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	



Table 6. Correlations among Risk Factors and Internalizing Symptoms

Wives	Husbands										
	1	2	3	4	5	6	7	8	9	10	11
1. Neuroticism	<b>.10</b>	.39*	-.47*	-.33*	-.31*	-.38*	.55*	.69*	.56*	.47*	.42*
2. Stress	.31*	<b>.22*</b>	-.15	-.10	-.07	-.19	.34*	.39*	.36*	.32*	.42*
3. Conflict	-.31*	-.33*	---	.59*	.57*	.68*	-.27*	-.36*	-.31*	-.11	-.20*
4. Support	-.28*	-.44*	.59*	---	.65*	.74*	-.21*	-.18	-.26*	-.09	-.18
5. Intimacy	-.31*	-.33*	.57*	.65*	---	.57*	-.15	-.25*	-.24*	-.06	-.05
6. Control	-.24*	-.44*	.68*	.74*	.57*	---	-.33*	-.33*	-.35*	-.18	-.24*
7. Time 1 Symptoms	.35*	.11	-.17	-.30*	-.34*	-.19	<b>.19</b>	.50*	.56*	.35*	.44*
8. Time 2 Symptoms	.69*	.33*	-.15	-.32*	-.43*	-.23*	.53*	<b>.09</b>	.59*	.52*	.52*
9. Time 3 Symptoms	.43*	.36*	-.21*	-.27*	-.30*	-.25*	.41*	.57*	<b>.10</b>	.57*	.56*
10. Time 5 Symptoms	.33*	.37*	.02	-.19	-.23*	-.21*	.37*	.51*	.61*	<b>.16</b>	.76*
11. Time 6 Symptoms	.25*	.25*	-.19	-.17	-.17	-.14	.50*	.38*	.63*	.41*	<b>.02</b>

Note.  $N = 103$  couples. Correlations were estimated in Mplus to address missing data. Husbands' data are above the diagonal. Wives' data are below the diagonal. Interspousal correlations are in bold along the diagonal (with the exception of each of the four relationship processes which represent dyadic-level scores). Correlations between husbands' neuroticism and wives' stress ( $r = .27^*$ ) and wives' neuroticism and husbands' stress ( $r = .04$ ) were small in magnitude. \*  $p < .05$ .

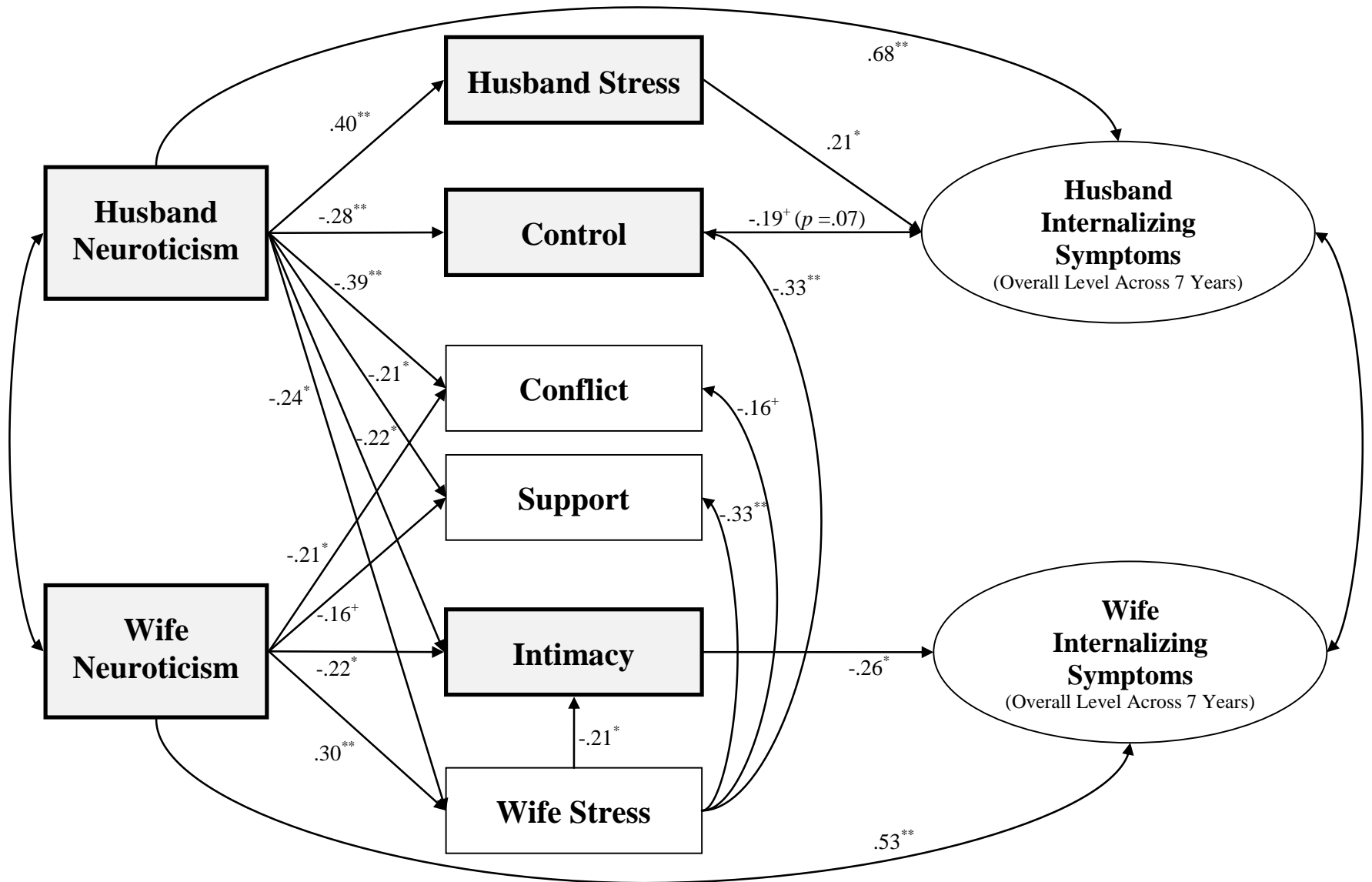


Figure 1. Final Integrated Model. Only significant pathways are shown. All coefficients are standardized. <sup>+</sup>  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ .

## GENERAL DISCUSSION

For decades, marital researchers have examined associations between intimate relationship functioning and individual psychopathology, establishing a robust link between marital discord and depression (Whisman & Kaiser, 2008). However, limitations of this research have restricted our understanding of the significance of marriage with regard to the development of internalizing symptoms. Results of the present research help to address these limitations and clarify the role of marriage in mental health. First, by incorporating a longitudinal research design, I was able to establish that marital discord is indeed a *risk factor* for internalizing symptoms and not just a consequence. Indeed, relationship functioning during the transition into marriage appears to have important long-term implications for the mental health of both partners in the relationship.

Second, by examining the general dimension of internalizing symptoms, I was able to establish that marital discord is a risk factor for the *broad range* of disorders as opposed to just one or two diagnoses. Clarifying the pervasiveness of the effects of marriage on individual psychopathology is of particular relevance for informing interventions. The mental health field is transitioning from a focus on treating existing psychopathology to *preventing* the development of psychopathology. This transition has prompted a call for basic research that involves identifying *global* risk factors associated with a broad range of disorders as opposed to specific forms of psychopathology (Coie, Watt, West, Hawkins, Asarnow et al., 1993, p. 1019). Clarifying that marital dysfunction is a risk factor for a *range* of internalizing symptoms is 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 would have limited utility.

Third, simultaneously examining marital dissatisfaction and each of the four relationship processes in the present research allowed for the identification of the specific aspects of the marriage *most* critical to mental health. Specifically, it appears most critical that partners are respectful of one another, are accepting of each other's hobbies, careers and passions, that each individual feels free to pursue his or her own unique interests, and that both partners have a say in the decision-making process (i.e., balance of power and control). It is also of particular importance that couples have high levels of intimacy and trust, feel as if they have a close emotional bond, feel comfortable disclosing that which is personal and important to them, and that they can expect their partners to respond with validation, are comfortable expressing love and affection, and receive affection in ways that meet their needs (i.e., high levels of emotional intimacy). Given that the majority of past research related to depression has been focused on either global marital dissatisfaction or conflict management alone, these results are novel and highlight the importance of routinely considering multiple relationship processes in research as opposed to narrowly focusing on one or two specific aspects of marital functioning (i.e., conflict management).

Fourth, by implementing a systematic model-building approach and examining neuroticism and non-marital stress as additional risk factors for internalizing symptoms, I was able to develop an integrated model for understanding how relationship processes fit into a diathesis-stress framework – one of the most widely applied frameworks of individual psychopathology. Notably, the relationship processes emerging as unique risk factors (Part 1) remained significant predictors of symptoms *after controlling for the effects*

*of neuroticism and non-marital stress* (Part 2). Consideration of relationship processes within the diathesis-stress framework also helped to clarify the specific environmental pathways through which neuroticism contributes to the development of internalizing symptoms, and highlights the relative importance of marital processes.

Finally, accounting for potential sex differences helped to address the supposition that the marital relationship may be more critical to the mental health of women than men. For men, non-marital stress emerged as a prominent pathway, as did the importance of a healthy balance of power and control in the relationship. For women, the quality of emotional intimacy and trust in one's relationship emerged as the principal etiological pathway through which neuroticism developed into internalizing symptoms. Moreover, non-marital stress no longer played a significant role for women once emotional intimacy was accounted for. These findings demonstrate the critical role that marriage plays in the mental health of women. Finally, although results highlight the importance of a healthy marital relationship for women, they also indicate that it is too simplistic to conclude that marriage is not important for men. Instead, by considering the various facets of the relationship, I was able to clarify that functioning in the marital relationship is as important to men as it is to women -- it is just important in different ways.

Taken together, the results of the present research have important implications for preventative interventions. Existing marital preparation programs (e.g., PREP; Markman, Stanley, & Blumberg, 1994) are focused primarily on building conflict management skills, but overlook other important relationship processes. By including components focused on building greater intimacy and helping couples to balance power and control dynamics in

their relationships, these programs have the potential to not only prevent marital dissatisfaction and divorce, but to also prevent the development of internalizing symptoms.

### **Future Directions**

Results of the present research help to clarify the role of the marital relationship in the developmental course of internalizing symptoms. The next step in this line of research is to examine parallel research questions in a clinical sample of individuals experiencing functional impairment as a result of diagnosable depression and anxiety. I anticipate that different relationship processes—such as conflict management and partner support—may emerge as the most prominent marital risk factors later in the course of mental illness. For example, behavioral couple therapy (BCT) is an empirically supported treatment for major depressive disorder (Nathan & Gorman, 1998), suggesting that conflict management—the primary relationship process targeted in BCT—has a considerable impact on existing psychopathology. Determining which relationship processes account for more variance in symptomatology at various stages in the course of psychopathology is critical for identifying clinical targets to be prioritized in prevention programs (e.g., promoting intimacy and balance of power and control in the relationship) versus tertiary interventions (e.g., teaching conflict management skills and addressing inadequate support).

Another important step for attaining a more comprehensive yet refined understanding of the role of marriage in individual psychopathology is to conduct closer examinations of the nature of each relationship process and clarify how to optimize functioning in each domain to best prevent individual psychopathology. Specifically, each of the relationship processes under investigation is multi-faceted, and different aspects of these processes may have unique implications for individual psychopathology. For example,

partner support is comprised of support solicitation behaviors, the act of providing support, the act of receiving (or the recognition of) support once it has been provided, perceptions of support adequacy once it has been received, and the behavioral responses of the support recipient that serve to reinforce or punish support provision (Brock & Lawrence, 2010a, 2010b). In the present research, partner support in general did not emerge as a significant risk factor for psychopathology when controlling for other relationship processes; however, perhaps a closer examination of the individual facets of this dyadic and dynamic process will reveal under what conditions support does play a role. Indeed, results from my own program of research indicate that receiving too much support (support overprovision) is more detrimental to the health of the marital relationship than not receiving enough support (support underprovision; Brock & Lawrence, 2009). Perhaps a similar pattern of results will emerge when examining the effects of underprovision and overprovision on internalizing symptoms, such that pervasive overprovision of unsolicited and undesired support contributes to the development of symptoms.

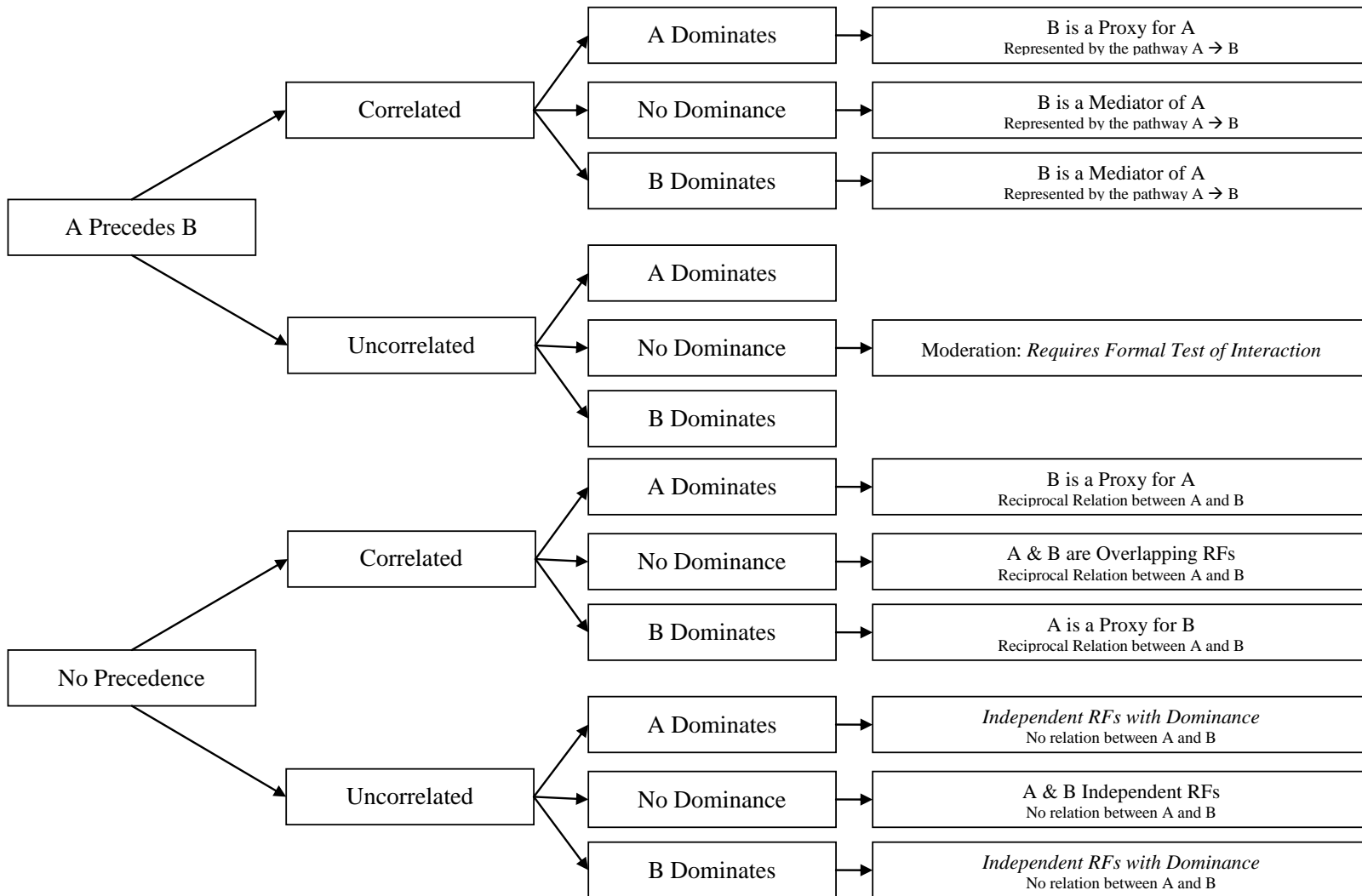
### **Conclusion**

To best inform theory and practice, there is a need for rigorous research identifying risk factors for depression and anxiety and clarifying how these risk factors ultimately lead to the development of psychopathology. By systematically examining marriage as a risk factor in the present research, I was able to (a) establish that marital discord is indeed a *global* risk factor for the broad dimension of internalizing symptoms, (b) clarify the specific nature of this risk and sex differences in the relative contributions of relationship processes (i.e., marital dissatisfaction and imbalance of power and control for men and lack of emotional intimacy for women), (c) demonstrate that marital processes remain notable and

significant risk factors for internalizing symptoms when controlling for other well-established risk factors (i.e., neuroticism and stress), and (d) explain how marital processes fit within broader etiological frameworks of individual psychopathology (i.e., a diathesis-stress framework). Taken together, results indicate that helping couples to build healthy and adaptive marital relationships is a critical endeavor such that individuals can live healthier and more fulfilling lives.



APPENDIX A  
DECISION TREE FOR MODEL DEVELOPMENT



APPENDIX B  
RESULTS OF PREDICTIVE DOMINANCE ANALYSES

Table B1. Pairwise Comparisons of Risk Factors

<i>Neuroticism vs. Stress</i>	Own Neuroticism			Own Stress			Predictive Dominance		
	Coefficient	SE	Test	Coefficient	SE	Test	BIC	BIC <i>fixed model</i>	Dominance?
Husbands' Symptoms	.66	.08	<b>8.50****</b>	.23	.09	<b>2.64**</b>	7337.021	<b>7334.556</b>	<i>no</i>
Wives' Symptoms	.57	.09	<b>6.24****</b>	.18	.11	1.72 <sup>+</sup>	7337.021	<b>7333.491</b>	<i>no</i>
<i>Neuroticism vs. Intimacy</i>	Own Neuroticism			Intimacy			Predictive Dominance		
	Coefficient	SE	Test	Coefficient	SE	Test	BIC	BIC <i>fixed model</i>	Dominance?
Husbands' Symptoms	.75	.07	<b>11.07****</b>	-.05	.09	-0.53	7063.134	<b>7060.702</b>	<i>no</i>
Wives' Symptoms	.55	.09	<b>6.22****</b>	-.26	.10	<b>-2.75**</b>	<b>7063.134</b>	7069.256	<b>Neuroticism</b>
<i>Neuroticism vs. Support</i>	Own Neuroticism			Support			Predictive Dominance		
	Coefficient	SE	Test	Coefficient	SE	Test	BIC	BIC <i>fixed model</i>	Dominance?
Husbands' Symptoms	.74	.07	<b>10.70****</b>	-.05	.09	-0.53	7072.900	<b>7070.640</b>	<i>no</i>
Wives' Symptoms	.58	.09	<b>6.54****</b>	-.18	.10	-1.83 <sup>+</sup>	<b>7072.900</b>	7074.375	<b>Neuroticism</b>
<i>Neuroticism vs. Control</i>	Own Neuroticism			Control			Predictive Dominance		
	Coefficient	SE	Test	Coefficient	SE	Test	BIC	BIC <i>fixed model</i>	Dominance?
Husbands' Symptoms	.69	.08	<b>9.21****</b>	-.17	.09	-1.88 <sup>+</sup>	<b>7078.535</b>	7082.356	<b>Neuroticism</b>
Wives' Symptoms	.60	.09	<b>7.00****</b>	-.11	.10	-1.06	7078.535	<b>7076.949</b>	<i>no</i>
<i>Neuroticism vs. Conflict</i>	Own Neuroticism			Conflict			Predictive Dominance		
	Coefficient	SE	Test	Coefficient	SE	Test	BIC	BIC <i>fixed model</i>	Dominance?
Husbands' Symptoms	.74	.08	<b>9.61****</b>	-.05	.10	-0.55	7157.714	<b>7157.308</b>	<i>no</i>
Wives' Symptoms	.65	.09	<b>7.69****</b>	.09	.11	0.81	7157.714	<b>7153.121</b>	<i>no</i>

Coefficients are standardized. <sup>+</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .005$ . \*\*\*\*  $p < .001$ .

Table B1 continued

<i>Stress vs. Intimacy</i>	Own Stress			Intimacy			Predictive Dominance		
	Coefficient	SE	Test	Coefficient	SE	Test	BIC	BIC <i>fixed model</i>	Dominance?
Husbands' Symptoms	.46	.09	<b>5.10</b> <sup>****</sup>	-.18	.10	-1.74 <sup>+</sup>	<b>6518.392</b>	6529.355	Stress
Wives' Symptoms	.26	.11	<b>2.35</b> <sup>*</sup>	-.36	.10	<b>-3.56</b> <sup>****</sup>	<b>6518.392</b>	6536.061	Intimacy
<i>Stress vs. Support</i>	Own Stress			Support			Predictive Dominance		
	Coefficient	SE	Test	Coefficient	SE	Test	BIC	BIC <i>fixed model</i>	Dominance?
Husbands' Symptoms	.45	.09	<b>4.98</b> <sup>****</sup>	-.19	.11	-1.76 <sup>+</sup>	<b>6520.540</b>	6531.857	Stress
Wives' Symptoms	.27	.12	<b>2.23</b> <sup>*</sup>	-.26	.11	<b>-2.24</b> <sup>*</sup>	<b>6520.540</b>	6531.922	Stress
<i>Stress vs. Control</i>	Own Stress			Control			Predictive Dominance		
	Coefficient	SE	Test	Coefficient	SE	Test	BIC	BIC <i>fixed model</i>	Dominance?
Husbands' Symptoms	.43	.09	<b>4.70</b> <sup>****</sup>	-.32	.10	<b>-3.19</b> <sup>***</sup>	<b>6525.863</b>	6546.837	Stress
Wives' Symptoms	.33	.12	<b>2.79</b> <sup>**</sup>	-.16	.12	-1.37	<b>6525.863</b>	6534.482	Stress
<i>Stress vs. Conflict</i>	Own Stress			Conflict			Predictive Dominance		
	Coefficient	SE	Test	Coefficient	SE	Test	BIC	BIC <i>fixed model</i>	Dominance?
Husbands' Symptoms	.44	.09	<b>4.84</b> <sup>****</sup>	-.28	.10	<b>-2.86</b> <sup>**</sup>	<b>6621.985</b>	6642.513	Stress
Wives' Symptoms	.38	.11	<b>3.36</b> <sup>***</sup>	-.07	.11	-0.64	<b>6621.985</b>	6629.437	Stress
<i>Intimacy vs. Support</i>	Intimacy			Support			Predictive Dominance		
	Coefficient	SE	Test	Coefficient	SE	Test	BIC	BIC <i>fixed model</i>	Dominance?
Husbands' Symptoms	-.10	.14	-0.69	-.21	.14	-1.47	6217.478	<b>6213.002</b>	<i>no</i>
Wives' Symptoms	-.36	.13	<b>-2.79</b> <sup>**</sup>	-.14	.13	-1.04	6217.478	<b>6213.724</b>	<i>no</i>

Coefficients are standardized. <sup>+</sup>  $p < .10$ . <sup>\*</sup>  $p < .05$ . <sup>\*\*</sup>  $p < .01$ . <sup>\*\*\*</sup>  $p < .005$ . <sup>\*\*\*\*</sup>  $p < .001$ .

Table B1 continued

<i>Intimacy vs. Control</i>	<b>Intimacy</b>			<b>Control</b>			<b>Predictive Dominance</b>		
	Coefficient	<i>SE</i>	Test	Coefficient	<i>SE</i>	Test	BIC	<i>fixed model</i>	Dominance?
Husbands' Symptoms	.01	.13	0.08	-.42	.12	<b>-3.49****</b>	6234.219	<b>6232.812</b>	<i>no</i>
Wives' Symptoms	-.42	.12	<b>-3.57****</b>	-.05	.13	-0.38	6234.219	<b>6232.643</b>	<i>no</i>
<i>Intimacy vs. Conflict</i>	<b>Intimacy</b>			<b>Conflict</b>			<b>Predictive Dominance</b>		
	Coefficient	<i>SE</i>	Test	Coefficient	<i>SE</i>	Test	BIC	<i>fixed model</i>	Dominance?
Husbands' Symptoms	-.04	.13	-0.31	-.34	.12	<b>-2.73**</b>	6320.495	<b>6316.678</b>	<i>no</i>
Wives' Symptoms	-.51	.12	<b>-4.43****</b>	.10	.13	0.77	<b>6320.495</b>	6325.146	<b>Intimacy</b>
<i>Support vs. Control</i>	<b>Support</b>			<b>Control</b>			<b>Predictive Dominance</b>		
	Coefficient	<i>SE</i>	Test	Coefficient	<i>SE</i>	Test	BIC	<i>fixed model</i>	Dominance?
Husbands' Symptoms	.08	.16	0.54	-.47	.15	<b>-3.21***</b>	6204.859	<b>6203.734</b>	<i>no</i>
Wives' Symptoms	-.35	.15	<b>-2.25*</b>	-.03	.16	-0.21	6204.859	<b>6201.408</b>	<i>no</i>
<i>Support vs. Conflict</i>	<b>Support</b>			<b>Conflict</b>			<b>Predictive Dominance</b>		
	Coefficient	<i>SE</i>	Test	Coefficient	<i>SE</i>	Test	BIC	<i>fixed model</i>	Dominance?
Husbands' Symptoms	-.09	.13	-0.67	-.31	.13	<b>-2.43*</b>	6330.106	<b>6325.799</b>	<i>no</i>
Wives' Symptoms	-.40	.12	<b>-3.18***</b>	.04	.13	0.30	<b>6330.106</b>	6330.140	<b>Support</b>
<i>Control vs. Conflict</i>	<b>Control</b>			<b>Conflict</b>			<b>Predictive Dominance</b>		
	Coefficient	<i>SE</i>	Test	Coefficient	<i>SE</i>	Test	BIC	<i>fixed model</i>	Dominance?
Husbands' Symptoms	-.31	.14	<b>-2.24*</b>	-.15	.14	-1.02	6319.559	<b>6315.869</b>	<i>no</i>
Wives' Symptoms	-.30	.15	<b>-2.08*</b>	.02	.15	0.11	6319.559	<b>6316.770</b>	<i>no</i>

Coefficients are standardized. <sup>+</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .005$ . \*\*\*\*  $p < .001$ .

APPENDIX C

CLARIFYING HOW RISK FACTORS WORK TOGETHER

Table C1. How Risk Factors Work Together to Contribute to Husbands' Internalizing Symptoms

<b>Risk Factor Pair</b>	<b>Temporal Precedence?</b>	<b>Significantly Correlated?</b>	<b>Predictive Dominance?</b>	<b>Application to Model Development</b>
Neuroticism & Stress	Neuroticism	Yes	<i>None</i>	Stress may be a Mediator of Neuroticism <b>Neuroticism → Stress</b>
Neuroticism & Intimacy	Neuroticism	Yes	<i>None</i>	Intimacy may be a Mediator of Neuroticism <b>Neuroticism → Intimacy</b>
Neuroticism & Support	Neuroticism	Yes	<i>None</i>	Support may be a Mediator of Neuroticism <b>Neuroticism → Support</b>
Neuroticism & Control	Neuroticism	Yes	<b>Neuroticism</b>	Control may be a Proxy for Neuroticism <b>Neuroticism → Control</b>
Neuroticism & Conflict	Neuroticism	Yes	<i>None</i>	Conflict may be a Mediator of Neuroticism <b>Neuroticism → Conflict</b>
Stress & Intimacy	<i>None</i>	<i>No</i>	<b>Stress</b>	Stress and Intimacy may be Independent Risk Factors <b>No Relation</b>
Stress & Support	<i>None</i>	<i>No</i>	<b>Stress</b>	Stress and Support may be Independent Risk Factors <b>No Relation</b>
Stress & Control	<i>None</i>	<i>No</i>	<b>Stress</b>	Stress and Control may be Independent Risk Factors <b>No Relation</b>
Stress & Conflict	<i>None</i>	<i>No</i>	<b>Stress</b>	Stress and Intimacy may be Independent Risk Factors <b>No Relation</b>
Intimacy & Support	<i>None</i>	Yes	<i>None</i>	Intimacy and Support may be Overlapping Risk Factors <b>Correlated Error Terms: Facets of Marital Quality</b>
Intimacy & Control	<i>None</i>	Yes	<i>None</i>	Intimacy and Control may be Overlapping Risk Factors <b>Correlated Error Terms: Facets of Marital Quality</b>
Intimacy & Conflict	<i>None</i>	Yes	<i>None</i>	Intimacy and Conflict may be Overlapping Risk Factors <b>Correlated Error Terms: Facets of Marital Quality</b>
Support & Control	<i>None</i>	Yes	<i>None</i>	Support and Control may be Overlapping Risk Factors <b>Correlated Error Terms: Facets of Marital Quality</b>
Support & Conflict	<i>None</i>	Yes	<i>None</i>	Support and Conflict may be Overlapping Risk Factors <b>Correlated Error Terms: Facets of Marital Quality</b>
Control & Conflict	<i>None</i>	Yes	<i>None</i>	Intimacy and Support may be Overlapping Risk Factors <b>Correlated Error Terms: Facets of Marital Quality</b>



Table C2. How Risk Factors Work Together to Contribute to Wives' Internalizing Symptoms

<b>Risk Factor Pair</b>	<b>Temporal Precedence?</b>	<b>Significantly Correlated?</b>	<b>Predictive Dominance?</b>	<b>Application to Model Development</b>
Neuroticism & Stress	Neuroticism	Yes	<i>None</i>	Stress may be a Mediator of Neuroticism <b>Neuroticism → Stress</b>
Neuroticism & Intimacy	Neuroticism	Yes	<b>Neuroticism</b>	Intimacy may be a Proxy for Neuroticism <b>Neuroticism → Intimacy</b>
Neuroticism & Support	Neuroticism	Yes	<b>Neuroticism</b>	Support may be a Proxy for Neuroticism <b>Neuroticism → Support</b>
Neuroticism & Control	Neuroticism	Yes	<i>None</i>	Control may be a Mediator of Neuroticism <b>Neuroticism → Control</b>
Neuroticism & Conflict	Neuroticism	Yes	<i>None</i>	Conflict may be a Mediator of Neuroticism <b>Neuroticism → Conflict</b>
Stress & Intimacy	<i>None</i>	Yes	<b>Intimacy</b>	Stress may be a Proxy for Intimacy <b>Reciprocal Relation between Stress and Intimacy</b>
Stress & Support	<i>None</i>	Yes	<b>Stress</b>	Support may be a Proxy for Stress <b>Reciprocal Relation between Stress and Support</b>
Stress & Control	<i>None</i>	Yes	<b>Stress</b>	Control may be a Proxy for Stress <b>Reciprocal Relation between Stress and Control</b>
Stress & Conflict	<i>None</i>	Yes	<b>Stress</b>	Conflict may be a Proxy for Stress <b>Reciprocal Relation between Stress and Conflict</b>
Intimacy & Support	<i>None</i>	Yes	<i>None</i>	Intimacy and Support may be Overlapping Risk Factors <b>Correlated Error Terms: Facets of Marital Quality</b>
Intimacy & Control	<i>None</i>	Yes	<i>None</i>	Intimacy and Control may be Overlapping Risk Factors <b>Correlated Error Terms: Facets of Marital Quality</b>
Intimacy & Conflict	<i>None</i>	Yes	<b>Intimacy</b>	Conflict may be a Proxy for Intimacy <b>Correlated Error Terms: Facets of Marital Quality</b>
Support & Control	<i>None</i>	Yes	<i>None</i>	Support and Control may be Overlapping Risk Factors <b>Correlated Error Terms: Facets of Marital Quality</b>
Support & Conflict	<i>None</i>	Yes	<b>Support</b>	Conflict may be a Proxy for Support <b>Correlated Error Terms: Facets of Marital Quality</b>
Control & Conflict	<i>None</i>	Yes	<i>None</i>	Control and Conflict may be Overlapping Risk Factors <b>Correlated Error Terms: Facets of arital Quality</b>

## APPENDIX D

ABBREVIATED EXAMPLES OF RATING SCALES OF  
THE RELATIONSHIP QUALITY INTERVIEW (RQI)

**Quality of Emotional Intimacy in the Relationship**

- 1 Extreme emotional distance; partner cannot be trusted. All difficult topics are avoided. Self-disclosure is punished. Partner does not disclose to participant. Very little love or affection. Total lack of intimacy.
- 5 Some closeness emotionally. Some trust in partner, depending on the situation. Certain topics are avoided. Partner discloses somewhat and shows some love/affection. Level of intimacy is moderate.
- 9 Extreme closeness. High level of trust/intimacy. Self-disclosure is rewarded. Both partners are able to confide in the other about any topic. Extremely high levels of intimacy in all aspects of the relationship.

**Quality of Support Transactions in the Relationship**

- 1 Partner provides no support or provides limited support but it is not what the participant wants. Partner almost always dismisses or ignores requests for support (or time alone) or responds with criticism.
- 5 There is some mismatch between type of support provided and type of support desired (about half of the time). Participant is indifferent on this topic.
- 9 High quality of support. Partner is excellent at providing support and always responds well to requests.

**Quality of Couple's Ability to Share Power in the Relationship**

- 1 Participant is not treated as a competent person or equal partner. Extreme disrespect in the relationship. One partner has almost all of the power, including over the other partner's daily life.
- 5 One or both partners is occasionally disrespected and sometimes feels unaccepted (about half of the time). Some shared power over decision-making. Some specific power issues or some lack of personal freedom.
- 9 Partners treat each other as competent individuals and equal partners. Tremendous respect and each partner has power over own daily life. Partners are comfortable with the division in decision making and power.

**Quality of Conflict/Problem-Solving Interactions in the Relationship**

- 1 Frequent major arguments (e.g. several times/week). Almost all disagreements escalate into major arguments. Conflict regularly includes verbal and/or physical aggression along with a multitude of negative emotions. Poor conflict management skills. Argument may end but issue is not resolved.
- 5 Occasional major arguments (e.g. 1/ month). Regular minor arguments (e.g. weekly). Major arguments include occasional verbal aggression. Conflict resolution is lengthy, but issues are resolved in some way.
- 9 Absolutely no major arguments. No aggression. Very rare minor disagreements (bickering). Good conflict management skills. Disagreements are resolved with communication and do not escalate into arguments.

## REFERENCES

- Acitelli, L.A. (1996). The neglected links between marital support and marital satisfaction. In G.R. Pierce, B.R. Sarason, & I.G. Sarason (Eds.), *Handbook of social support and the family* (pp. 83-103). NY: Plenum.
- Atkins, D.C. (2005). Using multilevel models to analyze couple and family treatment data: Basic and advanced issues. *Journal of Family Psychology, 19*, 98-110. doi:10.1037/0893-3200.19.1.98
- Barlow, D.H. (2000). Unraveling the mysteries of anxiety and its disorders from the perspective of emotion theory. *American Psychologist, 55*, 1247-1263. doi:10.1037/0003-066X.55.11.1247
- Barlow, D.H. (2002). *Anxiety and its disorders: The nature and treatment of anxiety and panic* (2nd ed.). New York, NY: Guilford Press.
- Barry, R., Bunde, M., Brock, R.L., & Lawrence, E. (2009). Validity and utility of a multidimensional model of received support in intimate relationships. *Journal of Family Psychology, 23*, 48-57. doi:10.1037/a0014174
- Beach, S. (2002). Affective disorders. In D.H. Sprenkle (Ed.), *Effectiveness research in marriage and family therapy* (pp. 289-309). Alexandria, VA: The American Association for Marriage and Family Therapy.
- Beach, S.R., & Fincham, F.D. (1998). Marital processes and depression: Implications for clinical intervention. In L. L'Abate (Ed.), *Family psychopathology: The relational roots of dysfunctional behavior* (pp. 256-279). New York, NY: Guilford Press.
- Beach, S.R.H., Fincham, F.D., & Katz, J. (1998). Marital therapy in the treatment of depression: Toward a third generation of therapy and research. *Clinical Psychology Review, 18*, 635-661. doi:10.1016/S0272-7358(98)00023-3
- Beach, S.R.H., Martin, J.K., Blum, T.C., & Roman, P.M. (1993). Effects of marital and co-worker relationships on negative affect: testing the central role of marriage. *The American Journal of Family Therapy, 21*, 313-323. doi:10.1080/01926189308251002
- Beach, S.R.H., & O'Leary, K.D. (1993). Marital discord and dysphoria: For whom does the marital relationship predict depressive symptoms? *Journal of Social and Personal Relationships, 10*, 405-420. doi:10.1177/0265407593103007
- Beach, S.R.H., Katz, J., Kim, S., & Brody, G.H. (2003). Prospective effects of marital satisfaction on depressive symptoms in established marriages: A dyadic model. *Journal of Social and Personal Relationships, 20*, 355-371. doi:10.1177/0265407503020003005

- Beach, S.R.H., Sandeen, E.E., O'Leary, K.D. (1990). *Depression in marriage*. NY: Guilford.
- Beach, S.R.H., Smith, D.A., & Fincham, F.D. (1994). Marital interventions for depression: Empirical foundation and future prospects. *Applied & Preventive Psychology, 3*, 233-250.
- Beam, C.R., Horn, E.E., Hunt, S.K., Emery, R.E., Turkheimer, E., & Martin, N. (2011). Revisiting the effect of marital support on depressive symptoms in mothers and fathers: A genetically informed study. *Journal of Family Psychology, 25*, 412-422. doi: 10.1037/a0023758.
- Beck, A.T., & Steer, R.A. (1990). *Manual for the Beck Anxiety Inventory*. TX: Psych. Corp.
- Beck, A.T., Steer, R.A., & Brown, G.K. (1996). *Manual for Beck Depression Inventory-II*. San Antonio, TX: Psychological Corporation.
- Bentler, P.M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107*, 238-246. doi:10.1037/0033-2909.107.2.238
- Bradbury, T.N., Cohan, C.L., & Karney, B.R. (1998). Optimizing longitudinal research for understanding and preventing marital dysfunction. In T.N. Bradbury (Ed.), *The developmental course of marital dysfunction* (pp. 279-311). Cambridge: Cambridge University Press.
- Brock, R. L., & Lawrence, E. (2009). Too much of a good thing: Underprovision versus overprovision of partner support. *Journal of Family Psychology, 23*, 181-192. doi:10.1037/a0015402
- Brock, R. L., & Lawrence, E. (2010a). A unified and multifaceted approach to examining support transactions in marriage. In K.S. Pearlman (Ed.), *Marriage: Roles, stability and conflicts* (pp. 31-54). NY: Nova Science Publishers, Inc.
- Brock, R. L., & Lawrence, E. (2010b). Support adequacy in marriage: Observing the platinum rule. In K.T. Sullivan & J. Davila (Eds.), *Support processes in intimate relationships* (pp. 3-25). NY: Oxford Press.
- Brock, R.L. & Lawrence, E. (2011). Marriage as a risk factor for internalizing disorders: clarifying scope and specificity. *Journal of Consulting and Clinical Psychology, 79*, 577-589. doi:10.1037/a0024941
- Brown, G.W., Andrews, B., Harris, T., Adler, Z., & Bridge L. (1986). Social support, self-esteem and depression. *Psychological Medicine, 16*, 813-831. doi:10.1017/S00332917000 11831

- Browne, M.W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K.A. Bollen & J.S. Long (Eds.), *Testing structural equation models* (pp. 445-455). Newbury Park, CA: Sage.
- Brown, G.W., & Harris, T.O. (1978). *Social origins of depression: A study of psychiatric disorder in women*. New York: Free Press.
- Brown, G.W., & Harris, T.O. (1986). Crises and life changes and the onset of schizophrenia. *Journal of Health and Social Behavior*, 9, 203-214. doi:10.1192/bjp.116.532.327
- Byrne, M., & Carr, A. (2000). Depression and power in marriage. *Journal of Family Therapy*, 22, 408-427. doi:10.1111/1467-6427.00161
- Byrne, M., Carr, A., & Clark, M. (2004). Power in relationships of women with depression. *Journal of Family Therapy*, 26, 407-429. doi:10.1111/j.1467-6427.2004.00291.x
- Cascardi, M., O'Leary, K.D., & Schlee, K.A. (1999). Co-occurrence and correlates of posttraumatic stress disorder and major depression in physically abused women. *Journal of Family Violence*, 14, 227-249. doi:10.1023/A:1022827915757
- Clark, D.A., Steer, R.A., & Beck, A.T. (1994). Common and specific dimensions of self-reported anxiety and depression: Implications for the cognitive and tripartite models. *Journal of Abnormal Psychology*, 103, 645-654. doi:10.1037/0021-843X.103.4.645
- Clark, L.A. (2005). Temperament as a unifying basis for personality and psychopathology. *Journal of Abnormal Psychology*, 114, 505-521. doi:10.1037/0021-843X.114.4.505
- Clark, L.A., Simms, L.J., Wu, K.D., & Casillas, A. (in press). *Schedule for Nonadaptive and Adaptive Personality* (2nd ed.). MN: University of Minnesota.
- Clark, L.A., & Watson, D. (2006). Distress and fear disorders: an alternative empirically based taxonomy of the 'mood' and 'anxiety' disorders. *The British Journal of Psychiatry*, 189, 481-483. doi:10.1192/bjp.bp.106.03825
- Coie, J. D., Watt, N. F., West, S. G., Hawkins, J. D., Asarnow, J. R., Markman, H. J., Ramey, S. L., Shure, M. B., & Long, B. (1993). The science of prevention: A conceptual framework and some directions for a national research agenda. *American Psychologist*, 48, 1013-1022.
- Conway, K.P., Compton, W., Stinson, F.S., & Grant, B.F. (2006). Lifetime comorbidity of DSM-IV mood and anxiety disorders and specific drug use disorders: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Journal of Clinical Psychiatry*, 67, 247-257.

- Costello, C.G. (1982). Social factors associated with depression: A retrospective community study. *Psychological Medicine*, *12*, 329-339. doi: 10.1017/S0033291700046663
- Culp, L.N., & Beach, S.R.H. (1998). Marriage and depressive symptoms: The role and bases of self-esteem differs by gender. *Psychology of Women Quarterly*, *22*, 647-663. doi: 10.1111/j. 1471-6402.1998.tb00183.x
- Davila, J., Karney, B.R., Hall, T.W., & Bradbury, T.N. (2003). Depressive symptoms and marital satisfaction: Within-subject associations and the moderating effects of gender and neuroticism. *Journal of Family Psychology*, *17*, 557-570. doi:10.1037/0893-3200.17.4.557
- Dehle, C., Larsen, D., & Landers, J.E. (2001). Social support in marriage. *American Journal of Family Therapy*, *29*, 307-324. doi:10.1080/01926180126500
- Dimidjian, S., Martell, C.R., Addis, M.E., & Herman-Dunn, R. (2008). Behavioral activation for depression. In D. Barlow (Ed.), *Clinical handbook of psychological disorders* (4<sup>th</sup> ed., pp. 328-364). New York, NY: Guilford Press.
- Fincham, F.D., Beach, S.R.H., Harold, G.T., & Osborne, L.N. (1997). Marital satisfaction and depression: Different causal relationships for men and women? *Psychological Science*, *8*, 351-356. doi:10.1111/j.1467-9280.1997.tb00424.x
- Fincham, F.D., & Bradbury, T.N. (1993). Marital satisfaction, depression, and attributions: A longitudinal analysis. *Journal of Personality and Social Psychology*, *64*, 442-452. doi:10.1037/0022-3514.64.3.442
- Goldfarb, M.R., Trudel, G., Boyer, R. Preville, M. (2007) Marital relationship and psychological distress: its correlates and treatments. *Sexual and Relationship Therapy*, *22*, 109-126. doi:10.1080/14681990600861040
- Gottman, J. M., & Levenson, R.W. (2000). The timing of divorce: predicting when a couple will divorce over a 14-year period. *Journal of Marriage and Family*, *62*, 737-745. doi:10.1111/ j.1741-3737.2000.00737.x
- Gorsuch, R. (1983). *Factor analysis*. Hillsdale, NJ: Lawrence Erlbaum & Associates.
- Hammen, C. (1991). Generation of stress in the course of unipolar depression. *Journal of Abnormal Psychology*, *100*, 555-561. doi:10.1037/0021-843X.100.4.555
- Hammen, C. (2005). Stress and depression. *Annual Review of Clinical Psychology*, *1*, 293-319. doi:10.1146/annurev.clinpsy.1.102803.143938
- Hammen, C., Adrian, C., Gordon, D., Burge, D., Jaenicke, C., & Hiroto, D. (1987). Children of depressed mothers: Maternal strain and symptom predictors of dysfunction. *Journal of Abnormal Psychology*, *96*, 190-198. doi:10.1037/0021-843X.96.3.190

- Hautzinger, M., Linden, N., & Hoffman, N. (1982). Distressed couples with and without a depressed partner: An analysis of their verbal interaction. *Journal of Behavioral Therapy and Experimental Psychiatry*, *13*, 307-314. doi:10.1016/0005-7916(82)90075-1
- Hettema, J.M., Neale, M.C., Myers, J.M., Prescott, C.A., & Kendler, K.S. (2006). A population-based twin study of the relationship between neuroticism and internalizing disorders. *American Journal of Psychiatry*, *163*, 857-864. <http://ajp.psychiatryonline.org>
- Hill, J.P., & Lynch, M.E. (1983). The intensification of gender-related role expectations during early adolescence. In J. Brooks-Gunn & A.C. Petersen (Eds.), *Girls at puberty* (pp. 201-228). New York: Academic Press.
- Horwitz, A.V., McLaughlin, J., & White, H.R. (1997). How the negative and positive aspects of partner relationships affect the mental health of young married people. *Journal of Health and Social Behavior*, *39*, 124-136. <http://www.jstor.org/stable/2676395>
- Horwitz, A.V., McLaughlin, J., & White, H.R. (1998). How the negative and positive aspects of partner relationships affect the mental health of young married people. *Journal of Health and Social Behavior*, *39*(2), 124-136. doi:10.2307/2676395
- Hu, L.T., & Bentler, P.M. (1995). Evaluating model fit. In R.H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 76-99). Thousand Oaks, CA: Sage.
- Ingram, R., & Luxton, D. (2005). Vulnerability-stress models. In B. Hankin & J. Abela (Eds.), *Development of psychopathology: A vulnerability-stress perspective* (pp. 32-46). Thousand Oaks, CA: Sage.
- Karney, B.R. (2001). Depressive symptoms and marital satisfaction in the early years of marriage: The implications of a growth curve analysis. In S.R.H. Beach (Ed.), *Marital and family processes in depression* (pp. 45-68). Washington, DC: APA.
- Karney, B.R., & Bradbury, T.N. (1995a). The longitudinal course of marital quality and stability: A review of theory, methods, and research. *Psychological Bulletin*, *118*, 3-34. doi:10.1037/0033-2909.118.1.3
- Karney, B., & Bradbury, T. (1995b). Assessing longitudinal change in marriage: An introduction to the analysis of growth curves. *Journal of Marriage and the Family*, *57*, 1091-1108. doi: 10.2307/353425
- Karney, B.R., Story, L.B., & Bradbury, T.N. (2005). Chronic and acute stress among newlyweds. In T.A. Revenson, K. Kayser & G. Bodenmann (Eds.), *Couples coping with stress* (pp. 13-32). DC:APA.

- Kendler, K.S., Gardner, C.O., & Prescott, C.A. (2002). Toward a comprehensive developmental model of major depression in women. *American Journal of Psychiatry, 159*, 1133-1145. <http://ajp.psychiatryonline.org/>
- Kendler, K.S., Karkowski, L.M., & Prescott, C.A. (1998). Stressful life events and major depression: Risk period, long-term contextual threat and diagnostic specificity. *The Journal of Nervous Mental Disease, 186*, 661-669.
- Kendler, K.S., Neale, M.C., Kessler, R.C., Heath, A.C. & Eaves, L.J. (1993). A longitudinal twin study of personality and major depression in women.
- Kendler, K.S., & Prescott, C.A. (2006). *Genes, environment, and psychopathology: Understanding the causes of psychiatric and substance use disorders*. NY: The Guilford Press.
- Kendler, K.S., Prescott, C.A., Myers, J., & Neale, M.C. (2003). The structure of genetic and environmental risk factors for common psychiatric and substance use disorders in men and women. *Archives of General Psychiatry, 60*, 929-937. <http://archpsyc.ama-assn.org/>
- Kendler, K.S., Thornton, L.M., & Gardner, C.O. (2001). Genetic risk, number of previous depressive episodes, and stressful life events in predicting onset of major depression. *American Journal of Psychiatry, 158*, 582-586. <http://ajp.psychiatryonline.org/>
- Kenny, D.A. (1995). The effect of nonindependence on significance testing in dyadic research. *Personal Relationships, 2*, 67-75. doi:10.1111/j.1475-6811.1995.tb00078.x
- Kenny, D.A., Kashy, D.A., & Cook, W.L. (2006). *Dyadic data analysis*. New York, NY: Guilford Press.
- Kessler, R.C. (1997). The effects of stressful life events on depression. *Annual Review of Psychology, 48*, 191-214. [www.annualreviews.org](http://www.annualreviews.org)
- Kessler R.C., Chiu W.T., Demler, O., & Walters, E.E. (2005). Prevalence, severity, and comorbidity of twelve-month DSM-IV disorders in the National Comorbidity Survey Replication (NCS-R). *Archives of General Psychiatry, 62*, 617-27.
- Khan, A.A., Jacobson, K.C., Gardner, C.O., Prescott, C.A., & Kendler, K.S. (2005). Personality and comorbidity of common psychiatric disorders. *British Journal of Psychiatry, 168*, 58-67. <http://bjp.rcpsych.org/>
- Kiecolt-Glaser, J. K., Newton, T., Cacioppo, J.T., MacCallum, R.C., Glaser, R., & Malarkey, W.B. (1996). Marital conflict and endocrine function: are men really more physiologically affected than women? *Journal of Consulting and Clinical Psychology, 64*, 324-32. doi: 10.1037/0022-006X.64.2.324.



- Kraemer, H.C., Stice, E., Kazdin, A., Offord, D., & Kupfer, D. (2001). How do risk factors work together? Mediators, moderators, and independent, overlapping, and proxy risk factors. *American Journal of Psychiatry*, *158*(6), 848-856. doi:10.1176/appi.ajp.158.6.848
- Kreider, R.M., & Fields, J.M. (2001). Number, timing, and duration of marriages and divorces: Fall 1996. *Current population reports* (pp. 70–80). Washington, DC: US Census Bureau.
- Krueger, R.F. (1999). The structure of common mental disorders. *Archives of General Psychiatry*, *56*, 921-926. doi:10.1017/S0033291710001662
- Kurdek, L.A. (2005). Gender and marital satisfaction early in marriage: A growth curve approach. *Journal of Marriage and Family*, *67*, 68-84. doi: 10.1111/j.0022-2445.2005.00006.x
- Lange, A., & van Dyck, R. (1992). The function of agoraphobia in the marital relationship: a research note. *Acta Psychiatrica Scandinavica*, *85*, 89-93. doi:10.1111/j.1600-0447.1992.tb01449.x
- Lawrence, E., Barry, R. A., Brock, R.L., Bunde, M., Langer, A., Ro, E., Fazio, E., et al. (2011). Development of an interview assessing relationship quality: Preliminary support for reliability, convergent and divergent validity, and incremental utility. *Psychological Assessment*, *23*, 44-63. doi: 10.1037/a0021096
- Lawrence, E., Brock, R.L., Barry, R.A., Langer, A., & Bunde, M. (2009). Assessing relationship quality: Development of an interview and implications for couple assessment and intervention. In E. Cuyler (Ed.), *Psychology of relationships* (pp. 173-189). NY: Nova Publishers, Inc.
- Lawrence, E., Pederson, A., Bunde, M., Barry, R.A., Brock, R.L., Fazio, E., Mulryan, L., Hunt, S., Madsen, L., & Dzankovic, S. (2008). Objective ratings of relationship skills across multiple domains as predictors of marital satisfaction trajectories. *Journal of Social and Personal Relationships*, *25*, 445-466. doi:10.1177/0265407508090868
- Lawrence, E., Yoon, J., Langer, A., & Ro, E. (2009). Is psychological aggression as detrimental as physical aggression? *Violence and Victims*, *24*, 20-35. doi:10.1891/0886-6708.24.1.20
- Leonard, K.E., & Roberts, L.J. (1998). Marital aggression, quality, and stability in the first year of marriage: Findings from the buffalo newlywed study. In T.N. Bradbury (Ed.), *The developmental course of marital dysfunction* (pp. 44-73). Cambridge, NY: Cambridge University Press.
- Little, R.J.A. (1995). Modeling the drop-out mechanism in repeated-measures studies. *Journal of the American Statistical Association*, *90*(431), 1112-1121. doi:10.2307/2291350

- Lorenz, F.O., Conger, R.D., Montague, R.B., & Wickrama, K.A.S. (1993). Economic conditions, spouse support, and psychological distress of rural husbands and wives. *Rural Sociology*, *58*, 247-268. doi:10.1111/j.1549-0831.1993.tb00493.x
- MacCallum, R.C., Browne, M.W., & Sugawara H.M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods*, *1*, 130-149. doi:10.1037/1082-989X.1.2.130
- Mark, T., McKusick, D., King, E., Harwood, H., & Genuardi, J. (1998). *National expenditures for mental health, alcohol, and other drug abuse treatment, 1996*. Rockville, MD: Substance Abuse and Mental Health Services Administration.
- Markman, H.J., Stanley, S.M., Blumberg, S.L. (1994). *Fighting for your marriage: Positive steps for preventing divorce and preserving a lasting love*. San Francisco, CA: Jossey-Bass.
- Mazure, C.M. (1998). Life stressors as risk factors in depression. *Clinical Psychology: Science and Practice*, *5*, 291-313. doi:10.1111/j.1468-2850.1998.tb00151.x
- McGonagle, K.A., & Kessler, R.C. (1990). Chronic stress, acute stress, and depressive symptoms. *American Journal of Community Psychology*, *18*, 681-706. doi:10.1007/BF00931237
- McGonagle, K.A., & Schilling, E.A. (1992). The frequency and determinants in a community sample. *Journal of Social and Personal Relationships*, *9*, 507-524. doi:10.1177/0265407592094003
- McLeod, J.D. (1994). Anxiety disorders and marital quality. *Journal of Abnormal Psychology*, *103*, 767-776. doi:10.1037/0021-843X.103.4.767
- Mineka, S., Watson, D., & Clark, L.A. (1998). Comorbidity of anxiety and unipolar mood disorders. *Annual Review of Psychology*, *49*, 377-412. doi:10.1146/annurev.psych.49.1.377
- Monroe, S.M., & Simons, A.D. (1991). Diathesis-stress theories in the context of life stress research: Implications for the depressive disorders. *Psychological Bulletin*, *110*, 406-425. doi:10.1037/0033-2909.110.3.406
- Nathan, P., & Gorman, J.M. (1998). *A guide to treatments that work* (2nd ed.). Oxford, NY: Oxford University Press.
- Muthen, L.K., & Muthen, B.O. (1998-2010). *Mplus User's Guide. Sixth Edition*. Los Angeles, CA: Muthen & Muthen.
- Nolen-Hoeksema, S. & Girgus, J.S. (1994). The emergence of gender differences in depression during adolescence. *Psychological Bulletin*, *115*, 424-443. doi:10.1037/0033-2909.115.3.424

- Norton, R. (1983). Measuring marital quality: A critical look at the dependent variable. *Journal of Marriage and the Family*, *45*(1), 141-151. doi:10.2307/351302
- O'Connor, B.P. (2000). SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior Research Methods, Instruments, and Computers*, *32*(3), 396-402.
- O'Hara, M.W. (1986). Social support, life events, and depression during pregnancy and the puerperium. *Archives of General Psychiatry*, *43*(6), 569-573.
- O'Leary, K.D., & Cano, A.M. (2001). Marital discord and partner abuse: Correlates and causes of depression (pp. 163-182). In S.R.H. Beach (Ed.), *Marital and family processes in depression*. Washington, DC: American Psychological Association.
- Pistrang, N., & Barker, C. (1995). The partner relationship in psychological response to breast cancer. *Social Science and Medicine*, *40*, 789-799. doi:10.1016/0277-9536(94)00136-H
- Raudenbush, S.W., Brennan, R.T., & Barnett, R.C. (1995). A multivariate hierarchical model for studying psychological change within married couples. *Journal of Family Psychology*, *9*, 161-174. doi:10.1037//0893-3200.9.2.161
- Raudenbush, S.W., & Bryk, A.S. (2002). *Hierarchical linear modeling: Applications and data analysis methods* (2nd ed.). Thousand Oaks, CA: Sage Publications, Inc.
- Rehman, U.S., Gollan, J., & Mortimer, A.R. (2007). The marital context of depression: Research, limitations, and new directions. *Clinical Psychology Review*, *28*, 179-198. doi:10.1016/j.cpr.2007.04.007
- Reiss, D., & Price, R.H. (1996). National research agenda for prevention research: The national institute of mental health report. *American Psychologist*, *51*, 1109-1115. doi:10.1037/0003-066X.51.11.1109
- Schweitzer, R.D., Logan, G.P., & Strassberg, D.S. (1992). The relationship between marital intimacy and postnatal depression. *Australian Journal of Marriage and Family*, *13*, 19-23.
- Smolen, R.C., Spiegel, D.A., & Martin, C.J. (1986). Patterns of marital interaction associated with marital dissatisfaction and depression. *Journal of Behaviour Therapy and Experimental Psychiatry*, *17*, 261-266. doi:10.1016/0005-7916(86)90061-3
- Steer, R.A., Clark, D.A., Beck, A.T., & Ranieri, W.F. (1995). Common and specific dimensions of self-reported anxiety and depression: A replication. *Journal of Abnormal Psychology*, *104*, 542-545. doi:10.1037/0021-843X.104.3.542

- Sullivan, P.F., Neale, J.M., Kendler, K.S. (2000). Genetic epidemiology of major depression: Review and meta-analysis. *American Journal of Psychiatry*, 157, 1552-1562. <http://ajp.psychiatryonline.org/>
- The World Health Organization. (2004). *The World Health Report 2004: Changing History, Annex Table 3: Burden of disease in DALYs by cause, sex, and mortality stratum in WHO regions, estimates for 2002*. Geneva: WHO.
- Tucker, L.R., & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika*, 38, 1-10. doi:10.1007/BF02291170
- Trull, T.J., & Durrett, C.A. (2005). Categorical and dimensional models of personality disorder. *Annual Review of Clinical Psychology*, 1, 355-380. doi:10.1146/annurev.clinpsy.1.102803.144009
- U.S. Census. (2005). *Number, timing, and duration of marriages and divorces: 2001 (P70-97)*.
- Wallace, J., Schneider, T., and McGuffin, P. (2002). The genetics of depression. In I.H. Gotlib and C.L. Hammen (Eds.). *Handbook of Depression* (169-191). New York: Guilford Press.
- Waring, E.M., & Patton, D. (1984). Marital intimacy and depression. *British Journal of Psychiatry*, 145, 641-644. doi:10.1192/bjp.145.6.641
- Waring, E.M., Patton, D., Neron, C.A., & Linker, W. (1986). Types of marital intimacy and prevalence of emotional illness. *Canadian Journal of Psychiatry*, 31(8), 720-725.
- Watson, D. (2005). Rethinking the mood and anxiety disorders: A quantitative hierarchical model for DSM-V. *Journal of Abnormal Psychology*, 114, 522-536. doi:10.1037/0021-843X.114.4.522
- Watson, D., O'Hara, M.W., & Stuart, S. (2008). Hierarchical structures of affect and psychopathology and their implications for the classification of emotional disorders. *Depression and Anxiety*, 25, 282-288. doi:10.1002/da.20496
- Weissman, M.M. (1987). Advances in psychiatric epidemiology: Rates and risks for major depression. *American Journal of Public Health*, 77, 445-451. <http://ajph.aphapublications.org/>
- Wolff, H.G., & Preising, K. (2005). Exploring item and higher order factor structure with the Schmid-Leiman solution: Syntax codes for SPSS and SAS. *Behavior Research Methods*, 37, 48-58. doi:10.3758/BF03206397
- Wheaton, B., Muthen, B., Alwin, D.F., & Summers, G.F. (1977). Assessing reliability and stability in panel models. In D. R. Heise (Ed.), *Sociological methodology 1977* (pp. 84-136). San Francisco: Jossey-Bass.

- Whisman, M.A. (1999). Marital dissatisfaction and psychiatric disorders: Results from the national comorbidity survey. *Journal of Abnormal Psychology, 108*, 701-706. doi:10.1037/0021-843X.108.4.701
- Whisman, M.A. (2001). Depression and marital distress: Findings from clinical and community studies. In S.R.H. Beach (Ed.), *Marital and family processes in depression* (pp. 3-24). Washington, DC: American Psychological Association.
- Whisman, M.A. (2007). Marital distress and DSM-IV psychiatric disorders in a population-based national survey. *Journal of Abnormal Psychology, 116*, 638-643. doi:10.1037/0021-843X.116.3.638
- Whisman, M.A., & Bruce, M.L. (1999). Marital dissatisfaction and incidence of major depressive episode in a community sample. *Journal of Abnormal Psychology, 108*, 674-678. <http://www.apa.org/pubs/journals/abn/>
- Whisman, M.A., & Kaiser, R. (2008). Marriage and relationship issues. In K.S. Dobson & D.J.A. Dozois (Eds.), *Risk factors in depression* (pp. 363-384). San Diego, CA: Academic Press.
- Whisman, M.A., Sheldon, C.T., & Goering, P. (2000). Psychiatric disorders and dissatisfaction with social relationships: Does type of relationship matter? *Journal of Abnormal Psychology, 109*, 803-808. doi:10.1037//0021-843X.109.4.S03
- Whisman, M.A., & Uebelacker, L.A. (2009). Prospective associations between marital discord and depressive symptoms in middle-aged and older adults. *Psychology and Aging, 24*, 184-189. doi:10.1037/a0014759
- Whisman, M.A., Uebelacker, L.A., Tolejko, N., Chatav, Y., & McKelvie, M. (2006). Marital discord and well-being in older adults: Is the association confounded by personality? *Psychology and Aging, 21*, 626-631. doi:10.1037/0882-7974.21.3.626
- Whisman, M.A., Uebelacker, L.A., & Weinstock, L.M. (2004). Psychopathology and marital satisfaction: The importance of evaluating both partners. *Journal of Consulting and Clinical Psychology, 72*, 830-838. doi:10.1037/0022-006X.72.5.830
- Whisman, M.A., Weinstock, L.M., & Tolejko, N. (2006). Marriage and depression. In C.L.M. Keyes & S.H. Goodman (Eds.), *Women and depression: A handbook for the social, behavioral, and biomedical sciences* (pp. 219-240). Cambridge, NY: Cambridge University Press.
- Wichstrom, L. (1999). The emergence of gender difference in depressed mood during adolescence: The role of intensified gender socialization. *Developmental Psychology, 35*, 232-245. doi:10.1037/0012-1649.35.1.232

- Widiger, T. A., & Clark, L.A. (2000). Toward *DSM-V* and the classification of psychopathology. *Psychological Bulletin*, *126*, 946-963. doi:10.1037/0033-2909.126.6.946
- Williams, N.L., Reardon, J.M., Murray, K.T., & Cole, T.M. (2005). Anxiety disorders: A developmental vulnerability-stress perspective. In B.L. Hankin & J.R.Z. Abela (Eds.), *Development of psychopathology: A vulnerability-stress perspective* (pp. 289-327). Thousand Oaks, CA: Sage.