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The Hurtful Relationship: A Longitudinal Study of Relational Aggression and Physical Health in Marriage

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THE HURTFUL RELATIONSHIP: A LONGITUDINAL STUDY OF RELATIONAL AGGRESSION AND
PHYSICAL HEALTH IN MARRIAGE

by

Matthew P. Martin

A thesis submitted to the faculty of

Brigham Young University

In partial fulfillment of the requirements for the degree of

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As chair of the candidate's graduate committee, I have read the thesis of Matthew P. Martin in its final form and have found that (1) its format, citations, and bibliographical style are consistent and acceptable and fulfill university and department style requirements; (2) its illustrative materials including figures, tables, and charts are in place; and (3) the final manuscript is satisfactory to the graduate committee and is ready for submission to the university library.

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ABSTRACT

THE HURTFUL RELATIONSHIP: A LONGITUDINAL STUDY OF RELATIONAL AGGRESSION AND PHYSICAL HEALTH IN MARRIAGE

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Master of Science

Previous literature has examined the link between overt marital conflict and physical health and found that negative interactions in marriage may lead to poorer health. Moreover, recent studies have identified relational aggression as a type of covert marital conflict. However, none have tested for effects of relational aggression on physical health in marriage. The purpose of this research is to further study this type of conflict by examining longitudinal dyadic data to determine how subtle, indirect marital conflict like relational aggression affects the health of spouses. Data from 316 couples, from the first two waves of the BYU Flourishing Families Project, were examined using structural equation modeling. The main finding of this study was that wives who withdraw support and affection from their husbands may experience poorer health a year later. This partner affect was not found to be true for husbands. Clinical implications are discussed, as well as recommendations for future research.

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Introduction

There is a growing body of literature that suggests a significant relationship between marriage and health. Research evidence suggests that being married affects certain health outcomes like health behaviors, mental health, health care access and use, longevity, and physical health (Wood et al., 2007). In addition to marital status, there is an emerging literature that demonstrates that marital conflict poses a significant risk for spousal health (Kiecolt-Glaser & Newton, 2001).

Most of these studies on marital conflict and health, however, have focused on overt marital conflict (Buehler et al., 1997). Overt acts of conflict would include belligerence, contempt, derision, screaming, insulting, slapping, threatening, and hitting (Buehler et al., 1994). Other forms of marital conflict are more covert and thus more difficult to observe and recognize. Covert marital conflict is any hostile behavior and affect that reflects passive-aggressive, or indirect, ways of managing conflict between parents (Buehler, 1997).

One type of covert marital conflict has been called relational aggression, which is defined as any behavior in which damage to relationships or the threat of damage to relationships serves as the vehicle of harm (Crick et al., 2006). Recently, research has begun studying the effects of relational aggression on romantic relationships (Linder et al., 2002). Examples of relational aggression in romantic relationships include “my partner doesn’t pay attention to me when he or she is mad at me” and “my romantic partner tries to make me feel jealous as a way of getting back at me” (Linder et al., 2002, pg. 86). Little attention has been made to relational aggression in romantic relationships and, consequently, little is known about this form of covert conflict (Linder et al., 2002; Schad et al., 2008). Furthermore, few

longitudinal studies have been done to study relational aggression (Werner & Nixon, 2005). To date, no studies have examined the effects of relational aggression on physical health.

Literature Review

Marital Conflict and Health

One review of 64 research articles from the 1990s concluded that marital dysfunction is indirectly consequential for depression and health habits and directly consequential for cardiovascular, endocrine, immune, neurosensory, and other physiological mechanisms (Kiecolt-Glaser & Newton, 2001). Furthermore, research has shown marital distress to be a predictor of cardiovascular disorders (Smith & Glazer, 2005), ulcers (Levenstein et al., 1995), atherosclerosis (Gallo et al., 2003), hypertension (Wickrama, 2001), and rheumatoid arthritis symptoms (Zautra et al., 1998). One study concluded that marital strain is especially unhealthy for older married couples (Umberson et al., 2006), while another study demonstrated a positive association between marital distress and health care utilization for older couples (Sandberg, et al., in press). Moreover, some studies have shown a positive relationship between marital distress and measures of self-reported health (Ren, 1997; Ryff et al., 2001; Wickrama et al., 1997). Again, the research shows a clear association between marital conflict and health.

Specifically, marriage has been linked with reduced heavy drinking and overall alcohol consumption (Curran et al., 1998; Duncan et al., 2006; Miller-Tutzauer et al., 1991), reduced marijuana use (Duncan et al., 2006), increased insurance coverage (Short, 1998), shorter average hospital stays (Iwashyna, 2003), fewer doctor visits (Prigerson, 2000), preventive care of cancer (Lee, 2005), reduced depressive symptoms (Kim, 2002; Lamb, 2003; Marks, 1998; Simon, 2002), longevity (Kaplan, 2006; Manzoli, 2007; Sorlie, 1995), physical health (Lorenz,

2006; Williams, 2004) , and intergenerational health effects (Hayward, 2004; Maier, 2000; Schwartz, 1995). It is safe to conclude that there is a strong relationship between marital status and health outcomes.

Various theoretical models have been proposed to explain the link between marital conflict and health, including the main-effect model, the stress-buffering model, and the social strain-social support model (Burman & Margolin, 1992). In the main-effect model, marriage is seen as a great source of social support that promotes well-being regardless of stress. Therefore, married people enjoy greater health because of the social support they receive from their spouses. The stress-buffering model puts forward the idea that a positive marriage buffers the effects of stress that can damage health, while a negative marriage does not. Evidence for both of these models has been found (Cohen & Wills, 1985; Cohen, 1988). The social strain-social support model simply posits the potentially protective and deleterious nature of marriage. In other words, negative relationships, via social strain, may actually hinder well-being while positive relationships, via social support, may protect or enhance it (Rook, 1990). The basic, underlying assumption of all three models is that marriage either through positive interaction (main-effect model and stress-buffering model) or status alone (social strain-social support model) helps to promote well-being and buffer stress.

Although these models of social support and strain provide a conceptual framework for understanding marriage and health, the hypotheses are broad and difficult to test (Cohen, 1988; Burman & Margolin, 1992). Another model was developed to not only include testable variables but also to more fully develop the pathway from marriage to health (Burman & Margolin, 1992). Included in this model is the idea that social support and strain from marriage are mediated by

psychological processes like cognition (e.g. perceptions), affect (e.g. depression), and health-related behaviors (e.g. diet). Psychological processes, according to this model, either directly or indirectly, through coping strategies, affect physiological well-being. Thus, the authors of this model concluded that the relationship between marital interaction and health was nonspecific and possibly indirect (Burman & Margolin, 1992).

More recently, another conceptual framework has emerged that refines and amplifies the previously mentioned model. In their seminal review of 64 articles on marriage and health, Kiecolt-Glaser and Newton studied the existence of physiological pathways leading from the marital relationship to physical health outcomes while also including the roles of depression, health habits, and trait hostility (2001). The findings from these reviewed research suggested direct links from negative and positive domains of marital functioning to biological systems. For example, negative behavior within the domain of communication was shown to be directly linked with physiological functioning. This is an example of a direct pathway between marriage and health that was not found previously with Burman and Margolin's model (1992).

Furthermore, indirect pathways between domains of marital functioning and biological systems are mediated by health habits (e.g., substance abuse, eating habits), individual differences (e.g., hostility), and psychiatric symptomatology (e.g., depression). These mediating variables, like depression, are impacted or created by marital functioning and, in turn, impact biological systems (Kiecolt-Glaser & Newton, 2001). This idea of indirect pathways makes sense considering the great volume of literature that links marital discord with depression (see Ross et al., 1990 for a review) and depression with poor health (Leibson et al., 1999). Here, Kiecolt-Glaser and Newton's model helps to amplify the model put forth by Burman and Margolin

(1992) by supporting the idea of indirect pathways between marriage and health while at the same time developing support for direct pathways.

Kiecolt-Glaser and Newton's review (2001) reported findings from studies that found connections between marital functioning and self-reported health. For example, one study of 403 women found that women in rewarding relationships reported lower levels of physical symptoms (Barnett et al., 1991). These findings were similar for another study of 205 men and women (Ganong & Coleman, 1991). This study found that men with high marital satisfaction reported fewer health complaints and higher health ratings. Similarly, wives in this study who had more positive feelings for their husband reported fewer health complaints.

One study of 156 couples in long-term marriages found that, in dissatisfying marriages, wives reported more health problems than husbands (Levenson et al., 1993). Furthermore, another study on marital functioning and health found that wives in emotionally-distant marriages reported poorer health while husbands in emotionally-aversive marriages reported poorer health (Fisher et al., 1992). One large study of 7,156 men and women from the National Survey of Families and Households found that individuals who were happy with their relationships, who always discussed disagreements in a peaceful manner, who never resorted to violence, and who were optimistic about the future of their relationship were more likely to report good health than those who reported the opposite (Ren, 1997).

In a more recent study that used another large national study of adults aged 25-74 years (Ryff et al., 2001), individuals of both genders who reported positive emotions from their spouses also reported fewer health symptoms, fewer chronic conditions, and better subjective

health. All of these studies show that a significant link exists between self-reported health and marital functioning.

Longitudinal research provides more compelling evidence that marital conflict has an influence on spousal health because it allows researchers to specify temporal sequence. In addition, studies across time help to show that self-reports of health and symptoms are not over-stated by individuals because of psychological distress. Two longitudinal studies were included in the review. One study involved 364 wives and husbands who reported data on marital quality and health annually for four years (Wickrama et al., 1997). The authors found that improvements in marital quality over the four-year period were accompanied by decreases in self-reported physical illness symptoms. Another study that highlights the value of longitudinal assessment found that, among 927 women, those higher in marital satisfaction reported better sleep, fewer depressive symptoms, and fewer physician visits than women who were less satisfied with their marriages (Prigerson et al., 1999).

Although the focus of this study is marital conflict and self-reported health, the aforementioned research supports two things. First, there is a strong relationship between positive, supportive marital functioning and self-reported health. Second, there is very little research on marital conflict and self-reported health.

Research suggests that changes in biological systems primarily occur when conflictual or hostile interactions take place in the marriage (Kiecolt-Glaser & Newton, 2001). Recent studies by Williams and Umberson (2004, 2006) have also concluded that the effects of marital interaction on health seem to be most prominent in the presence of marital conflict. This seems to increase with age and affects both men and women in similar ways across the life

course (2006). However, Williams and Umberson found that a greater effect size seemed to exist especially for couples who were heading for divorce. The health of these couples was more impacted than couples who were not headed for marital dissolution (2004).

Furthermore, Williams and Umberson (2004) found that life course stage is as important as gender in moderating the effects of marriage on health, and she argued that longitudinal studies are more helpful than cross-sectional studies in determining the effects of marital conflict on health. Again, other authors have made similar conclusions (Kiecolt-Glaser & Newton, 2001; Sandberg et al., in press; Wood et al., 2007). Perhaps longitudinal studies will also help clarify the importance of considering life course stage when studying marriage and health.

Overall, there is a large body of evidence that shows a connection between positive, supportive marital functioning and health, as well as a link between marital conflict and health outcomes. In addition, research has shown that self-report health measures are reliable indicators of the effects of poor marital functioning on physical well-being.

Overt vs. Covert Marital Conflict

Research on marital conflict generally conceptualizes conflict as overt. For example, Gottman (1994) has found that couples manage relationship conflict in one of five ways; avoidant, validating, volatile, hostile-engaged, and hostile-disengaged. His research suggested that the avoidant, validating, and volatile styles of overt conflict were predictive of high marital satisfaction and stability, while hostile-engaged or hostile-disengaged styles were predictive of marital distress and divorce.

While most marital conflict is non-aggressive (Gottman, 1994), some forms of marital conflict is aggressive, which has usually been categorized as either physical or psychological aggression. Physical aggression has typically been described as coercive attacks toward a partner's body like grabbing, pushing, slapping, kicking, hitting, or throwing something at a spouse (Buehler, 1994; O'Leary et al., 1989; Straus & Gelles, 1986). Psychological aggression is also seen as an overt form of conflict that entails a wide-ranging construct. One author described such behaviors as "coercive verbal behaviors (e.g., insulting or swearing at partner) and coercive nonverbal behaviors that are not directed at the partner's body (e.g., slamming doors or smashing objects)" (Murphy & O'Leary, 1989, p. 579). One study measured such conflict by the number of times that couples "call each other names", "tell each other to shut up", and "threaten each other" (Buehler et al., 1998).

National survey reports show that physical and psychological forms of aggression occur in a significant number of couples (Straus & Gelles, 1986; O'Leary et al., 1989) and that verbal aggression usually accompanies physical aggression (Stets, 1990). It's reasonable to conclude that overt conflict styles usually describe the behavior that is being expressed, whether verbally or nonverbally, and have been a chosen favorite of past research because of the ease in which they can be observed and measured.

A less observable style of aggression is covert marital conflict. Covert marital conflict is any hostile behavior and affect that reflects passive-aggressive, or indirect, ways of managing conflict between parents (Buehler, 1997). Compared to overt marital conflict, less is known about these more subtle forms of aggression. Furthermore, no research to date has examined the relationship between covert marital conflict and physical health. Covert marital conflict is

any hostile behavior and affect that reflects passive-aggressive, or indirect, ways of managing conflict between partners (Buehler, 1997).

Triangulation is one style of covert marital conflict (Björkqvist, 1994). It is the attempt of one person in a relationship to reduce the stress, anxiety or tension in the relationship by recruiting a third party. That third party can be a therapist, friend, relative, or child (Scharf, 1996). Marital triangulation can easily occur when a spouse reaches out to an ally to relieve tension in the marriage (Charles, 2001). Such inclusion of a third party can be subtle and covert, not only in process, but also in outcome as well. Triangulation usually occurs when anxiety increases between two persons. Bowen, who created the theory of triangulation, stated: “[The] involvement of a third person decreases anxiety in the twosome by spreading it through three relationships” (Kerr & Bowen, 1988, pg. 135). Research, so far, has failed to find support for the relationship between anxiety and triangulation (Benson et al., 1993; Larson & Wilson, 1998). However, research has generally supported the connection between triangulation and negative outcomes in physical health (Hanson, 1998; Miller, et al., 2004; Wood et al., 1989).

Triangulation is a good example of aggression that seeks to indirectly manipulate and cause harm. However, indirect aggression between just two partners is also common and usually occurs when a person wishes to attack another person circuitously and without counterattack. Examples may include manipulating others to attack an opponent, excluding an individual from the social group, and spreading malicious rumors. With such behavior, attempts are made to remain anonymous (Lagerspetz, 1988) and appear rational (Björkqvist, 1994). A perpetrator of indirect aggression will likely explain his or her behavior as justifiable and may even suggest that the behavior was not aggressive at all. Victims of indirect aggression,

including those in romantic relationships, are prone to depression, loneliness, anxiety, and negative thoughts towards physical appearance, romantic appeal, global self-worth, and close friendships (Coyne, 2006). In the end, indirect aggression, by these definitions, appears to be very similar to another form of covert conflict: relational aggression.

Relational Aggression

The idea of relational aggression grew out of investigations about aggression styles used by elementary school-aged girls and boys. Relational aggression is defined as any behavior in which damage to relationships or the threat of damage to relationships serves as the vehicle of harm (Crick & Grotpeter, 1995). Most research on relational aggression has been done among children. In one study of 91 preschool-aged children, relational aggression was observed more often among girls than boys (Crick et al., 2006). Specifically, girls were more relationally aggressive to female peers than to male peers. These results, found over two years of study, were discovered using observations made by teachers and researchers. Furthermore, relational aggression was stable for both genders during the 18 month period and predicted future peer rejection. Another recent study (Coyne, 2006) among 216 pre-teenagers and teenagers (11-15 year olds), found no gender differences in the amount of aggression, whether relational or physical, reported by boys and girls. Thus, relational aggression seems to be more prevalent among elementary and preschool-aged girls but then gender differences disappear as development continues.

Recent research has helped to explain the development of relational aggression. As was mentioned earlier, pre-adolescent girls may show patterns of relational aggression earlier than boys. This may be due to socialization. In other words, pre-adolescent girls learn to use indirect,

subtle forms of aggression that are different from boys' more direct, physical aggression. This form of aggression seems to be more acceptable for girls to use. Moreover, television, even more so than school, seems to provide a large exposure of examples of relational aggression (Coyne et al., 2006). One study found that adolescents who experience or use pressure behaviors that undermine autonomy were more likely to perpetrate romantic relational aggression in their relationships and to have partners who report romantic relational aggression (Schad, 2008). Therefore, relational aggression develops as individuals learn covert behavior that pressures others and undermines autonomy. Furthermore, individuals whose social development lacks autonomy may be more prone to increased levels of relational aggression and/or aggression.

There is evidence that relational aggression is predictive of negative outcomes among children. Relational aggression among children has been associated with social-psychological adjustment problems, including social maladjustment, internalizing problems, and externalizing difficulties (Crick et al., 2006). Like victims of other types of indirect aggression, children and adolescents, who are victims of relational aggression, are prone to depression, loneliness, anxiety, and negative thoughts towards physical appearance, romantic appeal, global self-worth, and close friendships (Coyne et al., 2006).

Only recently has research focused on relational aggression among adults. One study found that among 134 young adults, 18-25 years of age, indirect relational aggression was more likely to be used by females towards both females and males (Nelson, 2007). Here, relational aggression was measured through a survey that asked what college students do to be mean to each other. For example, one of the four questions asked, "what do most women do when they

want to be hurtful or mean to another woman?" Answers reflected the normative beliefs of these emerging adults about the use of aggression within social circles. No attempts were made to measure the use of aggression in romantic relationships. The authors concluded that relationally manipulative behaviors are clearly perceived to be salient for the social functioning of emerging adults.

Only two studies have examined the use of relational aggression in romantic relationships. The first study found no gender differences in the use of romantic relational aggression but did find that males reported a significantly higher level of romantic relational victimization (Linder et al., 2002). The sample for this study included 104 college students (34 males and 70 females) from a large Midwestern university. The mean age was 20.6 years, and the majority of participants were Caucasian (85.6%). In order to be included in the study, all participants had to report having been in at least one romantic relationship during their lives. Over 70% of the sample reported that they were currently in a romantic relationship that averaged 20.3 months, while the remainder reported a past relationship that averaged 9.6 months. Relational aggression and victimization was measured using a 56-item self-report measure that rated responses on a 7-point Likert scale. Two subscales of that measure included relational aggression and relational victimization. Cronbach's alphas for these subscales included .73 and .72, respectively. Examples of items include "I try to make my romantic partner jealous when I am mad at him/her", "If my romantic partner makes me mad, I will flirt with another person in front of him/her", and "My romantic partner doesn't pay attention to me when s/he is mad at me". The authors also measured feelings and expectations about romantic relationships and attachment figures.

Men and women reported similar levels of romantic relational aggression (2.14 for women; 2.23 for men), but men reported a significantly higher level of romantic relational aggression (2.85 for men, compared to 1.83 for women). The previous numbers are the mean levels of romantic relational aggression and victimization scores. Items were rated on a 7-point Likert scale, with higher scores indicating higher levels of aggression or victimization. An important contribution of the study was that the authors refined the definition of relational aggression in a romantic context, saying that relational aggression is any behavior that causes harm by damaging relationships or feelings of acceptance and love.

Other results of this study showed positive correlations between romantic relational aggression and frustration (.56), ambivalence (.54), jealousy (.58), and anxious clinging (.57). A negative correlation between romantic relational aggression and trust (-.44) was also found. For romantic relational aggression, positive correlations were found for frustration (.58), self-reliance (.27), ambivalence (.40), jealousy (.43), and anxious clinging (.53). A negative correlation was found between proximity seeking (-.31) and romantic relational aggression. These important findings help to identify the possible outcomes or predictors of relational aggression and aggression. Other possible outcomes of relational aggression among adults are social-psychological adjustment problems, including social maladjustment, internalizing problems, and externalizing difficulties (Crick et al., 2006).

The other study, a more recent one, focuses solely on relational aggression between spouses (Carroll et al., in press). The authors found that a majority of couples reported that relationally aggressive behaviors, such as social sabotage and love withdrawal, were a part of their marital dynamics, at least to some degree. Gender comparisons revealed that wives were

significantly more likely to be relationally aggressive than husbands. The sample for the study consisted of 349 families drawn from the *Flourishing Families Project (FFP)*. Because of the targeted age range of the children, spouses were within a fairly uniform stage of the marital lifespan (wives: M age = 43.44, SD = 5.54; husbands: M age = 45.32, SD = 6.23). Seventy-nine percent of the participants were European American, 5% were African American, 5% were Asian American, 2% were Hispanic, and 9% indicated that they were “mixed/biracial” or of another ethnicity. The average family income per month (after taxes) was \$7,051 (SD = \$6,498), with 70% of spouses having a bachelor’s degree or higher.

Relational aggression was measured using two subscales from the Couples Relational Aggression and Victimization Scale (CRAViS) developed by Nelson and Carroll (2007). The two subscales included the partner’s engagement in social sabotage and love withdrawal. Both scales are measured on a 7-point scale ranging from “not at all true” (coded as 1) to “very true” (coded as 7). The *social sabotage* scale is comprised of 7 items measuring the degree to which husbands and wives feel their spouse utilizes socially aggressive behaviors in times of conflict and difference. Examples of such items include: a) My partner has gone “behind my back” and shared private information about me with other people (i.e., extended family, friends, neighbors, etc.), and b) When my partner has been mad at me, he/she recruits other people to “take sides” with her/him and gets them upset with me too. The *love withdrawal* scale is comprised of 5 items measuring the degree that husbands and wives feel their spouse withdraws affection and support when there is conflict in the relationship. Examples of items that make up this scale include: a) my partner gives me the silent treatment when I hurt his/her

feelings in some way, and b) my partner has intentionally ignored me until I give in to his/her way about something.

Descriptive analyses in this study showed that love withdrawal behaviors are used more frequently in times of marital conflict (wives $M = 3.08$, $SD = 1.32$; husbands $M = 2.67$, $SD = 1.47$) than are social sabotage behaviors, which appear to occur much less frequently (wives $M = 1.59$, $SD = .95$; husbands $M = 1.42$, $SD = .79$). Findings from a structural equation model indicated that higher husband's love withdrawal and social sabotage were predictive of poorer marital outcomes for both partners. Higher wife's love withdrawal and social sabotage were not related to wife's marital outcomes, but were related to poorer marital outcomes reported by husbands. The authors concluded that "marital partners probably see love withdrawal and social sabotage as more acceptable forms of manipulation" (Carroll et al., in press, p. 22).

Despite the advances in research on relational aggression, there is no research that has examined the effect of relational aggression on physical health between spouses. With substantial evidence linking overt marital conflict and health problems, there is reason to believe that covert marital conflict, specifically relational aggression, will be significantly associated with health problems. Hence, the hypothesis of this study is that relational aggression in marriage will be associated with poorer health among the spouses.

Methods

Sample and Procedures

The data for this project are taken from the first two waves of the *Flourishing Families Project (FFP)*. The sample includes 500 families from a large northwestern city who were

interviewed in winter and spring of 2007 and again in the summer of 2008. The overall project is a multi-year longitudinal study of family life.

The sample for this study consisted of families drawn from the FFP Time 1 assessment ($N = 500$ families). Exactly 149 of those families were single parent–headed households and thus did not lend themselves to comparisons across mothers and fathers, two families were dropped because their children were younger than 10 years of age. The sample consisted of intact marriages with wives having an average age at Time-1 of 43.44 (s.d. = 5.54) and husbands having an average age of 45.32 (s.d. = 6.23). Seventy-nine percent of the participants were European American, 5% were African American, 5% were Asian American, 2% were Hispanic, and 9% indicated that they were “mixed/biracial” or of another ethnicity. For two-parent families, 73% of fathers, 86% of mothers, and 80% of children were European American, 18% of fathers, 8% of mothers, and 3% of children were African American, and 9% of fathers, 6% of mothers, and 17% of children were from other ethnic groups or were multiethnic. For two-parent families, 72% of mothers and 69% of fathers had a bachelor’s degree or higher. For two-parent families, 14% made less than \$25,000 per year, 16% made between \$25,000 and \$50,000 a year, and 70% made more than \$50,000 per year; with 21% of two-parent mothers and 5% of two-parent fathers reporting being unemployed. Ninety-five percent of two-parent families were currently married. In the summer of 2008 (May – August), the families were recontacted, with 95% participating in the second wave of data collection ($N = 473$). For this study, results from families with both spouses present were used. Furthermore, only results where both spouses responded to measures were used. This brought the final sample size to 316.

Families, consisting of a child, mother and father (when resident), were interviewed in their homes by trained interviewers, with each interview consisting of a one-hour video and a one-and-one-half hour self-administered questionnaire. For this study, only questionnaire data were used, as provided by both spouses. Families were selected using a purchased national telephone survey database (Polk Directories/ InfoUSA). Families were recruited within census tracts that mirrored the socio-economic and racial stratification of the Seattle School District. Two-thousand seven hundred households were contacted by trained interviewers to determine eligibility; 880 were determined to have a child who was 11 years old, which was the target age. Five hundred (57%) agreed to participate in the study. Families were given a \$200 stipend for their participation.

This database claimed to contain 82 million households across the United States and had detailed information about each household, including presence and age of children. Families identified with the Polk Directory were selected from targeted census tracts that mirrored the socio-economic and racial stratification of reports of local school districts. All families with a child between the ages of 10 and 14 living within target census tracts were deemed eligible to participate in the FFP. Eligible families were subsequently contacted directly using a multi-stage recruitment protocol. First, a letter of introduction was sent to potentially eligible families. Second, interviewers made home visits and phone calls to confirm eligibility and willingness to participate in the study. Once eligibility and consent were established, interviewers made an appointment to come to the family's home to conduct an assessment interview.

In addition to the random selection protocol used with the survey database, families were recruited into the study through family referral. At the conclusion of their in-home interviews, families

were invited to identify two additional families in the recruitment area that matched study eligibility. This type of limited-referral approach permitted us to identify eligible families in the targeted area that were not found in the Polk Directory. The Polk Directory national database was generated using telephone, magazine, and internet subscription reports; therefore, families of lower socio-economic status were under-represented in the database. By broadening our approach and allowing for some limited referrals, we were able to significantly increase the social-economic and ethnic diversity of the sample.

Through these recruitment protocols, a total of 692 potentially eligible families were identified within the survey database as living within the targeted census tracts. Of those, 372 were determined to have a child within the target age range. Of those, 64% agreed to participate ($n = 238$). Additionally, there were 372 families referred by participating families, 262 of whom agreed to participate (71%). The most frequent reasons cited by families for not wanting to participate in the study (at both Time 1 and Time 2) were lack of time and concerns about privacy. It is important to note that there were very little missing data. As interviewers collected each segment of the in-home interview, questionnaires were screened for missing answers and double marking. For each question used in the statistical analyses here, there were fewer than four individual response items missing for each. AMOS's data imputation program was used to create the missing values.

Measures

Relational Aggression. Relational aggression was measured using two subscales from the Couples Relational Aggression and Aggression Scale (CRAViS) developed by Nelson and Carroll (2006). This measure is a modified version of the original Self-Report of Aggression and Aggression (SRAV) measure developed by Morales and Crick (1998) and extended to romantic

relationships of young adults by Linder, Crick, and Collins (2002). The SRAV-M utilizes the same item stems as the SRAV, but uses modified language for committed couples where respondents were instructed to respond with respect to their current marriage relationship. The two subscales measured in this study included social sabotage aggression and love withdrawal aggression.

The *social sabotage aggression* subscale is comprised of 6 items measuring the degree to which husbands and wives feel their spouse utilizes socially aggressive behaviors in times of conflict and difference. The items that made up this scale include: a) My partner has gone “behind my back” and shared private information about me with other people (i.e., extended family, friends, neighbors, etc.), b) When my partner has been mad at me, he/she recruits other people to “take sides” with her/him and gets them upset with me too, c) When my partner has been angry at, or jealous of me, he/she has tried to damage my reputation by gossiping about me or by passing on negative information about me to other people (i.e., extended family, friends, neighbors, etc.).

The *love withdrawal aggression* subscale is comprised of 6 items measuring the degree that husbands and wives feel their spouse withdraws affection and support when there is conflict. Items include: a) My partner gives me the silent treatment when I hurt his/her feelings in some way, b) My partner ignores me or gives me the “cold shoulder” when s/he is angry with me, and c) My partner withholds affection or sex from me when s/he is angry with me. Both scales are measured on a 7-point Likert scale ranging from 1 (*not at all true*) to 7 (*very true*). Higher scores indicate higher perceived relational aggression. Reliability tests for this sample

indicated a Cronbach's Alpha of .88 for females and .89 for males, with reliability coefficients ranging from .86 to .90 for the social sabotage and love withdrawal subscales.

Health. The adult's level of health was assessed using three items from the RAND Health and Survey 1.0 (VanderZee, Sanderman, Heyink, & de Haes, 1996; RAND, 1992). Parents responded to one question about general health based on a 5-point Likert scale ranging from 1 (*poor*) to 5 (*excellent*). The question was, "how would you rate your health?" The other two items were "I am as healthy as anybody I know" and "My health is excellent". Responses to these two items were measured on a five-point Likert scale and ranged from 1 being "definitely false" and 5 being "definitely true". Reliability coefficients (Cronbach's Alpha) were found to be .81 for the General Health items. Similarly, in this sample, reliability coefficients were found to be .778 for females and .664 for males (General Health).

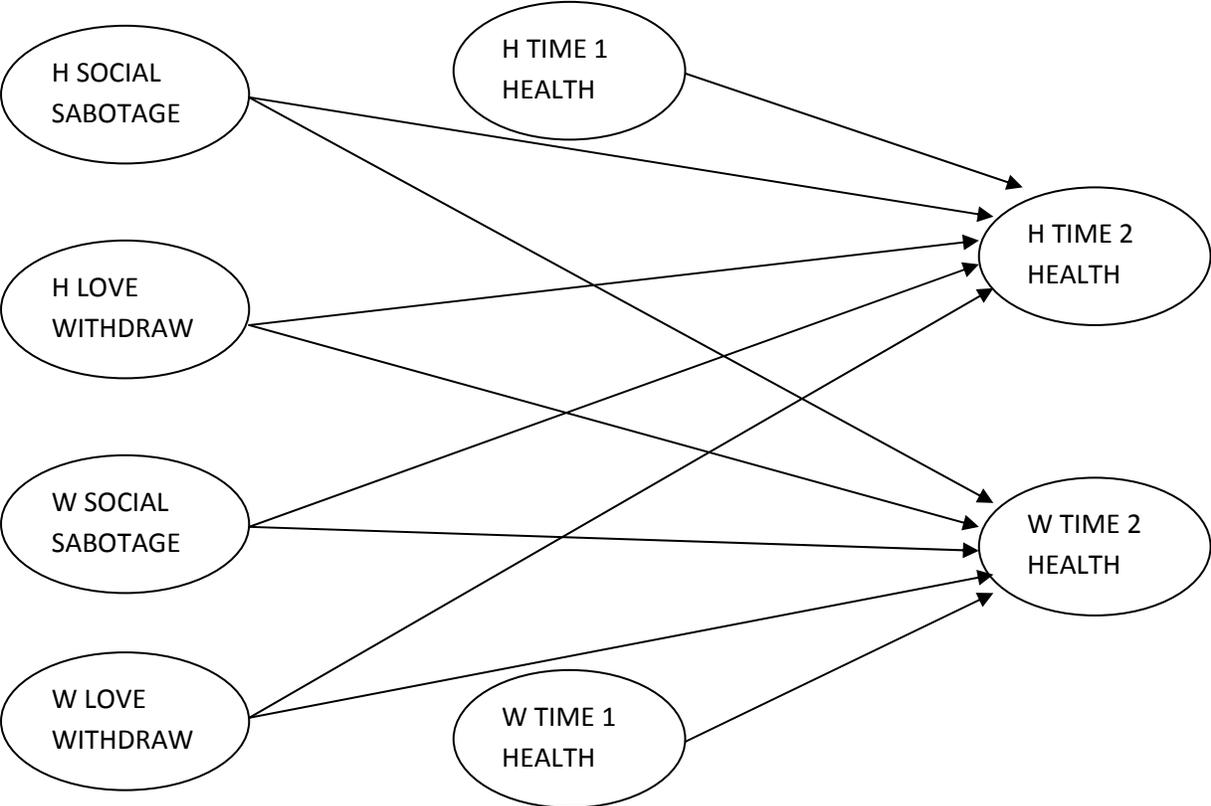
Control Variables. Education, number of years married, and race were included as control variables. Race was constructed based on responses from parents to the question about self-identified ethnicity: to which race/ethnic group do you belong. Responses included "European Americans", "African American", "Hispanic", "Asian American", "other", and "multi-ethnic". Families were identified as multi-ethnic if family members differed from one another in their ethnic identification.

Results

Analysis

A structural equation modeling (SEM) method of analysis was used to analyze the data. The analysis program, AMOS (Arbuckle, 1999), which uses graphic models to represent the theoretical construct, computed model outputs. Figure 1 illustrates the model that was tested.

Figure 1 Conceptual Model Relational Aggression and Time 1 & Time 2 Health



SEM is generally superior to standard multiple regression when analyzing survey data because it accounts for measurement error, which leads to more accurate estimates of the associations between variables (Kline, 1998). The model that was tested is based on the work by Miller and Hollist (2007), who used this type of a model to test the effect of marital distress on depression, using a longitudinal sample.

Descriptive Results

Before reporting on the hypothesis tests, a review of the descriptive statistics will help to contextualize the study (See Table 1). The mean for husband reports of social sabotage was (1.59) with a range of (5.33) and a SD of (.945). The mean for wife reports of social sabotage was (1.41) with a range of (5.83) and a SD of (.782). The mean for husband reports of love withdrawal was (2.89) with a range of (6.00) and a SD of (1.26). The mean for wife reports of love withdrawal was (2.49) with a range of (5.50) and a SD of (1.30). The Time 2 health mean for husbands was (3.85) with a range of (4.00) and a SD of (.858). The Time 2 health mean for wives was (3.75) with a range of (4.00) and a SD of (.951). (See Table 1.)

Table 1. Means, Ranges, and Standard Deviations of Latent Variables (N = 316)

	Mean	Standard Deviation	Range
Husband Social Sabotage	1.59	.945	1.00 – 6.33
Wife Social Sabotage	1.41	.782	1.00 – 6.83
Husband Love Withdrawal	2.89	1.26	1.00 – 7.00
Wife Love Withdrawal	2.49	1.30	1.00 – 6.50
Husband Time 2 Health	3.85	.858	1.00 – 5.00
Wife Time 2 Health	3.75	.951	1.00 – 5.00
Husband Time 1 Health	3.87	.862	1.33 – 5.00
Wife Time 1 Health	3.82	.935	1.00 – 5.00

Inter-Correlations of Latent Variables

A correlation matrix of latent variables was constructed to determine the correlational structure of the data. (See Table 2.) Findings indicate that husband reports of love withdrawal were significantly correlated with the time 2 health of husbands and wives. However, social sabotage was not significantly correlated with the time 2 health of either spouse. It is important to note that none of the relational aggression latent variables were significantly correlated with the time 1 health of husbands and wives. This seems to suggest that any effects of relational aggression on health occur over time. This is consistent with the findings of the SEM analysis. (See Table 2.).

Among relational aggression variables, the matrix show that significant correlations were found between all four variables. For example, husband reports of social sabotage were significantly, positively correlated with wife reports of social sabotage and love withdrawal and husband reports of love withdrawal. This was found to be the same with all four variables. The correlation matrix shows that two of the control variables used in the model, education and race, were significantly correlated with social sabotage and love withdrawal. Husband's education was significantly correlated with wife reports of social sabotage and love withdrawal and husband reports of social sabotage. Husband's race was correlated with husband and wife reports of love withdrawal while wives race was correlated with husband reports of love withdrawal. Wives' education and number of years married were not significantly correlated with either social sabotage or love withdrawal.

Table 2. *Correlations for Relational Aggression, Health, Education, Race, and Years Married (N = 316)*

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. H Social Sabotage	~	.527***	.468***	.289***	-.072	-.111	-.047	-.099	-.195**	-.112	-.053	-.072	-.019
2. W Social Sabotage		~	.271***	.343***	-.080	.009	.008	-.005	-.185**	-.049	-.018	-.035	.048
3. H Love Withdrawal			~	.295***	-.092	-.035	-.138*	-.141*	-.099	-.043	-.152*	-.164**	-.076
4. W Love Withdrawal				~	-.010	-.048	-.008	-.049	-.119*	-.029	-.139*	-.029	-.025
5. H Health Time 1					~	.120	.791***	.105	.177**	.026	.046	.004	.081
6. W Health Time 1						~	.073	.817***	.196**	.149*	.127*	.160**	-.095
7. H Health Time 2							~	.095	.210***	.082	.059	.031	.141*
8. W Health Time 2								~	.102	.109	.183**	.082	-.108
9. H Education									~	.428***	.125*	.095	.178**
10. W Education										~	.159**	.159**	.134*
11. H Race											~	.502***	.124*
12. W Race												~	.084
13. # Years Married													~

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

Model Fit

The first step of analysis was to verify the model's goodness of fit. Several fit statistics were used to indicate that the model accurately represented the data, including the Chi-square statistic, the GFI, TLI, and the RMSEA. After determining that the model fit the data, the second step will be to test the hypotheses of the study. Path coefficients for latent variable associations will be used to verify or refute the hypotheses. These path coefficients are reported in both unstandardized and standardized coefficients, with the degree of significance reported as a p value.

Structural equation modeling (SEM) was used to estimate the conceptual model, and the computer program AMOS was used to compute the structural model indexes. Kline (1998) stated that the reporting of goodness-of-fit statistics should include the chi-square, root mean square error of approximation (RMSEA), goodness-of-fit index (GFI), and Tucker-Lewis index. These statistics provide a comprehensive assessment of the fit of the model to the data (Boomsma, 2000). The chi-square statistic is mainly an important goodness-of-fit statistic in small samples (Kline), making it less useful for the large sample in this study. Scores of less than .05 for the RMSEA are considered good fitting models and less than .08 are considered adequate (Byrne, 2001). The RMSEA is an especially important statistic with larger samples (Boomsma). The GFI and Tucker-Lewis indexes indicate goodness-of-fit with scores of .90 and higher (Byrne). The parsimony ratio also is used to evaluate fit (Kline). This index evaluates the degree of appropriateness of model complexity compared with the data. For example, if there are unnecessary variables included in the conceptual model, it will lower the parsimony ratio. Thus, a parsimony ratio closer to 1.0 indicates that the model is organized as succinctly as

possible without losing valuable information. In most cases, acceptable parsimony ratios are above .60 (Byrne).

According to the goodness-of-fit statistics, the model fits the data. The model fit summary reported a score of .048 for RMSEA, which is less than the .05 benchmark and an especially important statistic for large samples. Moreover, the summary reported scores higher than .90 for the GFI (.934) and TLI (.915). Results also showed a parsimony ratio score of .774 which is above the recommended .60. The chi-square statistic for goodness-of-fit was 1040.805.

Hypothesis Test

The results for the hypothesis test of this study are divided into actor and partner effects with standardized path coefficients and p-values. (See Table 3) In terms of actor effects, neither the wife reports of love withdrawal ($\beta = .017, p = .747$) or social sabotage ($\beta = -.008, p = .890$) were significantly associated with wife time 2 health, when controlling for wife time 1 health. Furthermore, neither the husband reports of love withdrawal ($\beta = -.089, p = .133$) or social sabotage ($\beta = -.001, p = .988$) were significantly associated with husband time 2 health, controlling for husband time 1 health. Thus, there were no actor effects found in this study. (See Table 3.)

In regards to partner effects, the husband reports of love withdrawal ($\beta = -.142, p = .01$) were significantly associated with the time 2 health of wives. This indicates that husbands' report of their wives withdrawing love towards them at time 1 is predictive of decreasing health among their wives. The path between husband social sabotage and wife health was not significant ($\beta = .059, p = .325$). For wives, neither the reports of love withdrawal ($\beta = -.008, p$

= .892) or social sabotage ($\beta = .097, p = .132$) were significantly associated with the time 2 health of husbands.

Table 3. *Regression Weights for Full Model (N = 316)*

	Unstandardized	Standardized	<i>p</i>
Husband Social Sabotage → Husband Health Time 2	-.001	-.001	.988
Wife Social Sabotage → Husband Health Time 2	.138	.097	.132
Husband Social Sabotage → Wife Health Time 2	.055	.059	.325
Wife Social Sabotage → Wife Health Time 2	-.013	-.008	.890
Husband Love Withdrawal → Husband Health Time 2	-.056	-.089	.133
Wife Love Withdrawal → Husband Health Time 2	-.004	-.008	.892
Husband Love Withdrawal → Wife Health Time 2	-.100**	-.142**	.010
Wife Love Withdrawal → Wife Health Time 2	.010	.017	.747
Husband Health Time 1 → Husband Health Time 2	.743***	.797***	.000
Wife Health Time 1 → Wife Health Time 2	.810***	.818***	.000
Husband Health Time 1 → Wife Health Time 2	.000	.000	.999
Wife Health Time 1 → Husband Health Time 2	-.019	-.021	.676

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

Discussion

Hypothesis

We predicted that, due to past research that supports the relationship between overt marital conflict and health problems (Kiecolt-Glaser & Newton, 2001; Wood et al., 2007), relational aggression in marriage would be associated with poorer health among spouses. Relational aggression was divided into two variables, social sabotage and love withdrawal. It was hypothesized that both types of relational aggression would be associated with poorer health. According to the findings of this study, husband reports of love withdrawal were predictive of poorer health for wives a year later. In other words, husbands' perceptions of their wives withdrawing love from them were predictive of wives' poorer health. However, husband reports of their wives' love withdrawal did not predict changes in their own health. Wife reports of their husbands' love withdrawal were not predictive of poorer health for either themselves or their husbands. No support for the relationship between social sabotage and health was found.

The only significant finding of this study centers on love withdrawal. Love withdrawal, a subscale of relational aggression, measures the degree that husbands and wives feel their spouse withdraw affection and support when there is conflict in the relationship (Carroll et al., in press). Thus, the withdrawal of love exists in the context of occurring conflict. Our findings seem to say that the physical wellbeing of wives diminishes as they hold back love and support from their husbands. In other words, when wives are angry and deny affection to their husbands (from the husband's perspective), it seems to deteriorate the health of the wife. It may be then that wives suffer physically because of the emotional toll that such loneliness

takes. Perhaps wives suffer more in these instances because of the loss of reciprocating love and support. However, this appears to occur over time and not immediately.

What about the health of husbands? Our findings seem to go against past findings on marital conflict and health which report equal effects for genders (Williams, 2004; Umberson, 2006). According to the results of this study, husbands are more likely to report love withdrawal (mean of 2.89) than wives (mean of 2.49). See Table 1 for more information on descriptive statistics. Therefore, it may be that wives are more likely to use love withdrawal in a marriage compared to men and thereby experience consequences to physical health. Furthermore, our correlational matrix showed significant, negative associations between husband reports of love withdrawal and the time 2 health of wives and husbands while our SEM analysis only showed a significant association between husband reports of love withdrawal and the time 2 health of wives.

We report that social sabotage in marriage does not predict poorer health a year later. Why not? This may occur due to the fact that, in our sample, social sabotage was not reported as often as love withdrawal. Couples do not seem to frequently experience this form of relational aggression. Husbands report a mean of 1.59 while wives report 1.41. See Table 1 for more information on descriptive statistics. Thus, our findings show that social sabotage occurs less often than love withdrawal and therefore may not happen enough to incur any detrimental health effects.

Furthermore, social sabotage happens behind spouses backs. It occurs when spouses share personal information about spouses with friends or turns friends against spouses. Although it seems that such social aggression would certainly damage a relationship, social

sabotage does not hold the same face-to-face confrontation or interaction like other forms of marital conflict. For example, some physical aggression has been described as coercive attacks toward a partner's body like grabbing, pushing, slapping, kicking, hitting, or throwing something at a spouse (Buehler, 1994; O'Leary et al., 1989; Straus & Gelles, 1986). These kinds of confrontations are certainly more aggressive than social sabotage, thereby eliciting a strong physiological response that would possibly lead to deterioration in health.

Another reason for our findings may be that the emotional consequences of love withdrawal are greater than social sabotage. In general, relational aggression is defined as "behaviors that harm others through damage (or the threat of damage) to relationships or feelings of acceptance, friendship, or group inclusion" (Crick et al., 1999, p. 77). Social sabotage, a subscale of relational aggression, is more a function of damaging relationships outside the marriage than is love withdrawal. The latter is characterized by behaviors that include withholding affection and/or sex, threatening to leave the relationship, and ignoring the other partner. Such disaffection may create space in a relationship where fear, distrust, and resentment grow. According to Bowlby, these feelings can be a result of the absence of or separation from an attachment figure (Bretherton, 1992). This includes romantic relationships (Hazan & Shaver, 1987). When such an attachment injury to a relationship occurs, spouses may feel abandoned or betrayed (Johnson, 2001). The emotional consequences of such an experience may far outweigh those of social sabotage where the focus is on destroying relationships outside the marriage or sharing private information with others outside the marriage.

Overall, relational aggression is a more subtle, covert form of marital conflict and, therefore, may not produce the same biological response that overt marital conflict like shouting and throwing things may produce. This kind of conflict raises blood pressure and heart rate, thus creating a more intense, exhausting experience than social sabotage or love withdrawal. (Gottman & Notarius, 2000; Kiecolt-Glaser & Newton, 2001). In one study, Gottman and Levenson used physiological assessment and observational coding to study marital interaction (1992). They found that interaction marked by negative affect between spouses resulted in much higher levels of arousal. Smith and Brown (1991) found that cynical hostility, especially for husbands, was related to increased blood pressure and heart rate. Similar findings have been found in other studies (see Kiecolt-Glaser & Newton, 2001). Such findings have probably been discovered because of the instinctual need to fight or flight that arises when a person experiences acute stress (Cannon, 1915). This response is commonly regarded as the first stage of the general adaptation syndrome that regulates stress responses and primes people for fighting or fleeing. However, it seems that such findings are less likely to be made in studies examining relational aggression and health. Relational aggression takes place quietly and subtly without direct confrontation thus preventing any acute stress that might trigger intense physiological responses.

As far as we know, the findings of this study are the first to report on the interaction between relational aggression and health in marriage. Kiecolt-Glaser and Newton (2001) found that health problems primarily occur when conflictual interaction takes place in marriage. Williams and Umberson (2004, 2006) came to the same conclusion about the interaction between overt marital conflict and poorer health but added that this seems to affect both men

and women and increases with age. Both researchers agree that longitudinal studies are most helpful in determining interactions between marital conflict and health. There has been a near absence of literature examining the link between covert marital conflict and health. This research provides some impetus in filling that gap.

Limitations

One limitation for these findings includes the ability to generalize the findings. The characteristics of the sample are central to the study's methodology, but impose clear limits when we attempt to extend these findings to other populations. A majority of the wives (72%) and husbands (69%) had a bachelor's degree and 70% of the couples reported annual incomes of \$50,000 or more. Thus, the sample was quite educated. Furthermore, almost 80% of the sample reported being of European American descent; and most couples reported average ages of 43-45 years. Our findings, then, can only be generalized to a mainly Caucasian, educated population of couples in the fourth decade of life. This naturally lends to continuing this research with other populations.

Another limitation is that the span between the first and second waves of data collection is only one year. It is possible that it takes longer than one year for the effects of relational aggression to reach a threshold where it affects spousal health. Thus our findings are limited to only a small span of time and cannot be generalized to say that health deteriorates the longer relational aggression functions in a marriage. Perhaps some couples adapt to such marital dynamics to the point where health is unaffected. Only future research would be able to answer these questions.

The findings suggest that poorer health is an outcome of love withdrawal after one year. It's not known how these findings may change over the course of several years. The sample for this study is part of a multi-year research project that will include several waves of data collection. However, our findings are limited to the effects of relational aggression on health after only one year.

Directions for Future Research

Future research on covert marital conflict and health should address the limitations listed above. This includes designing studies that extend over a longer period of time. This kind of methodology is more accurate in examining health effects that may be subtle and time sensitive. Our study included two waves over the time of one year. Future studies should be at least two years to five years. This will better examine the long term effects of relational aggression on health since relational aggression is less intense than more overt types of marital conflict.

Moreover, researchers should determine if these findings are extendable to minority populations. The findings presented here are limited to a mainly European American, mid-life population. Future research can determine not only the consequences of covert marital conflict but the actual occurrence among minority populations.

Another area of future research is the link between relational aggression and physiological response. Past research has examined the relationship between overt marital conflict and physiological responses (Gottman & Notarius, 2000; Kiecolt-Glaser & Newton, 2001). Although this study found not significant association between social sabotage and health in marriage, future research (longitudinal) can examine the effects of love withdrawal on

biological mechanisms like heart rate, metabolism rate, blood pressure, and even sleeping patterns. Such research may provide a glimpse into the long-term, specific effects of love withdrawal on the body.

Clinical Implications

The findings of this study highlight the issue of covert marital conflict, in this case, relational aggression. Previous research has demonstrated that relational aggression is occurring in marriages and is associated with lower marital quality and marital instability (Carroll et al., in press). Furthermore, according to this study, wives are more likely to be relationally aggressive than husbands (see also Nelson, 2007). Other possible outcomes of relational aggression among adults are social-psychological adjustment problems, including social maladjustment, internalizing problems, and externalizing difficulties (Crick et al., 2006). However, relational aggression may extend beyond marital relationships into family outcomes. There is additional research that has linked covert marital conflict to poor child outcomes, especially internalizing problems (Stutzman et al., 2008). The results from this study provide partial support that covert marital conflict has negative effects on spousal health.

Despite this accumulating evidence of the negative effects of covert marital conflict on family well-being, many marital therapy models focus almost exclusively on overt marital conflict. For example, behavioral marital therapy aims at decreasing negative interaction and increasing rewarding behaviors (Holtzworth-Munroe & Jacobson, 1991). Gottman therapy also seeks to lessen the amount of harsh start-ups and flooding that characterizes overt marital conflict (Gottman, 1999). Even therapy models that focus on subtle marital dynamics like

emotion and pursuit-withdraw dynamics seem to view conflict as being mostly confrontational (Greenberg & Johnson, 1988). However, it would be unfair to say that none of these models address marital interactions like avoidance and emotional disengagement.

With evidence mounting that covert marital conflict is a significant dynamic in families, it is important that marital therapists attend to covert marital conflict, as well as overt conflict. This can be done by identifying relationally aggressive behaviors like sharing private information behind a spouse's back, giving a spouse the "silent treatment", not allowing their partners to sleep in the same bed, intentionally withdrawing affection from a relationship, and refusing any physical affection bids. Such conflict patterns in relationships are indirect and subtle, thereby making it difficult to detect. Although covert, these patterns of conflict may lead to eventual poorer health over time. Therapists can recognize these patterns and provide clients with appropriate interventions.

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