

Tracking Marital Adjustment, Hostility, and Physical Functioning Across Time in a Therapy Population: A Biopsychosocial Model

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Abstract In this study we sought to explore the biopsychosocial connections between relational adjustment, hostility, and physical functioning of individuals who attended psychotherapy. Assessments were given at therapy intake, 6 months post intake, and 12 months after therapy intake. Path analyses between relational adjustment, hostility, and physical functioning revealed a good fit to the data. Results indicated that therapy may interrupt the relationship between hostility at intake and later marital satisfaction. Individuals' ability to function physically day to day at 6 months post therapy intake contributed to increased marital adjustment 12 months after intake. Clinical implications are discussed.

Keywords Biopsychosocial approach · Couples therapy · Individual therapy · Hostility · Physical activity

Since Descartes (1596–1650) introduced the idea of dualism between mind and body, the biopsychosocial domains often have been considered to be separate. However, Duncan (2000) contends that the dualism blamed on Descartes was due to a misunderstanding of Descartes' writings rather than on Cartesian thought itself. Within the last few decades the biological, psychological, and social domains have started to be united theoretically (c.f., Burman and Margolin 1992) along with practical implementations (e.g., medical family therapy, behavioral health). In this exploratory study we investigated how the biopsychosocial domain may change over time in the therapy context.

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In 1992, Burman and Margolin consolidated the existing literature and developed a theoretical model of how relational factors (e.g., marital status, relationship quality, interaction patterns), intrapersonal processes (e.g., perception, cognitive attributions, mental health), and physical health mutually influence each other. Since this theoretical integration, a growing number of empirical studies have identified specific pathways in which the biological, psychological, and physical domains interact. However, there is a gap in the research exploring how physical functioning, hostility, and marital adjustment interact with each other over time in a therapy context.

Marital Adjustment and Hostility

Marital dynamics have been found to have a reciprocal relationship with hostility. Hostility can be thought of as an affective state of anger combined with behavioral expressions of that anger (Spielberger et al. 1995). Gottman (1993, 1994) has consistently found defensive and critical interactions, characteristics of state hostility, to be predictive of relationship dissolution. Beyond relationship dissolution, hostility has long been established to be a precursor to marital and overall relationship difficulty (Roberts 2000; Pasch and Bradbury 1998). Smith and Glazer (2006) reported results of a series of studies showing that wives' trait anger predicted lower marital adjustment scores for both wives and husbands.

Reciprocally, marital distress also has been shown to precede psychological difficulties. Specifically, marital distress has been found to increase the risk of depression and anxiety in a nationally representative sample of couples (Whisman 2007). When studying the impact of marital interaction on state hostility, Roberts and Krokoff (1990) found that for women, state hostility was a response to their husbands' withdrawal behavior in distressed marriages. Roberts (2000) found that husband hostility was strongly associated with wife withdrawal and lower relational adjustment. Each of these studies suggests that state hostility can be a result of relationship dynamics. Makinen and Johnson (2006) also have found hostile responses to partner withdrawal in the therapeutic setting.

Strong relationships are characterized by the relatively infrequent presence of hostile behaviors and interactions in relation to positive behaviors and interactions (Gottman 1994). Due to the association between hostility and marital distress, therapeutic interventions often target hostility in an attempt to reduce hostile interactions, thereby improving relational adjustment and stability. For example, Emotionally Focused Therapy (EFT; Johnson and Greenberg 1985) is designed to reduce attachment anxiety, which is often manifested as hostile pursuit of a partner. The Gottman Method (Gottman and Gottman 2008) targets reduction in criticism, contempt, and defensiveness through multiple interventions in an attempt to build a strong relationship foundation. Cognitive Behavioral Couples Therapy (CBCT, Baucom et al. 2008) targets cognitive misattributions that lead to hostile responses.

Marital Adjustment and Physical Functioning

Marriage has been shown to have health benefits (Kiecolt-Glaser and Newton 2001). Intimate relationships are not only health protective, these relationships also can have a curative component toward health concerns previously believed to be 'individual' issues. Campbell (2003) argued that family impacts health through direct mechanisms such as

genetic inheritance or shared living spaces that allow for disease transmission, and through indirect mechanisms like shared lifestyle, health behaviors, and psychophysiological pathways. One study on the power of psychophysiological pathways found that marital quality and the severity of prior congestive heart failure were equally predictive of later death (Coyne et al. 2001). Weihs et al. (2002) also demonstrated evidence for reciprocal influence between family functioning and health, with appropriate communication and connectedness providing protective factors while conflict and criticism were risk factors for health outcomes.

The vast majority of empirical literature and theoretical models place marital processes as predictors, moderators, or mediators of later health (e.g., Burman and Margolin 1992; Cohen 1988; Cohen and Wills 1985; Kiecolt-Glaser and Newton 2001; Robles and Kiecolt-Glaser 2003). In contrast, the literature on how physical health affects marital adjustment is inconsistent with some research showing health problems negatively impacting relationship quality, health problems as beneficial to relationship quality, or no difference as compared to controls without health complications (Burman and Margolin 1992). Variance in the results may be due to unknown interactions of specific disease processes/types with specific kinds of relational measurements (e.g., marital status, relationship quality, relational interaction processes).

Other research has shown that when families enter treatment for relational concerns, the frequency with which they use the medical system begins to drop. This phenomenon is referred to as the “medical offset effect” (Follette and Cummings 1967). A medical offset effect for those who attend marriage and family therapy has been demonstrated (Law and Crane 2000; Law et al. 2003). This line of research has shown that offsets occur for multiple individuals in the family, not just the identified patient, indicating that physical health is tied to the health of those in the relational system.

The research specifically linking physical functioning and relational adjustment demonstrates how relational adjustment or satisfaction is negatively impacted when one partner loses physical functioning due to such things as illness (Booth and Johnson 1994). On the other hand, a strong relationship appears to buffer the impact of chronic illness (Fekete et al. 2007), as well as being health protective (Rohrbaugh et al. 2006). Practitioners in the field of medical family therapy often attempt to increase relational functioning to facilitate recovery and adaption to illness and injury, with promising results (Campbell 2003).

Hostility and Physical Functioning

The interconnections between health and individual psychology were discussed as early as 1929 with Cannon’s exploration of the connection between psychological stress and physiological arousal. Since then, research has grown in sophistication and specificity. A more recent longitudinal study exemplifies this trend. Yan et al. (2003) found Type A psychological factors such as hostility and impatience to be significant predictors of hypertension 15 years later, while achievement striving/competitiveness, depression, and anxiety were not predictors of hypertension. Felsten (1996) found that expressive hostility was connected to health implications and heart disease while neurotic hostility was not associated with health complications.

The impact of physical functioning on hostility is less well defined. Much of the research shows state hostility, usually operationalized as anger, as part of the transition process after a loss of physical functioning due to illness or injury (Livneh and Antonak

2005). A limited amount of research has shown that exercise can have a positive effect in decreasing depression and anxiety, and can attenuate hostility (Norris et al. 1992).

Given the interrelated nature of hostility, marital adjustment, and physical functioning, we expected to find the same interrelationships present in our study. As therapy, by design, is to positively impact the lives of individuals, couples, and families, we were curious to ascertain if therapy had an impact on the variables of interest in this study.

Method

In our study, a path model was developed to understand the interplay between hostility, relational well-being, and physical functioning over the course of 12 months in a therapy population. All clients were assessed prior to therapy intake, 6 months post intake, and 1 year post intake.

Participants

Participants were invited to take part in the study when they contacted a university-based counseling center for counseling services. Individuals were pursuing individual therapy, couples therapy, or family therapy. Due to the presence of family level data, one adult member of each family was randomly selected in order to maintain assumptions of data independence. Other participants returned questionnaires but did not attend therapy and also were dropped from the analysis.

This process resulted in a final sample of 76 participants (39 males and 37 females) for analysis at Time 1. Of that initial sample, 97% were Caucasian with an average income of \$28,299 per year ($SD = 24,611$, range = \$0–\$11,000), 13.79 years of education ($SD = 5.05$, range = 1–23 years), and a mean age of 32.80 ($SD = 11.34$, range = 21–68 years old). Data were available from 68 participants (34 male, 34 female) at Time 2 and 53 participants (26 male, 27 female) at Time 3. There were no statistically significant differences in demographic variables or the variables of interest between subjects randomly selected and non-selected participants. No statistical differences at intake were found for those individuals who dropped out at the second or third assessment time periods.

Participants attended 11.83 sessions of therapy on average ($SD = 10.64$). Of the total sample, five subjects participated in family therapy ($x = 8.40$ sessions, $SD = 4.93$), 46 participants attended couples therapy ($x = 12.71$ sessions, $SD = 11.83$), 16 participants engaged in individual therapy ($x = 10.00$ sessions, $SD = 7.17$), and nine participants had a mix of individual, family, or couples therapy ($x = 12.44$ sessions, $SD = 12.08$). Therapy modality was determined by having at least a 3:1 ratio of a single modality (Crane et al. 2004). The specific theoretical models, therapeutic goals, and interventions used by the therapists were not available in the data for analysis purposes.

Procedure

An assessment packet was sent by mail to participants at the beginning of therapy services and a follow-up call was given two weeks later to ascertain continued interest in the study. A second assessment packet was sent at 6 months post intake and a third assessment was sent 12 months after intake.

Measures

Physical Functioning

The RAND-36 (Hays et al. 1993) was developed as a measure of overall health related quality of life (HRQoL). The instrument has 36 items with subscales that measure physical functioning, role limitations to physical health, energy/fatigue, emotional well-being, social functioning, pain, general health, and health changes. The physical functioning (PF) subscale contains 10 items and was used in this study to ascertain physical functioning. The RAND-36 has been shown to be psychometrically reliable and valid ($\alpha = .78$ through $.93$, Hays et al. 1993). The PF subscale can be considered a more stringent measure of health as it asks the individuals to identify the impact of their health on their day to day physical functioning rather than general health questions or questions related to somatization. The PF subscale was shown to be reliable for the present sample ($\alpha = .83$, $n = 76$). The items in the PF subscale provide questions about physical capabilities (e.g., going up and down stairs, running, sports) as well as activities of daily living (e.g., bathing, dressing oneself, vacuuming, carrying groceries).

A distinction must be made between exercise and physical functioning as operationalized in this study. Exercise can be defined as the intentional engagement in physical activity with the purpose of maintaining or improving physical health or fitness (Caspersen et al. 1985). Physical functioning in our study was characterized as the extent an individual was physically able to carry out activities of varying physical demands (Hays et al. 1993, RAND 36). While physical functioning is correlated with physical fitness, physical functioning does not include the intentionality of health gains that exercise does (Caspersen et al. 1985). Participants who scored high on physical functioning reported they were capable of activities that required higher levels of physical fitness.

Psychological Functioning

The Brief Symptom Inventory (BSI; Derogatis and Melisaratos 1983) is a 53-item instrument that contains nine different psychological sub-scales and three overall psychological functioning subscales. The BSI has been shown to be valid and reliable and correlates highly with the Minnesota Multiphasic Personality Inventory (Derogatis and Melisaratos 1983). The hostility measure for this study was the hostility subscale of the BSI and measured hostility in terms of thoughts, feelings, and behaviors (Derogatis and Melisaratos 1983). The BSI conceptualization of hostility is closer to state anger/hostility. Hostility, anger, and aggression have had many overlapping conceptualizations and measurements (Spielberger et al. 1995). State hostility is what previous studies such as that of Roberts (2000) conceptualized in their relational research. The reliability for the overall BSI for this sample was excellent ($\alpha = .937$, $n = 76$). The Hostility subscale was shown to be reliable as well ($\alpha = .71$, $n = 76$).

Relational Adjustment

Overall relational adjustment in this study was indicated by the total score of the 14-item Revised Dyadic Adjustment Scale (RDAS; Busby et al. 1995). Previous research has shown the RDAS to be a valid and reliable instrument ($\alpha = .90$, Busby et al. 1995). The reliability of the RDAS for the current sample was excellent ($\alpha = .90$, $n = .90$).

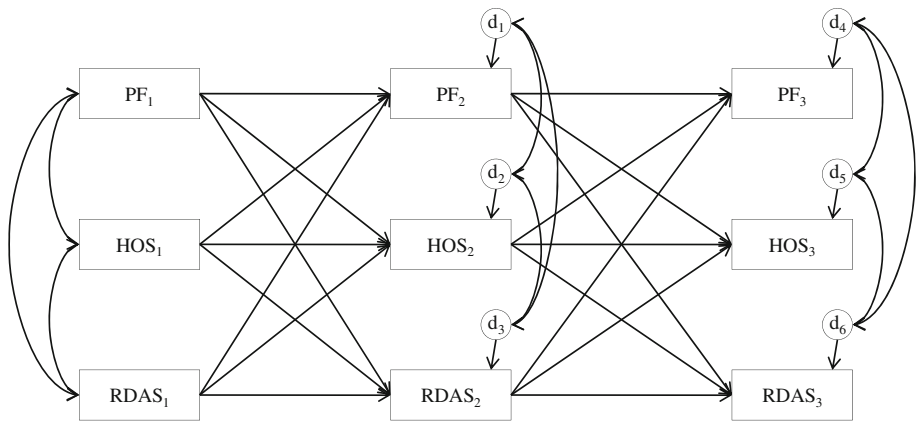


Fig. 1 Example path model

Analysis

Path analysis (using full information maximum likelihood estimation to handle missing data) was used to model relations between relational health, hostility, and physical functioning. The scores from these three variables were modeled over three time periods using AMOS version 5.0 (Arbuckle 2003). Physical functioning, relational satisfaction, and hostility were assessed at each time point, and relationships between the same variables (autoregressive paths) and cross-lag paths were estimated. See Fig. 1 for an example of the overall model. The model was considered a good fit for the data if it met the following criteria: non-significant model χ^2 , CFI >.95, RMSEA <.06 (Hu and Bentler 1998, 1999).

Results

The overall model showed an excellent fit ($\chi^2 = 8.182$, $p = .516$, CFI = 1.00, RMSEA = .000). All auto-regressive paths were significant, indicating that the scores for each variable at a previous assessment period were strong predictors of the scores for the same variable assessed later. Looking at each variable means individually between intake and 6 months, relational adjustment improved while hostility decreased. Mean scores for hostility and relational adjustment did not significantly change between 6 months and 12 months post intake. Physical functioning levels remained relatively constant across the three measurement periods (Fig. 2).

After controlling for the correlations between the variables at time one and controlling for repeated measurements, there were no significant cross lag paths between any of the variables during the first 6 months of the study. Hostility level at intake did not significantly predict relational adjustment 6 months later. Relational adjustment at intake also did not significantly predict hostility levels 6 months later. Hostility was negatively correlated with relationship satisfaction at the 6 months assessment.

One surprising cross lag path was found between 6 and 12 months post therapy intake (largely following therapy intervention). Physical functioning at 6 months post intake was predictive of improved relational adjustment at 12 months post intake ($\beta = .203$, $p = .011$).

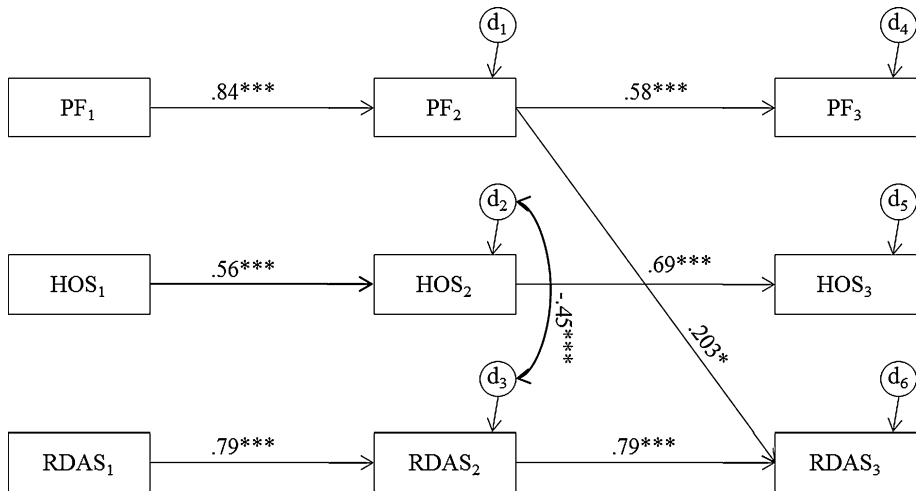


Fig. 2 Results. Coefficients shown account for all crosslags between times and autoregression. For clarity purposes, only those correlations and paths that were significant or approached significance were illustrated. $\chi^2 = 8.182^\dagger$, $df = 9$, $p = .516$, $n = 76$, $CFI = 1.00$, $NFI = .975$, $RMSEA = .000$, $* < .05$, $** < .01$, $*** < .001$

Discussion

We explored the longitudinal interaction between relationship adjustment, hostility, and physical functioning across time in a therapy population. The results of the current study did not show a relationship between hostility and marital adjustment between intake and 6 months after intake. This result is unique in the context of previous findings. For example, Roberts (2000) found that husband hostility predicted later decreases in wives marital satisfaction. Pasch and Bradbury (1998) also found husbands' expression of anger was predictive of later relationship distress for husbands and wives.

The correlation between hostility and relational adjustment at intake approached significance ($p = .053$), while hostility and relational adjustment were significantly correlated at 6 months post intake ($p < .001$). This finding is supportive of Baron et al.'s (2007) work, which looked at hostility and relational adjustment concurrently.

Roberts (2000), Pasch and Bradbury (1998), and Baron et al. (2007) all studied general populations, not therapy populations. The results from their work, and that of Gottman (1993, 1994), would suggest that left unchecked, relational adjustment and hostility are interrelated and have potentially negative consequences for relationships. The results of this study do not show connections between hostility and relational adjustment across time during therapy intervention. In fact, the current results add to the argument for the power of therapy intervention in interrupting problematic relational patterns.

At first blush it was surprising that the lack of a relationship between hostility and marital adjustment over time existed because individual, marital, and family therapy modalities were included in this study. Individuals, couples, and families typically seek therapy services to change patterns in their lives and/or relationships. Of the participants in this study, 90% reported that their relationships were moderately to severely distressed at therapy intake, and average hostility scores for the overall sample approached that of a clinical population (Derogatis and Melisaratos 1983).

Burman and Margolin's (1992) model sheds light on how differing therapy modalities could appear to have a similar impact. They identified specific interpersonal variables of "stress" and "social support" that mediate overall marital factors (e.g., relational adjustment) and psychological processes (e.g., hostility). Burman and Margolin (1992) hypothesize that relational dynamics can create stress, which leads to hostility, which can lead to more stress and negatively affect relationships. Social support from partners, or others, can be a result of relational dynamics, thereby positively impacting psychological processes, which in turn make it more likely for social support to be present, positively affecting relationships, etc. Burman and Margolin (1992) offer one more variable that has a reciprocal relationship with stress, social support, and psychological processes, that of "coping strategies." Therapists who directly target stress reduction, increases in social support, and improved coping strategies have the potential to impact the relationship between marital adjustment and hostility.

Beyond relational adjustment and hostility, a surprising result came in that the ability to function physically was predictive of later relational adjustment. The relationship between physical functioning and marriage has been implied in the literature by numerous findings indicating a drop in marital quality when a partner experiences impairments in physical functioning. This is the first study that shows good physical functioning as a specific protective factor toward relational health.

These results make intuitive sense in that the full range of physical functioning provides individuals with the ability to interact in tasks of day to day living that can enhance relational adjustment. Activities such as working together on home maintenance, childcare, recreational activities, and sexual activity can all contribute to healthy relational adjustment. When physical challenges, such as those brought about by physical pain, are present in the relationship, the couple can become unequally yoked. The previous tasks of daily living that were shared or divided can become the responsibility of the healthy partner (Livneh and Antonak 2005). It appears that this imbalance affects relational quality when the pain is prolonged or has greater intensity as in chronic illness (Romano et al. 1997).

Physical functioning is a manifestation of overall health status. When returning to Burman and Margolin's (1992) model, they have "health status" as a variable that indirectly influences marital status through coping systems, then psychological processes, and into "marital factors." Interestingly, they also hypothesize a direct reciprocal connection between health status and marital factors, which the current findings support.

Clinical Implications

The results of this study offer the clinician direct and indirect pathways to interrupt the marital adjustment-hostility pathway. Directly assessing for "psychological processes" and relational adjustment via assessments (e.g., BSI for psychological processes, RDAS for relational adjustment) or observing couple/family interactions would facilitate therapists' awareness of hostility and relational dynamics. Once aware, therapists have the option of targeting these dynamics directly, which can interrupt the longitudinal relationship between hostility and relational adjustment.

Interventions that could impact the hostile-relational adjustment connection more indirectly would focus on increasing social support, decreasing stress levels, and adding more coping resources. These domains are thought to mediate the relationship dynamics and psychological processes (Burman and Margolin 1992).

Limitations

It is important to note that this study was exploratory in nature. Results are only generalizable to the extent that this model is able to be fitted to additional samples. Generalizability issues are no different for a path model than for other more traditional parametric procedures. While this model was an appropriate fit across several different fit statistics, more research needs to be conducted with larger samples to confirm these models. This model was fitted to a group of individuals in a therapy setting, limiting the model's generalizability to a general population. It is also crucial to note that the demographic nature of the sample is not representative of the larger population.

There has been some argument that longitudinal designs take into consideration the time between assessments. Specifically, the gap between assessments ideally will be long enough to be sensitive enough to catch changes and not so long that the researcher misses the changes (Cole and Maxwell 2003). Replicating this study, or a more traditional longitudinal study focusing on the interactions of biological, psychological, and social variables outside of the therapy setting, ideally would have three levels of tracking, including some subjects assessed every 4 months, other subjects assessed every 6 months, and others assessed at 8 months. The models then could be compared to ascertain which time length was more sensitive to the changes.

Conclusions

This study has several important findings and underscores the complexity of the interplay between biopsychosocial variables over time. Therapy can interrupt the relationship between hostility and marital adjustment *over time* as seen by the lack of a predictive relationship during the first 6 months of the study. The prospective nature of the data collection also adds validity to the results. More research needs to look at clinical outcomes such as hostility levels in addition to marital distress or marital status.

Individuals who are able to maintain physical functioning appear to gain some protective benefits for their relationship. Encouraging couples to maintain physical mobility and capability could benefit later marital adjustment for the couple. Further exploration into the relationship between healthy physical functioning and marital adjustment is warranted.

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