

Adjustment to a Dyadic Stressor: A Longitudinal Study of Coping and Depressive Symptoms in Infertile Couples Over an Insemination Attempt

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In a study designed to examine how intimate partners' coping processes with regard to infertility predicted depressive symptoms across the course of a treatment cycle, 43 couples completed assessments in the week prior to and the week after receiving a negative pregnancy result from an alternate insemination attempt by the partner. Depressive symptoms in both partners increased significantly after the pregnancy result receipt. As hypothesized, avoidant coping predicted increased distress over time, and approach-oriented coping (e.g., problem-focused coping, emotional processing, and expression) predicted decreased distress. Coping strategies engaged in by both individuals and partners predicted depressive symptoms, and for women, interactions also emerged between their own and their partners' coping.

Stress and coping theories (e.g., Lazarus & Folkman, 1984) often guide research to identify risk and protective factors for adjustment to health-related adversity; such factors include attributes of the disease, the individual, and the environment, as well as individuals' situational appraisals and coping processes. Critics (e.g., Revenson, 1994; Somerfield & McCrae, 2000) of research in this area have pointed out that it often focuses only on the individual, relies on cross-sectional designs, and involves vaguely defined stressors. This study was designed to address these criticisms in its focus on a specific dyadic stressor in a longitudinal design. Specifically, we examined how infertile partners' coping processes predicted their depressive symptoms over an alternate insemination (AI) attempt.

The experience of infertility is an important vehicle for studying stress and coping processes in intimate relationships. Karney and Bradbury (1995) suggested that a strength of crisis theory (Hill, 1949) is its acknowledgment that stressful events influence the course of relationships but "rarely, however, have crisis theorists addressed the specific coping responses that lead to either adaptation or maladaptation" (p. 7). Coping processes, involving efforts to address perceived demands engendered by infertility, were the focus of the present study. Because studies have revealed that women report greater infertility-related distress than do men (Stanton & Danoff-Burg, 1995), we expected depressive symptoms surrounding AI to be greater for women; however, we expected that receiving a negative pregnancy result would be distressing for

both partners. We also explored between-partner differences in coping (see Jordan & Revenson, 1999).

Several models of coping as predictors of partners' adjustment are relevant. The first model, the individual model, suggests that one's adjustment is influenced solely by one's own coping. A second model, the partner main effects model, suggests that individuals are also influenced by partners' coping. Three lines of evidence supported main-effects hypotheses. First, the literature demonstrates that withdrawal (or a demand-withdrawal interaction pattern) predicts marital dissatisfaction and dissolution (Gottman & Krokoff, 1989; Heavey, Layne, & Christensen, 1993). Second, the coping literature documents deleterious effects of avoidance-oriented coping (Hynes, Callan, Terry, & Gallois, 1992; Stanton, Tennen, Affleck, & Mendola, 1992) and advantages of such approach-oriented coping strategies as social support seeking and emotional expression (Stanton et al., 1992; Stanton, Danoff-Burg, et al., 2000; Terry & Hynes, 1998). Third, Carver and Scheier (1998), in their self-regulation theory, posited that goal engagement predicts more positive affect when an outcome potentially is attainable. We predicted that partners' coping directed toward active engagement and low use of avoidant coping would predict decreased distress on receipt of a negative pregnancy result.

In partner interaction models, the relation of one partner's coping to adjustment varies as a function of the other partner's coping. Research has revealed that attitude similarity predicts marital satisfaction (Karney & Bradbury, 1995). Similarly, homogeneity in coping may protect couples from distress, such that whether couples make high or low use of particular strategies does not matter, as long as they are similar. A competing possibility is that if one partner's use of a functional coping process is low, then the other's use of that strategy is influential. For example, one partner's problem-focused coping could compensate for the other's low use of that strategy. In essence, we were interested in testing a similarity versus a compensatory interaction model.

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Table 1
Descriptive Statistics and Repeated Measures Analyses of Variance on Coping and Adjustment Variables

| Measure | Women | | | | Men | | | | Gender (<i>F</i>) | Time <i>F</i> |
|--------------------------------------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|------------------------|---------------|
| | Time 1 | | Time 2 | | Time 1 | | Time 2 | | | |
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | | |
| BDI | 9.00 | 6.62 | 11.07 | 8.72 | 5.79 | 5.93 | 7.56 | 6.72 | 5.84* | 5.71* |
| Seek Social Support | 2.33 | 0.79 | 2.20 | 0.88 | 1.45 | 0.50 | 1.44 | 0.60 | 64.48*** | 1.76 |
| Problem-Focused Coping | 2.70 | 0.63 | 2.73 | 0.80 | 2.41 | 0.76 | 2.39 | 0.82 | 10.49*** | 0.00 |
| Avoidance | 1.62 | 0.42 | 1.71 | 0.51 | 1.57 | 0.36 | 1.70 | 0.54 | 0.57 | 7.32* |
| Positive Reinterpretation and Growth | 2.51 | 0.71 | 2.47 | 0.89 | 2.23 | 0.75 | 2.10 | 0.87 | 12.65*** | 0.90 |
| Religious Coping | 2.20 | 0.95 | 1.94 | 0.98 | 1.68 | 0.95 | 1.44 | 0.73 | 24.06*** | 14.99*** |
| Emotional Processing | 2.78 | 0.79 | 2.95 | 0.97 | 2.08 | 0.70 | 2.06 | 0.81 | 42.16*** | 0.75 |
| Emotional Expression | 2.57 | 0.90 | 2.70 | 0.99 | 1.91 | 0.71 | 2.00 | 0.80 | 39.48*** | 3.37 |

Note. *ns* = 43 men and 43 women. Gender *F* test *dfs* = 1, 42. BDI = Beck Depression Inventory.

* $p < .05$. *** $p < .005$.

Method

Participants

Participants were 43 heterosexual couples with fertility problems who elected to use AI at one of three participating infertility clinics in the midwestern or northwestern United States. Of the 59 couples who originally participated in the study, 5 became pregnant. Of the 54 couples who received a negative pregnancy result, 7 did not complete all questionnaire sets and 4 had completed questionnaires from women only, yielding 80% completion.

Couples on average had been married for 6.6 years ($SD = 2.9$) and had attempted pregnancy for 32.9 months ($SD = 21.0$, range = 10–114 months). All had had a diagnostic work-up for infertility; 6 had male factor infertility, 15 had female factor infertility, 13 had combined diagnoses, and 9 had unexplained infertility. Four men and 1 woman had a child from a previous relationship.

On average, men in the sample were 34.7 years old ($SD = 3.7$) and had 16.2 years ($SD = 2.0$) of education. Thirty-eight men were White (88%), 2 were African American, 1 was Asian American, 1 was Latino, and 1 did not respond. On average, women were 33.6 years old ($SD = 4.0$) and had 16.1 years ($SD = 2.3$) of education. Thirty-nine women were White (91%), 3 were African American, and 1 was of other ethnicity.

No significant relations of demographic and infertility-related factors with Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979) scores were obtained. Thus, no background variables were used as covariates.

Procedure

Medical staff informed couples of the study at an appointment and gave them a cover letter describing the research as a study of how couples respond to fertility problems and AI. Interested couples received consent forms and separate questionnaire packets by mail or in the clinic, with instructions to refrain from discussing the study until its completion and to return packets independently in the week prior to AI (Time 1). Data were used only if Time 1 questionnaires were received prior to AI. Another packet was mailed 2 weeks after AI, with instructions to complete the packet within 1 week after receiving the pregnancy result (Time 2). Separate packets and instructions promoted independent completion.

Measures

Coping strategies were assessed primarily with the COPE (Carver, Scheier, & Weintraub, 1989), an inventory of demonstrated reliability and

validity. Participants were asked to refer to their experience with fertility problems within the past month at Time 1 and to refer to their experience during the past week since receiving the pregnancy result at Time 2. Items were rated on 4-point scales, from 1 (*I don't do this at all*) to 4 (*I do this a lot*), and means of the subscale items were calculated. The five COPE scales used¹ were Seek Social Support (combined Use of Instrumental and Emotional Social Support), Problem-Focused Coping (combined Active Coping and Planning), Avoidance (combined Denial, Mental Disengagement, and Behavioral Disengagement), Positive Reinterpretation and Growth, and Religious Coping. Preliminary versions of the Emotional Approach Coping scales (Stanton, Kirk, Cameron, & Danoff-Burg, 2000) also were included to assess emotional processing and emotional expression. Coefficient alpha ranged from .71 to .95 for the scales.

The BDI, a 21-item measure of depressive symptoms, was completed at Times 1 and 2. Coefficient alpha ranged from .88 to .93.

Results

Descriptive Analyses

Repeated measures analyses of variance conducted on matched partners' coping and BDI scores, with time and gender as independent variables, are displayed in Table 1. No Gender \times Time interactions were significant. In general, strategies for coping with fertility problems were similar to those for coping with a negative pregnancy result, except for avoidant and religious coping. Women reported significantly greater use of all coping strategies than did men, except for avoidance. BDI scores increased significantly for both men and women after receiving the pregnancy result, and women reported more symptoms than men. After receiving the negative pregnancy result, 33% ($n = 14$) of men met the criterion suggesting mild to moderate depressive symptoms (BDI = 10–18; Beck, Steer, & Garbin, 1988), and an additional 7% ($n = 3$) reported moderate to severe depression (BDI =

¹ The Suppression of Competing Activities and Restraint Coping scales were not included because we thought that two other problem-focused scales were sufficient to indicate the problem-focused domain (Carver, 1997). The Focus On and Vent Emotions Scale was not included because of its contamination with distress (Stanton, Danoff-Burg, Cameron, & Ellis, 1994). The Acceptance scale had unacceptably low internal consistency reliability ($\alpha < .50$) for inclusion in analyses.

19–29). At Time 2, 30% ($n = 13$) of women met the criterion for mild to moderate depressive symptoms, 21% ($n = 9$) for moderate to severe depression, and 2% ($n = 1$) for severe depression ($BDI = 30–63$).

Between-partner correlations on identical coping scales (e.g., husbands' avoidance correlated with wives' avoidance) ranged from .42 to .70 ($p < .005$) at Time 1 and from .41 to .78 ($p < .01$) at Time 2. Although partners' BDI scores were not significantly correlated at Time 1 ($r = .28, p = .06$), strong correspondence emerged at Time 2 ($r = .71, p < .001$).

Depressive Symptoms Regressed on Coping Scores

Hierarchical multiple regressions were performed. For example, women's depressive symptoms at Time 2 were regressed on their Time 1 depressive symptoms (Step 1), their own avoidant coping (Step 2), their partners' avoidant coping (Step 3), and the interaction of the two coping scores (Step 4). Separate regressions were performed for men and for women for each of seven coping strategies assessed at Times 1 and 2. Alpha was set at $p < .007$ to control for family-wise error (.05/7 coping scales). Significant findings are in Table 2 for men and Table 3 for women. For each predictor displayed, the overall equation was significant at that step, except that Time 1 BDI did not significantly predict men's Time 2 symptoms. Both men's coping strategies and their partners' coping predicted men's distress. Men's depressive symptoms decreased when they coped through positive reinterpretation (Time 1), emotional processing (Times 1 and 2), or emotional expression (Times 1 and 2). Depressive symptoms also decreased when men (Time 2) or their partners (Time 1) made low use of avoidance and when their partners were low in religious coping (Times 1 and 2). Seeking social support or problem-focused coping did not predict distress for men, and no significant partner interactions emerged.

Table 2
Significant Predictors of Time 2 BDI in Hierarchical Multiple Regressions for Men

| Variable | β | $R^2\Delta$ | $F\Delta$ |
|--------------------------------------------------------------|---------|-------------|-----------|
| Step 1: Men's Time 1 depressive symptoms ($df = 1, 41$) | | | |
| BDI Time 1 | 0.29 | .08 | 3.67 |
| Step 2: Individual model ($df = 1, 40$) | | | |
| Positive Reinterpretation, Time 1 | −0.50 | .24 | 14.57**** |
| Emotional Processing | | | |
| Time 1 | −0.61 | .37 | 26.96**** |
| Time 2 | −0.50 | .23 | 13.00**** |
| Emotional Expression | | | |
| Time 1 | −0.41 | .16 | 8.69** |
| Time 2 | −0.49 | .23 | 12.66**** |
| Avoidance, Time 2 | 0.73 | .53 | 55.13**** |
| Step 3: Partner main effects model ($df = 1, 39$) | | | |
| Partner Avoidance, Time 1 | 0.60 | .25 | 18.72**** |
| Partner Religious Coping | | | |
| Time 1 | 0.71 | .25 | 17.00**** |
| Time 2 | 0.66 | .24 | 13.96**** |

Note. Regressions were computed separately for each of seven coping strategies, with alpha adjustment for family-wise error ($p < .007$). BDI = Beck Depression Inventory.
** $p < .007$. **** $p < .001$.

Table 3
Significant Predictors of Time 2 BDI in Hierarchical Multiple Regressions for Women

| Variable | β | $R^2\Delta$ | $F\Delta$ |
|----------------------------------------------------------------|---------|-------------|-----------|
| Step 1: Women's Time 1 depressive symptoms ($df = 1, 41$) | | | |
| BDI Time 1 | 0.62 | .39 | 25.84**** |
| Step 2: Individual model ($df = 1, 40$) | | | |
| Social Support, Time 1 | −0.33 | .11 | 8.58** |
| Avoidance | | | |
| Time 1 | 0.66 | .36 | 56.46**** |
| Time 2 | 0.57 | .29 | 35.62**** |
| Emotional Processing | | | |
| Time 1 | −1.18 | .25 | 27.25**** |
| Time 2 | −0.52 | .27 | 29.16**** |
| Emotional Expression | | | |
| Time 1 | −1.38 | .20 | 19.99**** |
| Time 2 | −0.49 | .24 | 23.62**** |
| Problem-Focused Coping, Time 2 | −0.34 | .11 | 8.49** |
| Step 3: Partner main effects model ($df = 1, 39$) | | | |
| Partner Problem-Focused Coping, Time 1 | −0.35 | .09 | 8.41** |
| Partner Positive Reinterpretation, Time 1 | −0.34 | .09 | 8.31** |
| Step 4: Partner interaction model ($df = 1, 38$) | | | |
| Self × Partner Emotional Processing, Time 1 | 1.54 | .09 | 13.46**** |
| Self × Partner Emotional Expression | | | |
| Time 1 | 1.94 | .10 | 13.27**** |
| Time 2 | 1.56 | .08 | 9.46** |

Note. Regressions were computed separately for each of seven coping strategies, with alpha adjustment for family-wise error ($p < .007$). BDI = Beck Depression Inventory.
** $p < .007$. **** $p < .001$.

For women, their own and their partners' coping predicted adjustment, and the partner interaction model received some support. The pre-AI BDI accounted for significant variance in the Time 2 BDI. Women were protected from depressive symptoms when they made high use of social support seeking (Time 1), problem-focused coping (Time 2), or emotional approach coping (Times 1 and 2) or low use of avoidant coping (Times 1 and 2). Depressive symptoms also decreased when their partners at Time 1 used more problem-focused coping or positive reinterpretation. Religious coping did not predict distress.

Significant interactions of partners' coping scores on distress for women emerged for emotional processing (Time 1) and emotional expression (Times 1 and 2). Analyzed with Aiken and West's (1991) method, the interactions assumed the same form. As displayed in Figure 1 for coping at Time 1 (the form of the Time 2 interaction was nearly identical), women who reported high use of emotional-approach coping evidenced low predicted depressive symptoms over time, regardless of their partners' coping. However, when women reported average or low use of emotional-approach coping, their partners' coping was more influential. Specifically, husbands' high use of emotional approach could compensate for their partners' low use such that women's depressive symptoms were predicted to remain relatively low over time. If both partners were low in emotional approach, however, women's predicted Time 2 BDI scores exceeded 20.

Final Hierarchical Multiple Regressions

To test the combined predictive power of coping scores, we performed additional hierarchical regressions for men and for

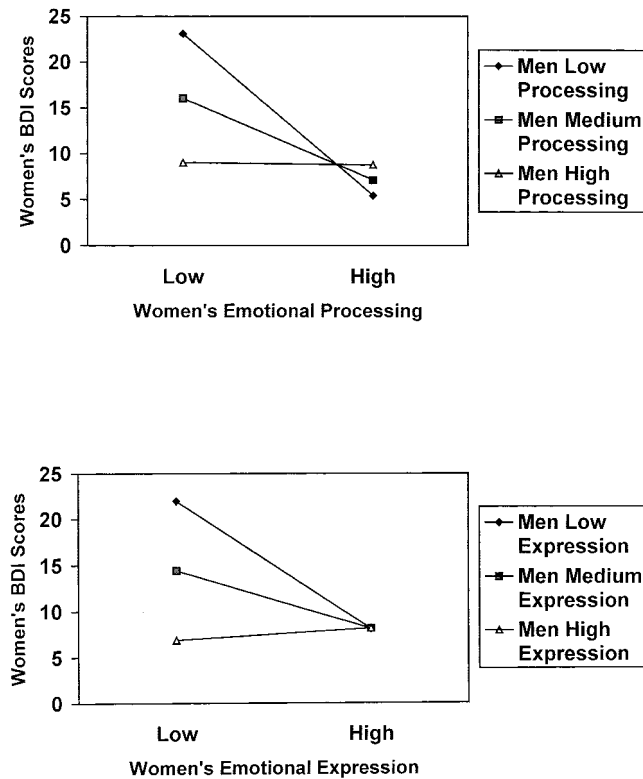


Figure 1. Partners' Time 1 coping through emotional processing (top) and emotional expression (bottom) interactions on depressive symptoms for women at Time 2, with women's Time 1 depressive symptoms controlled. BDI = Beck Depression Inventory.

women, including predictors found significant in previous regressions.² Controlling for Time 1 BDI, we found men's Time 1 coping accounted for 41% additional variance in men's Time 2 depressive symptoms, $F(3, 38) = 10.30, p < .001$, and their partners' coping scores accounted for 11% additional variance, $F(2, 36) = 5.08, p = .01$. The final equation with simultaneous predictor entry revealed that unique predictors (partial correlations [pr], all $ps < .05$) of men's depressive symptoms at Time 2 were their Time 1 distress ($pr = .49$), low emotional processing ($pr = -.32$), and partners' high avoidant coping ($pr = .44$).

Using Time 2 coping scores as predictors, we found that men's coping accounted for 55% variance over Time 1 BDI scores in Time 2 BDI scores, $F(3, 38) = 19.10, p < .001$, and their partners' religious coping accounted for 5% additional variance, $F(1, 37) = 5.79, p < .05$. Unique predictors of Time 2 BDI scores were high Time 1 distress ($pr = .41$), high avoidant coping ($pr = .73$), and partners' high religious coping ($pr = .37$).

Controlling for Time 1 BDI, we found that women's coping accounted for 39% additional variance in women's distress, $F(4, 37) = 16.41, p < .001$; their partners' scores accounted for 10% additional variance, $F(4, 33) = 6.46, p < .001$; and the partners' coping interactions for 2% additional variance, $F(2, 31) = 3.31, p < .05$. Unique predictors of women's Time 2 depressive symptoms were high Time 1 distress ($pr = .71$), high avoidance ($pr = .58$), partners' low problem-focused coping ($pr = -.60$) and positive reinterpretation ($pr = -.36$), and the above-described partner interaction on emotional processing ($pr = .37$).

Controlling for Time 1 BDI, women's Time 2 coping accounted for 35% additional variance, $F(4, 36) = 11.22, p < .001$. Unique predictors of adjustment were women's Time 1 BDI ($pr = .56$) and their Time 2 avoidant coping ($pr = .45$).

Discussion

A first finding of note is that receipt of a negative pregnancy result prompted a significant increase in depressive symptoms. Although 40% of men and 53% of women met the cutoff for at least mild depression at Time 2, long-term persistence of symptoms is unknown. If experienced across each disappointing treatment cycle, however, such marked and fluctuating distress may exact an emotional toll. A second conclusion is that coping strategies emerged as important predictors of distress. With pre-AI depressive symptoms controlled in regressions conducted with separate coping scores, participants' own coping mechanisms accounted for up to 36% additional variance in distress for women and 53% for men, partners' coping accounted for up to 9% additional variance for women and 25% for men, and interactions of partners' coping accounted for up to 10% of additional variance for women. When all significant predictors were included in regressions to test their combined predictive power, they accounted for up to 51% of variance for women and 60% for men over Time 1 distress.

Because other studies have yielded more modest relations (e.g., Stanton et al., 1992), we were surprised at the strong between-partner correspondence and relations of coping strategies with depressive symptoms. This study was unique in that it targeted a specific stressor that caused distress for both partners within a short-term longitudinal design. Further, most relevant research is conducted with couples in which one partner is diagnosed with chronic illness (Schmaling & Sher, 2000). Because infertile partners typically share the goal of having a child, perhaps convergence in coping and distress is more likely, particularly in the context of mutual disappointment. Finally, we examined the joint influence of individuals' and partners' coping, allowing for more sources of influence on distress than in most studies.

Which model of understanding coping within the context of intimate relationships received support? Consistent with our hypotheses, active, approach-oriented strategies reported prior to AI were useful in promoting adjustment to a negative result, whereas avoidant strategies engendered greater distress. Findings were consistent in indicating that both the individuals' own and the partners' coping make a difference. The individual model was not sufficient to account for adjustment, however. Rather, partners' coping at Time 1 was influential in 6 of the 11 cases in which coping significantly predicted depressive symptoms. For example, women appeared to benefit from their partners' problem-focused coping attempts (see also Levin, Sher, & Theodos, 1997), perhaps because these attempts alleviated the burden of infertility that typically is shouldered primarily by women (Abbey, Halman, & Andrews, 1992) or because the men's active problem-solving signaled their investment in the process to the women.

² Because this sort of selection of predictors may capitalize on chance and the number of predictors was large relative to sample size, findings should be interpreted with caution.

For women, a partner interaction model also received some support, taking the form of a compensatory model. Women who used emotional-approach coping at Time 1 were low on distress at Time 2 regardless of their partners' coping, whereas women initially low on coping through emotional approach benefited from their partners' emotional-approach coping.³ The finding that these interactions emerged only for emotional-approach coping may suggest the importance of managing emotions when stressors are perceived as uncontrollable (Lazarus & Folkman, 1984) or of men's emotional approach indicating their commitment to the process to their wives. A cross-sectional study in which one partner had rheumatic disease (Revenson, 1995) also suggested a link between complementarity in coping efforts and better adjustment. Other research suggests, however, that the adaptiveness of similar versus complementary use of coping may depend on the specific approach used (e.g., Helgeson, 1993). As O'Brien and DeLongis (1997) suggested in a review of research on couples coping with chronic stressors, partners' coping patterns that block emotional intimacy may exacerbate distress, at least for women (see also Coyne & Smith, 1991). Thus, both complementarity and congruence in coping may alleviate distress when they bring the couple closer. In light of the small sample, reliability of the interaction effects obtained in this study and detection of other potential interactions require study. Disentangling the relative influences of gender of the copier, content of the coping strategy, and coping match between partners on adjustment to unfolding dyadic stressors will require complex research designs.

In general, similar patterns of relations emerged for initial reports of coping with fertility problems (Time 1) and reports of coping with the specific disappointing AI (Time 2). Such findings might be interpreted as providing evidence for the dispositional nature of coping processes; however, both instructional sets regarded responses to infertility-relevant experiences and thus may reflect domain-specific responses. That predictive utility of partners' coping strategies was greater when assessed at Time 1 than at Time 2 also deserves note. When assessed at Time 2, individuals' own coping, and particularly avoidance, appeared more influential with regard to depressive symptoms than did their partners' coping.

Several study limitations deserve mention and provide directions for research. First, generalizability to larger, more diverse samples and to those undergoing other dyadic stressors requires study. For example, comparison with research on lesbian couples undergoing AI would allow more definitive conclusions regarding gender influences. Second, most self-report coping measures, including those used in this study, are oriented toward the individual. Interpersonal strategies such as negotiation, accommodation, and protective buffering were not assessed (O'Brien & DeLongis, 1997). We advocate study of interactional-coping processes and their assessment through a broader range of techniques well-developed in the marital-interaction literature (e.g., observational methods; Levenson, Carstensen, & Gottman, 1994). Expanding the predictive model to include other vulnerability and protective factors also would be useful. In addition, the dependent variable was an individual one, and we did not examine relationship satisfaction or other potentially important dyadic variables. Finally, daily process methodologies (e.g., Tennen, Affleck, Armeli, & Carney, 2000) and studies over multiple-treatment attempts would

provide a rich picture of the contribution of coping processes to resolution in infertile couples.

Findings also carry clinical implications. Although recommendations for intervention based on findings regarding naturally elected coping strategies must be offered with caution, results suggest that bolstering approach-oriented processes such as problem-focused coping, positive reinterpretation, support seeking, and emotional approach and minimizing avoidant strategies may be useful. The evidence that partners' coping prior to AI predicted adjustment indicates the promise of proactive interventions for couples. Heretofore, empirically evaluated interventions (e.g., Domar et al., 2000; McQueeney, Stanton, & Sigmon, 1997) have targeted only women. Clinical approaches oriented toward infertile couples warrant study.

³ Findings that emotional-approach coping strategies were beneficial for couples seemingly contrast with results of Levin et al. (1997), who found that emotion-oriented coping was associated with greater distress in infertile couples. However, the coping measure used in that study has been found to contain items that are contaminated with distress and self-deprecatory content (Stanton et al., 1994), and Levin et al. was a cross-sectional study.

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