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Running head: INFERTILITY SUPPORT, COPING, AND STRESS

A Dyadic Mediation Study on Social Support, Coping, and Stress among Couples Starting Fertility

Treatment

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### Abstract

This study adopted a dyadic approach to explore the associations between social support and stress as mediated by coping among infertile couples. All these variables were infertility-specific. A total of 201 couples starting their first assisted reproductive technology (ART) treatment completed self-reports of infertility-specific support from spouse and from social network, infertility-related coping with four strategies (active-avoidance, active-confronting, passive-avoidance, and meaning-based), and infertility stress. The actor-partner interdependence model was applied. Results indicated that dyadic associations between support and stress were either direct or mediated by individual or partner coping, with differences based on gender, source of support, and coping strategy. For both genders, greater support from spouse was associated with lower individual and partner stress directly and indirectly, through lower partner's use of active-avoidance coping. In men, the relationship between support from spouse and stress was also mediated by individual/partner avoidance coping strategies. As for support from social network, greater levels were directly associated with a lower partner stress in women and with higher individual stress in men. For both genders, the relationship between support from social network and stress was also mediated by active-confronting coping, which was associated with higher individual and partner stress. The findings suggest a potential protective role of support from spouse and an adverse effect of that from people outside the dyad. Interventions for couples starting ART treatment should focus on promoting infertility-related communication and support within the couple, which might help to reduce the use of infertility-specific maladaptive coping strategies.

*Keywords:* actor-partner interdependence mediation model, couples, dyadic approach, social

support, coping, infertility stress, infertility

Experiencing infertility is physically and psychologically demanding in all cultures and societies and is reported by couples as one of the most stressful events in their lives (Greil, Slauson-Blevins, & McQuillan, 2010). Stress is traditionally intended as a relationship between the individuals and their environment that is appraised by them as exceeding their resources and threatening their well-being (Lazarus & Folkman, 1984). Both the loss of plans to have children and fertility treatment are important sources of stress, and infertile individuals show higher levels of stress than the fertile population (Rooney & Domar, 2016). The concept of infertility stress refers to the burden that the inability to conceive places on personal, marital, and social life domains for both members of the infertile couple (Schmidt, Holstein, Christensen, & Boivin, 2005). It has been proposed as distinct from and nonoverlapping with the construct of general stress (Sexton, Byrd, O'Donohue, & Jacobs, 2010), as supported by a moderate correlation ( $r = .46$ ) recently found with it (Cesta et al., 2018). Infertility stress has adverse effects on the couples' quality of life (Kim, Shin, & Yun, 2018; Slade, O'Neill, Simpson, & Lashen, 2007) and was seen as a barrier to achieving pregnancy in couples undergoing assisted reproductive technology (ART) treatment (Sominsky et al., 2017). Focusing on infertility-related, rather than general, stress is considered critical to better describe the experience of infertile couples and capture variations in their levels of stress and distress (Greil, Shreffler, Schmidt, & McQuillan, 2011).

If infertility is a relevant source of stress, it is important to identify factors that may help couples to deal with it, and clinicians to design interventions to promote adjustment to infertility and its treatment (Gourounti, Anagnostopoulos, & Vaslamatzis, 2010). A range of psychosocial variables have been considered as either risk or protective factors for infertility stress, such as personality characteristics, cognitions, social support, coping skills, and perceived control (for a review see Gourounti et al., 2010). Regarding protective factors, several studies reported that

greater perceived social support from spouse and from social network was associated with lower infertility stress (Gourounti et al., 2010). In both fertile and infertile individuals, the greater the support they receive from their spouses, the greater their marital satisfaction (Abbey, Andrews, & Halman, 1995). Thus, marital satisfaction has been also used as an indicator of support from spouse that may protect against general and infertility-related stress in the infertile population (Chochovski, Moss, & Charman, 2013; Gourounti et al. 2010). In the infertility literature, most studies have addressed general social support (e.g., Gourounti et al., 2010; Martins, Peterson, Almeida, & Costa, 2011; Martins, Peterson, Almeida, Mesquita-Guimarães, & Costa, 2014); however, Martins et al. (2014) suggested to consider social support specific to infertility problems and treatments, namely infertility-specific support. A few studies have addressed infertility-specific support (e.g., Sexton & Byrd, 2015; Vassard, Rikke, Pinborg, Boivin, & Schmidt, 2012; Ying, Wu, & Loke, 2015) and showed that this type of support from the spouse was linked to lower infertility stress for both women and men (Sexton & Byrd, 2015; Ying et al., 2015). As for support from the social network, a quantitative study of women (Sexton & Bird, 2015) showed its association with lower infertility stress, while a qualitative study of couples (Ying et al., 2015) indicated that for some of them, the support from parents contributed to reducing their infertility stress, but for some others, it was an additional stressor as they felt guilty about adding to their parents' burden. In addition, some couples described the support from friends and colleagues as potentially negative, due, for example, to useless or unintentionally unfavorable comments. No study, to our knowledge, has addressed the relationship between general social support and social support specific to infertility, or their differential impact on infertility stress. However, evidence was provided that infertility-specific support from the partner (for men) and from the family (for women) was more closely related to the decision to terminate fertility treatment than was general social support (Vassard et al., 2012).

### **A Path from Social Support to Infertility Stress through Coping Strategies**

According to the transactional theory of stress (Lazarus & Folkman, 1984), the most critical elements in the process of adjusting to stressful life events are cognitive appraisals and coping.

105 Cognitive appraisals refer to a person's perception and interpretation of the stressor in terms of  
 106 whether it may cause harm and loss or personal growth and development, and what personal and  
 107 environmental resources are available to cope with it. Coping represents the cognitive and  
 108 behavioral efforts employed by an individual to manage a stressful situation (problem-focused  
 109 coping) and/or to regulate the emotions that the situation generates (emotion-focused coping).  
 110 Problem-focused coping includes strategies such as taking control, information seeking, or  
 111 generating alternative solutions, while emotion-focused coping includes strategies such as  
 112 avoidance, minimization, or positive reappraisal. In the infertile population, problem-focused  
 113 strategies have been linked to better adjustment, while emotion-focused strategies involving  
 114 avoidance have been consistently associated with worse adjustment (Gourounti et al., 2010;  
 115 Rockliff et al., 2014). Specific strategies commonly used to cope with infertility as a source of  
 116 stress include active- and passive-avoidance, active-confronting, and meaning-based coping  
 117 (Schmidt, Christensen, & Holstein, 2005). Active- and passive avoidance include coping strategies  
 118 aimed at distancing from the stressor through active or passive behaviors (e.g., avoiding being with  
 119 pregnant women or children, or hoping for a miracle, respectively). Active-confronting involves  
 120 problem-focused strategies such as information seeking, as well as emotion-focused strategies such  
 121 as letting feelings out. Meaning-based coping involves both problem-focused strategies like finding  
 122 other life goals, and emotion-focused strategies such as positive reappraisal. Across studies  
 123 considering infertility-related coping, the strategies most commonly used by infertile women and  
 124 men were meaning-based and passive-avoidance coping, while active-avoidance was the least used  
 125 strategy (Martins et al., 2011; Peterson, Pirritano, Christensen, & Schmidt, 2008; Schmidt,  
 126 Christensen, et al., 2005; Schmidt, Holstein, et al., 2005). Some evidence was found that active-  
 127 and passive-avoidance had an adverse effect on infertility stress, while active-confronting and  
 128 meaning-based coping had a protective role (Martins et al., 2011; Schmidt, Holstein, et al., 2005).  
 129 Gourounti et al. (2010) proposed a theoretical path model from social support to infertility  
 130 stress, which had its roots in the transactional theory of stress and was both direct and indirect,

131 either through cognitive appraisals or coping strategies. Indeed, social support is one of the  
 132 environmental resources that precede and influence the cognitive appraisal of a stressful event and  
 133 the coping strategies that a person adopts to deal with it (Lazarus & Folkman, 1984). Specifically,  
 134 receiving social support may encourage the use of problem-focused coping and reduce the use of  
 135 avoidant emotion-focused coping, which in turn have been associated with higher positive and  
 136 negative affect, respectively (Ben-Zur, 2002). The path model by Gourounti et al. (2010) was  
 137 tested, although not explicitly, in a study of women seeking fertility treatment (Martins et al., 2011).  
 138 A direct relationship was found between perceived general social support and lower infertility stress  
 139 that was also mediated by active-avoidance, active-confronting, and meaning-based, but not by  
 140 passive-avoidance coping.

#### 141 **A Dyadic Approach**

142 The path model proposed by Gourounti et al. (2010) focuses on an individual's (i.e., women's)  
 143 reactions to infertility, without considering those of the other partner. As a shared stressor,  
 144 infertility triggers coping efforts of both partners and affects both individual and couple outcomes  
 145 (Pasch & Sullivan, 2017; Peterson et al., 2008), thus a dyadic perspective needs to be adopted when  
 146 investigating infertility stress (Martins et al., 2014). Studies that investigated the predictors of  
 147 infertility stress at the couple level have shown that perceived general support from spouse or social  
 148 network and specific coping strategies have different effects on infertile women and men or on their  
 149 partners' self-evaluations. For example, in couples seeking fertility treatment, support from spouse  
 150 alleviated individual symptoms of stress for both women and men and reduced the partner's stress  
 151 (i.e., the partners' evaluation of their own stress) among women, while support from family  
 152 decreased individual and partner infertility stress for women but not for men (Martins et al., 2014).  
 153 However, the role of infertility-specific social support has not been explored from a dyadic  
 154 perspective.

155 Regarding the impact of each partner's coping on individual and partner infertility stress, for  
 156 both women and men, active- and passive-avoidance coping were both associated with increased

individual infertility stress, and active-avoidance was also related to increased partner infertility stress. Active-confronting was associated with increased individual infertility stress in both genders, and with greater partner infertility stress among women. Finally, at both the individual and partner levels, meaning-based coping was associated with lower infertility stress among women, but with greater infertility stress among men (Peterson et al., 2008). Thus, when considering the couple as the unit of analysis, the role of meaning-based coping differed across gender, while an adverse effect of active-confronting coping emerged for both women and men, which is in contrast with the findings of studies using individuals as the unit of analysis (Martins et al., 2011; Schmidt, Holstein, et al., 2005).

In summary, among studies using a dyadic approach, none has investigated the association of infertility-specific support with infertility stress also considering infertility-related coping strategies as potential mediators.

### **The Actor-Partner Interdependence Model**

The actor-partner interdependence model (APIM; Kenny, Kashy, & Cook, 2006) uses the couple as the unit of analysis and simultaneously estimates individual and partner associations. Individual associations refer to those between a person's own independent variable and her or his own outcome. Partner associations refer to those between the partner's independent variable and the other person's outcome and represent the interdependence that exists between the dyad members (Kenny et al., 2006). Besides modeling the interdependent nature of close relationships, the APIM allows also to test if the individual and partner associations are different for the two dyad members (Garcia, Kenny, & Ledermann, 2015). The actor-partner interdependence mediation model (APIMeM; Ledermann, Macho, & Kenny, 2011) is an extension of the APIM that incorporates mediation. The APIMeM examines whether the individual- and partner-level links between the independent and outcome variables are mediated by each partner's mediator variable.

### **The Present Study**



## Method

## Participants and Procedure

Participants were infertile couples starting ART treatment at a private fertility clinic in Santo André, State of São Paulo, Brazil. The inclusion criteria were 18 years or older, reporting infertility as the inability to conceive after at least one year of regular unprotected sexual intercourse, starting a first ART treatment, and having disclosed their infertility status to their social network (i.e., family, friends, and colleagues). Between September 2016 and April 2017 the couples scheduled for their first consultation for ART were approached by the second author in the waiting room, before the consultation, and were briefly explained the scope of the study. Participation was voluntary, and each participant signed an informed consent form, prior to completing the study questionnaire separately from the partner. During questionnaire completion, the researcher remained in the waiting room and was available to answer any questions. The study complied with the Declaration of Helsinki and was approved by the University Research Ethics Committee (CAAE-FMABC: 57365516.0.0000.0082).

208 Of the 491 consecutively approached couples, 256 (52.14%) met all inclusion criteria and were  
 209 invited to participate in the study, while 235 (47.86%) were deemed ineligible because they did not  
 210 meet one or more of the inclusion criteria. Fifty-five couples declined participation due to lack of  
 211 interest in the research; thus, the study sample consisted of 402 participants (78.5% participation  
 212 rate), 201 women and 201 men, who completed the study questionnaire with an item nonresponse  
 213 rate of 1.3%. Omitted items were replaced with the respondent's scale mean. Mean age was 36.22  
 214 years ( $SD = 4.33$ ; range 24-52 years) for women and 38.32 years ( $SD = 6.66$ ; range 23-63 years) for  
 215 men. All women except one (aged 52) were of reproductive age ( $< 45$  years)<sup>1</sup>. Sixty-seven percent  
 216 of women ( $n = 135$ ) and 53.7% of men ( $n = 108$ ) had tertiary education. Couples were married or  
 217 living together for approximately eight years ( $M = 7.56$ ,  $SD = 4.57$ , range 1-30 years).

## 218 Measures

219 Information on infertility history (length of time trying to have a child, other medically assisted  
 220 reproduction treatments prior to ART, and infertility counseling) was collected using a  
 221 questionnaire. Type of infertility (i.e., primary or secondary, and if secondary, having had  
 222 spontaneous abortions or live births from previous spontaneous conceptions or fertility treatments  
 223 other than ART) and infertility cause were based on medical records. Based on the international  
 224 glossary of infertility and fertility care (Zegers-Hochschild et al., 2017), primary infertility was  
 225 defined as a situation in which the couple has never conceived despite at least 12 months of  
 226 attempting conception. Secondary infertility was defined as a situation in which the couple has had  
 227 at least one prior conception but is subsequently unable to conceive after at least 12 months of  
 228 attempting conception. Infertility cause was categorized as female factors, male factors, mixed  
 229 factors (i.e., both female and male factors present), or unexplained infertility. Infertility counseling

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<sup>1</sup> Sensitivity analyses were run excluding the couple in which the woman was older than 44 years. The patterns and significance of the associations in the simple APIM and in the APIMeMs remained the same as when all 201 couples were included.

230 was defined as having received individual or couple infertility-related counseling by a mental health  
 231 professional before the first consultation for ART.

232 Self-reports measured infertility stress, infertility-specific support, and infertility-related coping  
 233 strategies. To ensure adaptation to the Brazilian Portuguese language, and after permission from the  
 234 authors, the scales were translated and back-translated by two independent bilingual psychologists  
 235 according to standard procedures (van de Vijver & Hambleton, 1996).

236 **Stress.** The Infertility-Related Stress Scale (Casu & Gremigni, 2016) was used to assess  
 237 infertility stress. This 12-item self-report measures the impact of infertility in both the intrapersonal  
 238 and the interpersonal domains of life (e.g., “How much stress the infertility problem placed on your  
 239 physical well-being” and “How much stress the fertility problem placed on relationships with  
 240 friends”). For each item, respondents were asked to rate their perceived amount of stress on a 7-  
 241 point scale (1 = none at all to 7 = a great deal). The global infertility stress score was used in the  
 242 present study, which showed a Cronbach’s alpha of .94 for women and .95 for men.

243 **Support from spouse and social network.** Six items were used to assess infertility-specific  
 244 social support from spouse and social network. Two items referred to the partner (i.e., “Do you get  
 245 support and understanding from your partner in relation to your difficulty in having children?”, and  
 246 “Do you find it difficult to talk to your partner about your difficulty in having children?”), and four  
 247 items referred to different social roles such as family, family-in-law, friends, and colleagues (i.e.,  
 248 “Do you get support and understanding from some people in relation to your difficulty in having  
 249 children?”). Respondents were asked to rate each item on a 5-point scale (1 = never to 5 = always).  
 250 These items were based on a previous work by Vassard et al. (2012), who developed and used them  
 251 as single predictors of dropout from fertility treatment but did not report reliability. As evidence of  
 252 validity, they found that low support from spouse and family predicted treatment termination after 1  
 253 year. In the present study, the Spearman-Brown reliability coefficient (Eisinga, Te Grotenhuis, &  
 254 Pelzer, 2013) for the two items of support from spouse was .65 for women and .63 for men.  
 255 Cronbach’s alpha for the support from social network scale was .84 for women and .89 for men.

**Coping.** The Copenhagen Multi-Centre Psychosocial Infertility (COMPI) research program

Coping Strategy Scales (Schmidt, Christensen, et al., 2005) were used to assess the strategies

specifically adopted to cope with infertility. This 19-item tool has four subscales: active-avoidance

(4 items; e.g., “I leave, when people are talking about pregnancies and children”), active-

confronting (7 items; e.g., “I read or watch television about childlessness”), passive-avoidance (3

items; e.g., “I have fantasies and wishes about how things might turn”), and meaning-based (5

items; e.g., “I have grown as a person in a good way”) coping. Items were rated on a 4-point scale

(1 = not used to 4 = used a great deal). The COMPI coping model was supported by confirmatory

factor analyses and significant associations with infertility stress (Martins et al., 2011; Peterson et

al., 2008, 2009; Schmidt, Holstein, et al., 2005). In this study, Cronbach’s alpha for active-

avoidance was .72 for women and .73 for men, for active-confronting was .75 for women and .81

for men, for passive-avoidance was .62 for women and .65 for men, and for meaning-based was .72

for women and .65 for men. Exploratory factor analyses were run separately for women and men

and yielded a 4-factor solution in both cases, with all items loading highly (above .40; Matsunaga,

2010) on the expected factors.

## **Data Analyses**

A series of preliminary analyses were conducted, including bivariate correlations between

study variables separately for women and men and within couples to test for interdependence within

dyads. Differences between dyad members in each of the study variables were tested using repeated

measures ANOVA. To test for the need to include covariates or confounding variables in the

APIMeMs, women’s and men’s stress and coping were correlated (Pearson’s correlation) with age,

length of the relationship, and duration of infertility, and also compared (ANOVA) among groups

based on previous fertility treatments (i.e., yes or no), infertility counseling (i.e., yes or no),

infertility type (i.e., primary or secondary), and infertility cause (i.e., female factors, male factors,

mixed, or unexplained). In addition, among the couples with secondary infertility, coping and stress

were compared between groups based on previous abortions or live births. Variables that were

282 correlated with the mediator or outcome at  $r \geq .30$  (Frigon & Laurencelle, 1993) or had a significant  
 283 association with these variables for either women or men were included in the models.

284 Using structural equation modeling (Lederman & Kenny, 2017), a simple APIM (Kenny et al.,  
 285 2006) was preliminarily applied to investigate the direct associations of women's and men's support  
 286 from spouse and social network with both individual and partner stress. To test for the role of each  
 287 coping strategy in mediating these associations, four APIMeMs (Ledermann et al., 2011) were then  
 288 estimated. If significant direct associations emerged in the simple APIM, they were maintained in  
 289 the APIMeMs. Prior to dyadic analyses, the study variables were standardized using the means and  
 290 standard deviations computed across the entire sample (Kenny et al., 2006). Empirical  
 291 distinguishability of dyad members by gender was preliminarily tested using the omnibus test of  
 292 distinguishability (Kenny et al., 2006), following the steps outlined by Ackerman, Donnellan, and  
 293 Kashy (2011). A model was first tested in which the means, variances, and intrapersonal and  
 294 interpersonal correlations were constrained to be equal across dyad members. In case of a  
 295 significant omnibus test, the model was re-estimated by constraining only the correlations. If this  
 296 second omnibus test was also significant, we tested whether associations differed across dyad  
 297 members by constraining each path as equal and testing each constraint individually (Garcia et al.,  
 298 2015; Ledermann et al., 2011). For each equality constraint, a  $\chi^2$  difference test ( $\Delta\chi^2$ ) was conducted  
 299 to determine if holding that association equal across dyad members would cause a significant  
 300 decrease in model fit. In case of a nonsignificant  $\Delta\chi^2$ , the path was held equal across dyad members  
 301 for model parsimony. All models were tested using maximum likelihood estimation. Goodness of  
 302 fit was evaluated using the following criteria: root mean square error of approximation (RMSEA) <  
 303 .06, standardized root mean-square residual (SRMR) < .08, and comparative fit index (CFI)  $\geq .95$   
 304 (Hu & Bentler, 1999). A bootstrapping procedure (Preacher & Hayes, 2008) was used to estimate  
 305 and test the indirect associations in the APIMeMs. We inferred consistent mediation if the indirect  
 306 association and the corresponding direct association were of the same sign, and inconsistent  
 307 mediation if these had opposite signs (MacKinnon, Krull, & Lockwood, 2000).

308 The sample size was established a priori as to meet the recommended ratio of at least five  
 309 observations per each estimated parameter in structural modeling and to reach enough power (.80)  
 310 to detect a mediated effect assuming small-to-medium sizes of the paths (Fritz & MacKinnon,  
 311 2007). Interpretation of results was based on statistical significance ( $p < .05$  and bootstrapped 95%  
 312 confidence intervals not including zero for indirect associations) and measures of effect size for the  
 313 preliminary analyses. Pearson's  $r$  of .10 was considered small, .30 medium, and .50 large; Cohen's  
 314  $d$  of 0.20, 0.50, and 0.80 were considered small, medium and large, respectively (Cohen, 1988).  
 315 APIM and APIMeMs were estimated using path analysis in Mplus 6.1 (Muthén & Muthén, 1998-  
 316 2010) and all other analyses were conducted with IBM SPSS 23.

## 317 **Results**

### 318 **Infertility-Related Characteristics**

319 Most couples ( $n = 129$ , 64.2%) were trying to have a child for over two years ( $M = 2.94$ ,  $SD =$   
 320 1.27, range 1-5 years) and 68.2% were primary infertile ( $n = 137$ ). Among secondary infertile  
 321 couples ( $n = 64$ ), 70.3% had spontaneous abortions ( $n = 45$ ), 29.7% live births ( $n = 19$ ) from  
 322 previous spontaneous conceptions, and none reported conceptions from previous fertility treatment.  
 323 As to the diagnosed causes, infertility was due to female factors in 37.8% ( $n = 76$ ), to male factors  
 324 in 27.4% ( $n = 55$ ), to mixed factors in 17.4% ( $n = 35$ ), and was unexplained in 17.4% of couples ( $n$   
 325 = 35). Prior to ART, 28.4% of couples ( $n = 57$ ) had undergone ovarian stimulation plus timed  
 326 intercourse or intrauterine insemination. In 12.9% of couples ( $n = 26$ ), the woman had received  
 327 infertility counseling.

### 328 **Preliminary Analyses**

329 Correlations among same variables in the dyads were all positive, indicating that the higher  
 330 score in stress, support, and coping a dyad member reported, the higher the partner's score.  
 331 Between-partner correlations were significant for all variables except meaning-based coping (Table  
 332 S1 in the online supplementary material). Results of repeated measures ANOVAs indicated that  
 333 women reported slightly higher stress than men,  $F(1,176) = 7.34$ ,  $p = .007$ ,  $d = 0.30$ . Women and

men did not differ in support from spouse,  $F(1,176) = 3.06, p = .08, d = 0.01$ , and from social network,  $F(1,176) = 1.47, p = .23, d = 0.16$ , nor in the use of meaning-based coping,  $F(1,176) = 0.13, p = .72, d = 0.17$ . Women reported moderately greater use of active-avoidance,  $F(1,176) = 8.07, p = .005, d = 0.44$ , active-confronting,  $F(1,176) = 5.24, p = .023, d = 0.55$ , and passive-avoidance coping,  $F(1,176) = 11.38, p = .001, d = 0.60$ , than men,  $F(1,176) = 7.34, p = .007, d = 0.30$  (Table S2 in the online supplementary material). The correlations of age, length of relationship, and duration of infertility with stress and coping were small, ranging from  $-.21$  to  $.14$  for women, and from  $-.14$  to  $.15$  for men, and thus were not included in the APIMeMs (Table S1 in the online supplementary material). Interaction and main effects in ANOVAs were nonsignificant, thus mean scores in stress and coping did not vary depending on fertility treatment prior to ART (i.e., yes or no), or infertility type (i.e., primary or secondary) and cause (i.e., female factors, male factors, mixed, or unexplained) in either women or men (Table S2 in the online supplementary material). The only exception was a significant association of infertility counseling (i.e., yes or no) with women's meaning-based coping. Therefore, this variable was entered in the APIMeM that included meaning-based coping. In secondary infertile couples, having had spontaneous abortions or live births from previous spontaneous conceptions was unrelated to coping and stress for both women and men (Table S2 in the online supplementary material).

### Simple APIM

**Empirical distinguishability.** The omnibus test constraining means, variances and correlations,  $\chi^2(10) = 34.69, p < .001$ , and that constraining only the correlations,  $\chi^2(4) = 12.05, p = .02$ , both indicated distinguishability by gender. Subsequent tests constraining each association as equal among dyad members indicated that there were significant gender differences in the direct associations of support from social network with both individual,  $\Delta\chi^2(1) = 8.35, p = .004$ , and partner stress,  $\Delta\chi^2(1) = 9.10, p = .003$ . These paths were thus allowed to be freely estimated across gender. The model fit was excellent,  $\chi^2(2) = 2.43, p = .30$ , RMSEA = .03, SRMR = .02, CFI = .99.

**Direct associations.** There was a direct inverse association of women's and men's support

from spouse with both individual,  $b = -.23$ ,  $SE = .05$ ,  $z = -4.75$ ,  $p < .001$ , and partner stress,  $b = -.12$ ,  $SE = .05$ ,  $z = -2.36$ ,  $p = .02$ . The direct association of support from social network with individual stress was nonsignificant for women,  $b = -.06$ ,  $SE = .08$ ,  $z = -.77$ ,  $p = .44$ , but positive and significant for men,  $b = .22$ ,  $SE = .07$ ,  $z = 3.16$ ,  $p = .002$ . The direct association of support from social network with partner stress was negative and significant for women,  $b = -.25$ ,  $SE = .08$ ,  $z = -3.16$ ,  $p = .001$ , but nonsignificant for men,  $b = .06$ ,  $SE = .08$ ,  $z = 0.81$ ,  $p = .42$  (Figure S1 in the online supplementary material). Thus, women's support from social network was unrelated to their own stress but was directly associated with lower stress in their partners. In contrast, men's support from social network was directly associated with their own higher stress but was unrelated to that of their partners.

#### **APIMeMs**

Indirect associations in the APIMeMs are reported in Table 1, where those with confidence intervals that do not include zero are considered significant. Path estimates are shown in Figures 1 to 4. Results are presented below separately for each coping strategy.

#### **Active-avoidance coping.**

**Empirical distinguishability.** The omnibus test constraining means, variances and correlations  $\chi^2(18) = 61.50$ ,  $p < .001$ , and that constraining only the correlations,  $\chi^2(11) = 20.29$ ,  $p = .04$ , both indicated distinguishability by gender. Subsequent tests constraining each individual path as equal among dyad members indicated that there was a significant gender difference in the association of support from spouse with individual active-avoidance coping,  $\Delta\chi^2(1) = 6.02$ ,  $p = .01$ . This path was thus allowed to be freely estimated across gender. The model showed an excellent fit (see Figure 1).

**Indirect associations.** Active-avoidance coping consistently mediated the relationships between support from spouse and individual and partner stress (see Table 1). The association of support from spouse with individual active-avoidance coping was nonsignificant for women,  $b = -.12$ ,  $SE = .07$ ,  $z = -1.58$ ,  $p = .12$ , but negative and significant for men (see Figure 1). In men only,



385 lower support from spouse was related to greater individual use of active-avoidance coping, and  
 386 thus to higher stress in both themselves and their partners. For both women and men, lower support  
 387 from spouse was associated with greater use of active-avoidance coping in their partners, and thus  
 388 with higher stress in both themselves and their partners. After the inclusion of the mediator, the  
 389 direct association of women's and men's support from spouse with their partners' stress was no  
 390 longer significant, as it was in the simple APIM. Active-avoidance coping was not a mediator in the  
 391 relationship between support from social network and stress as it was not significantly associated  
 392 with support from social network.

### 393 **Active-confronting coping.**

394 ***Empirical distinguishability.*** The omnibus test constraining means, variances and correlations  
 395 was significant,  $\chi^2(18) = 58.70, p < .001$ . However, the omnibus test constraining only the  
 396 correlations was nonsignificant,  $\chi^2(10) = 13.43, p = .20$ , indicating that although there were mean-  
 397 level differences, dyad members were not distinguishable in the intrapersonal and interpersonal  
 398 correlations. All paths were thus set equal across gender. The model fit was adequate (see Figure 2).

399 ***Indirect associations.*** Active-confronting coping did not mediate the relationship between  
 400 support from spouse and stress, as it was unrelated to support from spouse. This strategy instead  
 401 consistently mediated the relationship between women's and men's support from social network  
 402 and their own stress. It also inconsistently and consistently mediated, respectively, the relationship  
 403 between women's and men's support from social network and their partners' stress (see Table 1).  
 404 For both women and men, greater support from social network was linked to greater individual use  
 405 of active-confronting coping, and thus to higher individual and partner stress (see Figure 2). The  
 406 direct association of women's support from social network with lower partners' stress was  
 407 suppressed by women's support from social network being related to greater active-confronting  
 408 coping.

### 409 **Passive-avoidance coping.**

410 **Empirical distinguishability.** The omnibus test constraining means, variances and correlations,  
 411  $\chi^2(18) = 76.72, p < .001$ , and that constraining only the correlations,  $\chi^2(10) = 21.28, p = .02$ , both  
 412 indicated that dyad members were distinguishable by gender. Subsequent tests constraining each  
 413 individual path as equal among dyad members indicated that there were significant gender  
 414 differences in the associations of support from spouse with individual,  $\Delta\chi^2(1) = 10.01, p = .002$ , and  
 415 partner passive-avoidance coping,  $\Delta\chi^2(1) = 7.44, p = .006$ , and of support from social network with  
 416 individual passive-avoidance coping,  $\Delta\chi^2(1) = 6.37, p = .01$ . These paths were thus allowed to be  
 417 freely estimated across gender. The model showed an excellent fit (see Figure 3).

418 **Indirect associations.** Passive-avoidance coping consistently mediated the relationship between  
 419 men's support from spouse and their own stress (see Table 1). The association of support from  
 420 spouse with individual passive-avoidance coping was nonsignificant for women,  $b = .04, SE = .07, z$   
 421  $= 0.55, p = .58$ , but negative and significant for men (see Figure 3). Lower men's support from  
 422 spouse was linked to a greater individual use of passive-avoidance coping, and thus to higher  
 423 individual stress. Passive-avoidance coping consistently mediated also the relationship between  
 424 men's support from spouse and their partners' stress (see Table 1). The association of support from  
 425 spouse with partner passive-avoidance coping was nonsignificant for women,  $b = .01, SE = .08, z =$   
 426  $0.13, p = .90$ , but negative and significant for men (see Figure 3). Lower men's support from spouse  
 427 was related to greater use of passive-avoidance coping in their partners, and thus to higher female  
 428 stress. After the inclusion of the mediator, the direct association of support from spouse with the  
 429 partner's stress was no longer significant, as it was in the simple APIM.

430 The association of support from social network with individual passive-avoidance coping was  
 431 nonsignificant for women,  $b = -.08, SE = .08, z = -0.96, p = .34$ , but positive and significant for men  
 432 (see Figure 3). Passive-avoidance coping consistently mediated the relationship between men's  
 433 support from social network and their own stress, but did not mediate the association of women's  
 434 support from social network with their partners' stress (see Table 1). For men only, greater support

from social network was linked to a greater individual use of passive-avoidance coping, and thus to higher individual stress.

### **Meaning-based coping.**

**Empirical distinguishability.** The omnibus test constraining means, variances and correlations was significant,  $\chi^2(25) = 51.10, p = .002$ , and that constraining only the correlations was marginally significant,  $\chi^2(17) = 27.40, p = .053$ . Subsequent tests constraining each individual path as equal among dyad members indicated that there were significant differences in the associations of support from spouse with individual meaning-based coping,  $\Delta\chi^2(1) = 8.47, p = .004$ , and of meaning-based coping with individual stress,  $\Delta\chi^2(1) = 5.67, p = .017$ . These paths were thus allowed to be freely estimated across gender. The fit of this model was excellent (see Figure 4), and significantly better than that of a model with all paths constrained to be equal across gender,  $\Delta\chi^2(2) = 10.01, p = .007$ .

**Indirect associations.** The association of support from spouse with individual meaning-based coping was positive and significant for women, but nonsignificant for men,  $b = -.01, SE = .09, z = -0.09, p = .93$ . The significant distinguishability by gender in the association of coping with individual stress was due to the different sign of paths across gender; however, this association was nonsignificant for both women,  $b = -.01, SE = .07, z = -0.09, p = .93$ , and men,  $b = .14, SE = .07, z = 1.92, p = .06$ . The only significant path was between women's support from spouse and their greater meaning-based coping (see Figure 4).

## **Discussion**

To our knowledge, this was the first dyadic study to examine the relationships between infertility-specific support and infertility stress among infertile couples starting ART treatment, and to test whether these associations were mediated by infertility-related coping. We focused on domains unique to infertility as to better capture the experience of infertility (Greil et al., 2011). In particular, we chose infertility stress as an outcome as it is considered a distinct construct from general stress, which may lead to more generalized distress in other domains of life and respond differently to interventions (Cesta et al., 2018; Sexton et al., 2010; Slade et al., 2007). Noteworthy,

461 in order to address perceived social support specific to infertility, we included in our study only  
 462 couples who had disclosed their infertility status to their social network.

463 The findings showed that social support was related to individual and partner stress, and this  
 464 relationship was either direct or mediated by individual and partner coping, with some differences  
 465 based on gender, support from spouse or from social network, and coping strategies.

#### 466 **Direct Associations of Infertility-Specific Support with Infertility Stress**

467 The first hypothesis on direct associations of social support with stress was confirmed for  
 468 support from spouse: greater perceived support from spouse was directly associated with lower  
 469 stress at the individual level for both women and men, in line with previous evidence (Chochovski  
 470 et al., 2013; Gourounti et al., 2010; Martins et al., 2011, 2014, 2016; Sexton & Bird, 2015; Ying et  
 471 al., 2015). At the partner level, a higher perception of support from spouse had been previously  
 472 associated with the partner's lower stress among women only (Martins et al., 2014); in our study,  
 473 the same association was found for both genders. As for support from social network, at the  
 474 individual level, it was not directly linked to lower stress in women, in contrast with previous  
 475 evidence (Martins et al., 2011, 2014; Sexton & Bird, 2015). Men's greater perceived support from  
 476 social network was instead directly related to their own higher stress, contrary to hypotheses based  
 477 on the majority of previous studies but in line with a qualitative study by Ying et al. (2015). A  
 478 possible explanation might be related to social role expectations and cultural stereotypes about  
 479 masculinity as related to sexual potency. Infertility might be perceived as a threat to men's gender  
 480 identity (Gannon, Glover, & Abel, 2004) and potentially affect the way men use the support sources  
 481 in relation to their infertility problem. It has indeed been reported that men prefer to receive support  
 482 through online communities rather than openly share their emotions about infertility and its  
 483 treatment (Richard, Badillo-Amberg, & Zelkowitz, 2017). Thus, for men adhering to masculinity  
 484 norms, being offered the support of their social network in relation to infertility might increase their  
 485 stress. At the partner level, partly in line with hypotheses, greater perceived support from social

486 network was directly associated with lower partner stress in women but not in men, as found in a  
 487 previous study (Martins et al., 2014).

#### 488 **Indirect Associations of Infertility-Specific Support with Infertility Stress**

489 Regarding the second hypothesis, a number of indirect associations between social support and  
 490 individual and partner stress were found, which were generally in the same directions as those  
 491 hypothesized but varied depending on the source of support and/or on gender. The partner's coping  
 492 also mediated the individual- and partner-level associations between social support and stress.

493 **Avoidance coping strategies.** In men, greater perceived support from spouse was associated  
 494 with their own lower stress through their lower use of both active- and passive-avoidance coping. In  
 495 addition, men's greater perceived support from spouse was associated with lower women's stress  
 496 through both men's lower use of active-avoidance coping and women's lower use of passive-  
 497 avoidance coping. In both women and men, greater perceived support from spouse was associated  
 498 with lower levels of stress in themselves and in their partners through a lower use of active-  
 499 avoidance coping by their partners. Lastly, among men, a greater perceived support from social  
 500 network was associated with their own higher stress also through their greater use of passive-  
 501 avoidance coping. Active-avoidance coping was instead not associated with support from social  
 502 network. Altogether, our findings reinforce the potential adverse effect of active- and passive-  
 503 avoidance coping for individual and partner infertility stress, in line with previous findings (Martins  
 504 et al., 2011; Peterson et al., 2008; Schmidt, Holstein, et al., 2005).

505 **Active-confronting coping.** Active-confronting coping was unrelated to support from spouse.  
 506 In both women and men greater perceived support from social network was associated with higher  
 507 individual and partner stress through a greater individual use of active-confronting. Thus, as  
 508 suggested by an inconsistent mediation effect, the potentially protective role of women's support  
 509 from social network against their partners' stress might be suppressed when women engage in  
 510 active-confronting coping. Previous dyadic studies also found that women's use of active-  
 511 confronting coping was linked to worse adjustment in their partners, while the same was not

512 observed among men (Peterson et al., 2008, 2009; Volmer, Rösner, Toth, Strowitzki, &  
 513 Wischmann, 2017). Altogether, these findings point to the potentially maladaptive role of active-  
 514 confronting coping for individual and partner infertility stress in couples starting their first ART  
 515 treatment, in line with previous dyadic findings (Peterson et al., 2008, 2009; Volmer et al., 2017).  
 516 On the one hand, this might be attributable to the problem-focused and emotional venting  
 517 components of active-confronting coping. The goodness-of-fit hypothesis (Lazarus & Folkman,  
 518 1984) highlights the importance of matching the coping effort to the controllability of the situation,  
 519 suggesting that problem-focused coping promotes adjustment in controllable situations, while with  
 520 low-control stressors like infertility it might result in higher frustration and worse adaptation (e.g.,  
 521 Benyamini, Gozlan, & Kokia, 2004). There is also evidence that, among emotion-focused  
 522 strategies, behaviors such as emotional venting can intensify negative feelings and frustration,  
 523 probably due to rumination about the stressor (e.g., Nils & Rimé, 2012). On the other hand, the  
 524 potentially negative role of active-confronting coping might be in part attributable to the timing of  
 525 data collection. Couples at the early stage of fertility treatment might be characterized by an acute  
 526 stress reaction (Berg & Wilson, 1991) that can reduce the efficacy of an active-confronting coping  
 527 strategy. However, adopting such a strategy might yield to better outcomes in the long term as it  
 528 was suggested in a previous longitudinal study of infertile individuals (Stanton, 2011).

529 **Meaning-based coping.** This coping strategy was not a mediator in the relationship between  
 530 support and stress. Previous studies found an association between meaning-based coping and  
 531 infertility stress (Peterson et al, 2008, 2009; Schmidt, Holstein, et al., 2005; Volmer et al., 2017)  
 532 that was not observed in this study. This might be attributable to that the couples in the present  
 533 study were seeking their first ART treatment. As previously suggested (Peterson et al., 2009), it  
 534 may take time to experience the benefits of meaning-based coping, as it implies a thorough  
 535 reflection on and a redefinition of the infertility experience. Thus, couples attempting ART  
 536 treatment for the first time could have not found new meaning through the infertility experience yet.

537 **Limitations and Future Directions**

538       The present study has a number of limitations that must be acknowledged. First, the data relied  
 539 exclusively on self-report measures. Therefore, future studies that use multiple informants and  
 540 collect both self- and partner-reports would be helpful in reducing shared method variance (Orth,  
 541 2013). Second, the cross-sectional nature of the data does not allow conclusions about the  
 542 directionality of the identified associations. Although the tested relationships were theoretically  
 543 driven by the transactional theory of stress, future replication studies using longitudinal data are  
 544 encouraged to rule out possible reverse effects. Furthermore, in accordance with the transactional  
 545 theory of stress, we adopted a situational approach to coping as a response to the stressful  
 546 infertility-related situation. A different, dispositional approach could be adopted in future studies, in  
 547 which coping, conceptualized as a relatively stable characteristic, would act as a moderating rather  
 548 than mediating variable (Wu & Zumbo, 2008). Third, a number of factors might have influenced the  
 549 results. The duration of infertility was assessed as time trying to get pregnant (Moura-Ramos,  
 550 Gameiro, Canavarro, Soares, & Almeida-Santos, 2016), regardless of the time since infertility  
 551 diagnosis. We could not distinguish between the types of conventional fertility treatments (i.e.,  
 552 timed intercourse or intrauterine insemination) previously undergone by almost one third of  
 553 couples, since this information was self-reported and previous treatments were not necessarily  
 554 conducted at the same clinic. The couples in our study were entering their first ART treatment,  
 555 which is a situation of high anxiety and uncertainty. In the measurement of infertility-specific  
 556 support, support from spouse was assessed using only two items with reliability indices between .60  
 557 and .70. Also, the reliability of passive-avoidance and meaning-based coping scales, although  
 558 higher than those reported in other studies (e.g., Martins et al., 2011; Schmidt, Christensen, et al.,  
 559 2005; Schmidt, Holstein, et al., 2005), was in part slightly below the recommended thresholds.  
 560 Because low reliability attenuates observed relationships but cannot result in spuriously high  
 561 associations (Cohen, Cohen, West, & Aiken, 2003), the null results involving support from spouse,  
 562 passive-avoidance and meaning-based coping should be interpreted cautiously, but the relationships  
 563 found in this study for the mentioned variables likely reflect associations that do exist. Fourth, in

order to assess social support specific to infertility, we included only couples who had disclosed their infertile condition to others, which limits the generalizability of our findings. Since the benefits of social support against infertility stress might cease when the infertile condition is not disclosed (Martins et al., 2013), future dyadic studies should elucidate the relationships between social support, coping, and stress in couples keeping infertility secret. Future studies are also encouraged to address both general and infertility-specific social support, in order to clarify how they relate to each other and whether they differentially impact coping and stress. Fifth, the data were from a single clinic and a single country; thus, cross-cultural, multicenter studies are needed to clarify whether the identified dyadic associations represent a common pattern. Finally, sample-size requirements (Fritz & MacKinnon, 2007) did not allow including all coping strategies in a single APIMeM or distinguishing between different sources of social network support and between domains of infertility stress. To overcome this limitation, larger samples should be recruited to allow for testing of more complex multiple mediation models with a dyadic approach.

## **Conclusions and Implications**

This study provides new insight into the role of infertility-specific support for infertile couples and suggests new hypotheses to be tested in future longitudinal studies. The first one is that infertility-specific support might protect against infertility stress, both individually and as a couple, when it comes from the partner. This is probably linked to that the marital relationship is perceived as a primary source of support under stressful circumstances, and was found to improve in couples undergoing their first ART treatment (Holter, Anderheim, Bergh, & Möller, 2006). Each partner might benefit from her/his own as well as the other partner's perceptions of receiving support within the couple also indirectly, as these perceptions can inhibit the individual and partner use of avoidance coping strategies. Another hypothesis is that, in contrast, receiving infertility-specific support from people outside the couple might exacerbate stress at both the individual and couple levels either directly or by encouraging the use of active-confronting and passive-avoidance coping.



589       The results of this study have implications for clinicians working with infertile individuals and  
590 couples. Women and men reporting infertility stress might benefit from couple interventions aimed  
591 at promoting an open communication between partners (e.g., Sormunen, Aanesen, Fossum,  
592 Karlgren, & Westerbotn, 2018) as well as reciprocal support and understanding in relation to their  
593 infertility problem. This type of intervention may also help reduce the use of avoidance coping  
594 strategies that are maladaptive for the couple. Coping skills training could also help reduce the use  
595 of active-confronting coping strategies, at least at the beginning of fertility treatment attempts. In  
596 addition, given the potentially adverse role of support from social network, clinicians could help  
597 couples identify the people to whom they may disclose their infertility status, by selecting the ones  
598 who might be truly and effectively supportive within their social network.

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- 757



Table 1

*Indirect Effects in the APIMeMs*

Source of support	Support	→	Coping	→	Stress	Active-avoidance			Active-confronting			Passive-avoidance			Meaning-based		
						<i>b</i>	<i>SE</i>	95% CI	<i>b</i>	<i>SE</i>	95% CI	<i>b</i>	<i>SE</i>	95% CI	<i>b</i>	<i>SE</i>	95% CI
Spouse	W	→	W	→	W	-.05	.03	[-.11, .01]	-.01	.02	[-.05, .02]	.01	.02	[-.03, .05]	-.01	.02	[-.04, .03]
	M	→	M	→	M	-.12	.03	[-.19, -.07]	-.01	.02	[-.05, .02]	-.07	.03	[-.13, -.03]	-.01	.01	[-.04, .02]
	W	→	M	→	W	-.01	.01	[-.03, -.01]	-.01	.01	[-.02, .01]	.01	.01	[-.02, .02]	-.01	.01	[-.03, .01]
	M	→	W	→	M	-.01	.01	[-.03, -.01]	-.01	.01	[-.02, .01]	-.02	.02	[-.06, .01]	-.01	.01	[-.03, .01]
	M	→	M	→	W	-.03	.02	[-.07, -.01]	-.01	.01	[-.02, .01]	-.03	.02	[-.07, .01]	-.01	.01	[-.02, .01]
	W	→	W	→	M	-.01	.01	[-.04, .01]	-.01	.01	[-.02, .01]	.01	.01	[-.01, .03]	.02	.01	[-.01, .05]
	M	→	W	→	W	-.04	.02	[-.09, -.01]	-.01	.01	[-.03, .02]	-.06	.02	[-.11, -.03]	.01	.01	[-.01, .02]
	W	→	M	→	M	-.04	.02	[-.09, -.01]	-.01	.01	[-.03, .02]	.01	.02	[-.04, .04]	-.01	.01	[-.04, .00]
Social network	W	→	W	→	W	-.01	.02	[-.04, .04]	.06	.02	[.03, .10]	-.02	.02	[-.07, .02]	.00	.01	[-.01, .01]
	M	→	M	→	M	-.01	.02	[-.04, .04]	.06	.02	[.03, .10]	.04	.02	[.01, .09]	.01	.01	[-.01, .03]
	W	→	M	→	W	-.01	.01	[-.02, .01]	.01	.01	[-.01, .02]	.01	.01	[-.01, .02]	.01	.01	[-.01, .03]
	M	→	W	→	M												
	M	→	M	→	W	-.01	.01	[-.01, .01]	.02	.01	[.01, .05]	.02	.01	[-.01, .05]	.01	.01	[-.01, .02]

W	→	W	→	M	-.01	.01	[-.01, .01]	.02	.01	[.01, .05]	-.01	.01	[-.04, .01]	.01	.01	[-.01, .02]
M	→	W	→	W	-.01	.02	[-.05, .03]	.01	.02	[-.03, .03]	.01	.01	[-.03, .03]	.00	.01	[-.02, .01]
W	→	M	→	M	-.01	.02	[-.05, .03]	.01	.02	[-.03, .03]	.01	.01	[-.03, .03]	.01	.01	[-.01, .04]

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*Note.* W and M indicate women and men, respectively. APIMeM = actor-partner interdependence mediation model; *b* = standardized estimate; *SE* = standard error; CI = confidence interval. CI intervals not including zero are considered statistically significant.

Figure 1. APIMeM with active-avoidance coping as the mediator. Standardized path estimates are reported. Standard errors are in parentheses. Nonsignificant paths and within- and between-partner correlations are omitted from the figure for clarity. Model fit statistics:  $\chi^2(9) = 9.39, p = .40$ , RMSEA = .02, SRMR = .03, CFI = 1.00.

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

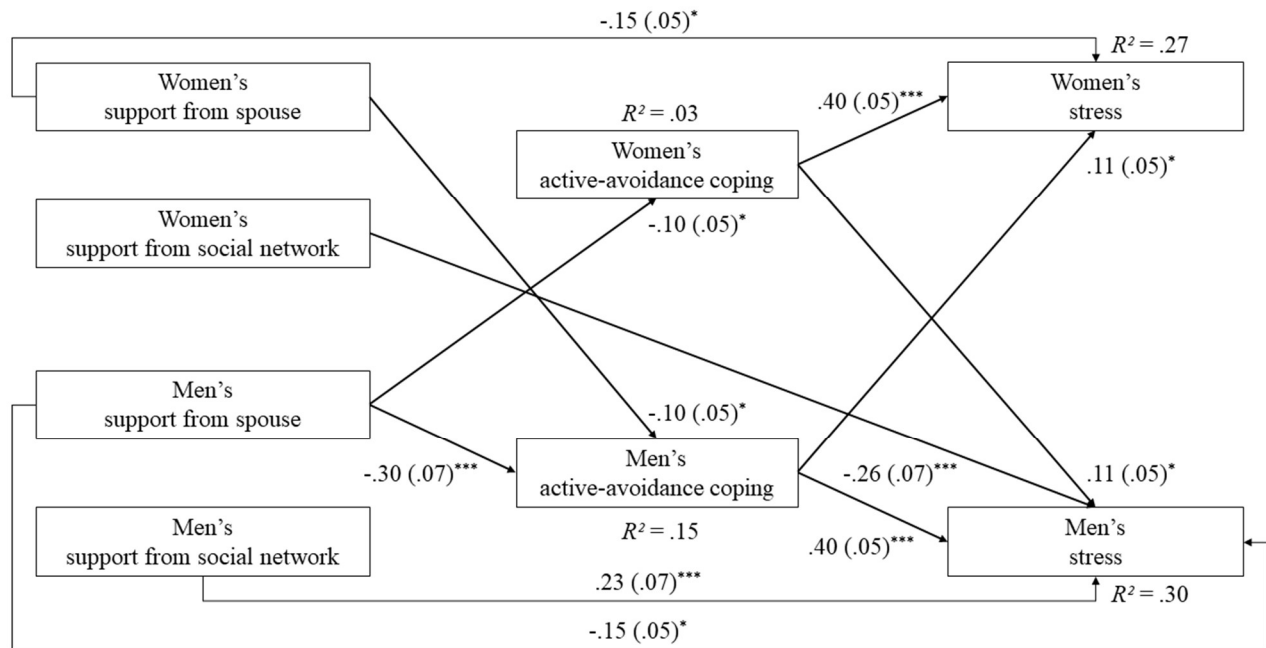


Figure 2. APIMeM with active-confronting coping as the mediator. Standardized path estimates are reported. Standard errors are in parentheses. Nonsignificant paths and within- and between-partner correlations are omitted from the figure for clarity. Model fit statistics:  $\chi^2(10) = 15.01, p = .13$ , RMSEA = .05, SRMR = .04, CFI = .96.

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

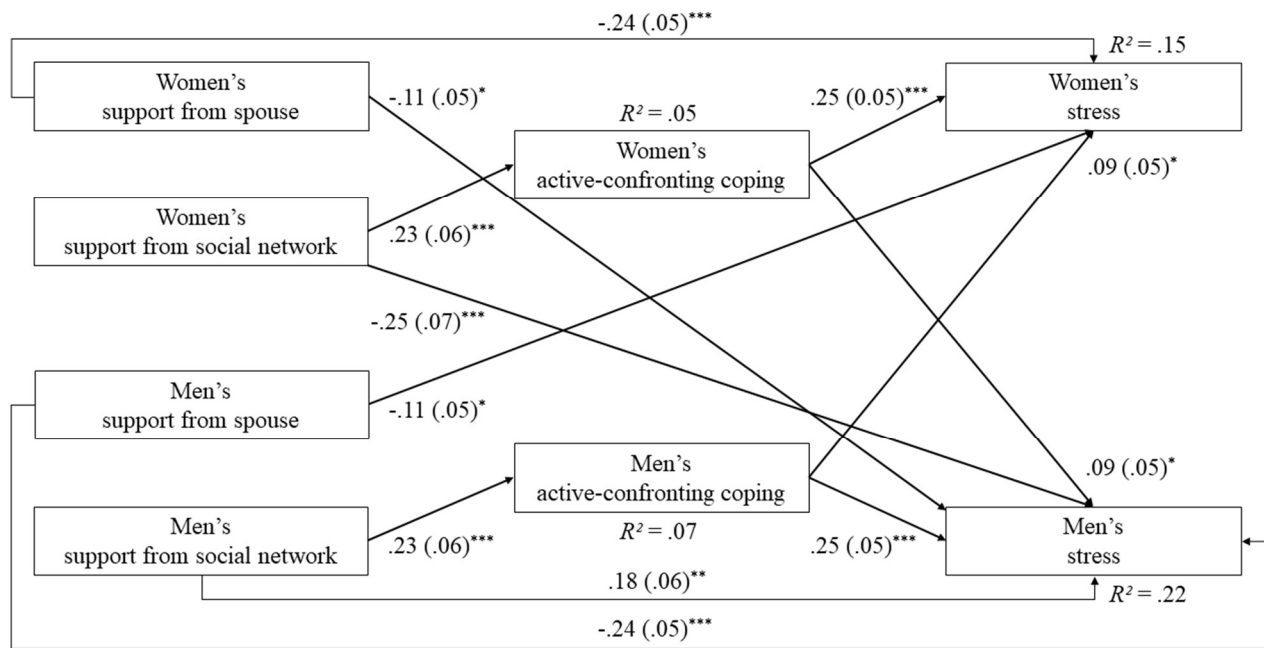


Figure 3. APIMeM with passive-avoidance coping as the mediator. Standardized path estimates are reported. Standard errors are in parentheses. Nonsignificant paths and within- and between-partner correlations are omitted from the figure for clarity. Model fit statistics:  $\chi^2(7) = 2.82, p = .90$ , RMSEA = .00, SRMR = .01, CFI = 1.00.

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

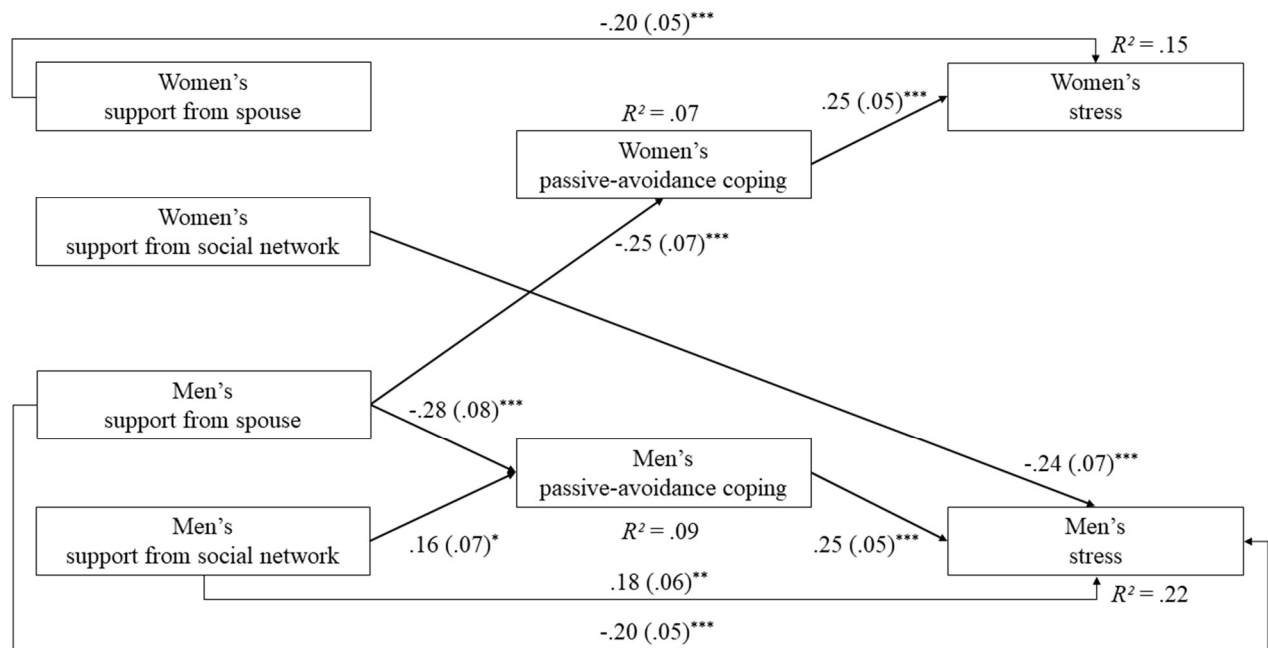
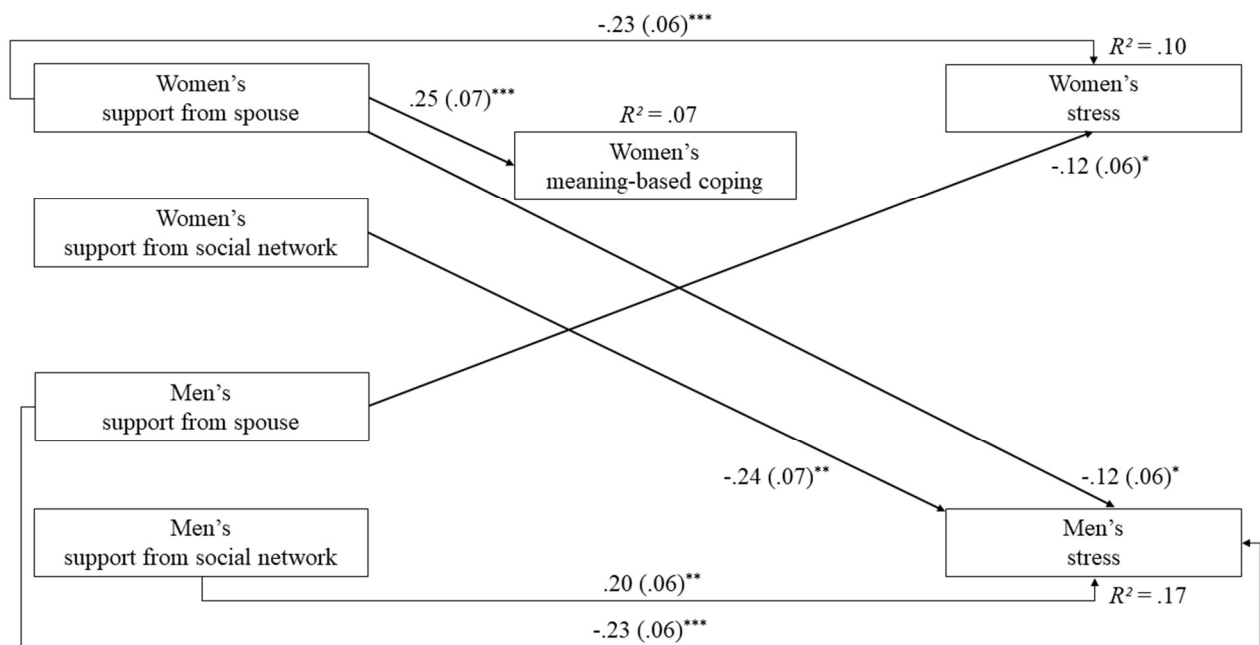


Figure 4. APIMeM with meaning-based coping as the mediator. Although not shown, infertility-related counseling was included as a covariate in the model. Standardized path estimates are reported. Standard errors are in parentheses. Nonsignificant paths and within- and between-partner correlations are omitted from the figure for clarity. Model fit statistics:  $\chi^2(15) = 15.22, p = .46$ ; RMSEA = .01, SRMR = .04, CFI = 1.00.

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



Supplemental Table S1

*Correlations for Study Variables and Potential Covariates/Confounders*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Age (women)	-																
2. Age (men)	.56 <sup>a</sup>	-															
3. Length of relationship	.13	.18 <sup>c</sup>	-														
4. Duration of infertility	-.02	-.03	.36 <sup>a</sup>	-													
5. Support spouse (women)	-.13	-.18 <sup>b</sup>	-.03	.01	-												
6. Support spouse (men)	.04	.00	.02	.07	.29 <sup>a</sup>	-											
7. Support social network (women)	.03	-.09	-.06	-.03	.32 <sup>a</sup>	.07	-										
8. Support social network (men)	-.08	-.07	-.04	.02	-.03	.23 <sup>b</sup>	.47 <sup>a</sup>	-									
9. Active-avoidance (women)	-.14 <sup>c</sup>	-.14 <sup>c</sup>	.03	.11	-.13	-.22 <sup>b</sup>	-.08	-.12	-								
10. Active-avoidance (men)	-.08	-.05	.04	.02	-.16 <sup>c</sup>	-.39 <sup>a</sup>	-.03	-.08	.31 <sup>a</sup>	-							
11. Active-confronting (women)	-.02	.01	-.05	-.02	.16 <sup>c</sup>	-.02	.32 <sup>a</sup>	.14 <sup>c</sup>	.12	.15 <sup>c</sup>	-						
12. Active-confronting (men)	-.08	-.14 <sup>c</sup>	.03	-.06	-.01	-.09	.11	.17 <sup>c</sup>	.05	.13	.18 <sup>c</sup>	-					
13. Passive-avoidance (women)	-.21 <sup>b</sup>	-.10	-.10	.02	-.06	-.26 <sup>a</sup>	-.09	-.07	.39 <sup>a</sup>	.28 <sup>a</sup>	.19 <sup>b</sup>	.04	-				
14. Passive-avoidance (men)	-.10	-.09	.03	.04	-.07	-.24 <sup>a</sup>	.04	.12	.19 <sup>b</sup>	.36 <sup>a</sup>	.03	.29 <sup>a</sup>	.27 <sup>a</sup>	-			

15. Meaning-based (women)	-.16 <sup>c</sup>	-.07	.06	.10	.24 <sup>a</sup>	-.04	.12	.07	.04	.02	.35 <sup>a</sup>	.03	.19 <sup>b</sup>	-.08	-		
16. Meaning-based (men)	.01	-.03	.15 <sup>c</sup>	.13	-.03	-.03	.01	.05	.15 <sup>c</sup>	.25 <sup>a</sup>	.07	.34 <sup>a</sup>	.13	.38 <sup>a</sup>	.12	-	
17. Stress (women)	.00	.04	.12	.14 <sup>c</sup>	-.23 <sup>a</sup>	-.21 <sup>b</sup>	-.12	.02	.50 <sup>a</sup>	.31 <sup>a</sup>	.23 <sup>a</sup>	.10	.33 <sup>a</sup>	.17 <sup>c</sup>	-.07	.16 <sup>c</sup>	-
18. Stress (men)	-.07	-.08	.14	.05	-.24 <sup>a</sup>	-.28 <sup>a</sup>	-.18 <sup>b</sup>	.08	.22 <sup>b</sup>	.43 <sup>a</sup>	.10	.27 <sup>a</sup>	0.24 <sup>a</sup>	.30 <sup>a</sup>	-.01	.19 <sup>b</sup>	.44 <sup>a</sup>

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<sup>a</sup> $p \leq .001$ . <sup>b</sup> $p < .01$ . <sup>c</sup> $p < .05$ .



## Supplemental Table S2

*Frequencies (Proportions) of Infertility-Related Characteristics and Coping and Stress Mean Scores (SD) by Subgroups within Genders*

		Women					Men				
	n (%)	Active- avoidance	Active- confronting	Passive- avoidance	Meaning- based	Stress	Active- avoidance	Active- confronting	Passive- avoidance	Meaning- based	Stress
MAR prior to ART											
Yes	57	9.04	14.18	8.37	12.81	43.19	7.33	12.23	6.54	13.14	34.18
	(28.36)	(3.28)	(4.33)	(2.25)	(3.30)	(20.04)	(2.39)	(3.73)	(2.61)	(3.04)	(16.82)
No	144	8.20	14.91	8.49	13.53	36.74	7.11	12.28	7.01	12.55	32.38
	(71.64)	(2.97)	(4.63)	(2.69)	(3.69)	(18.59)	(2.77)	(4.58)	(2.71)	(3.83)	(20.05)
		$F = 0.25^a$ , $d = 0.28$	$F = 0.04^a$ , $d = 0.16$	$F = 0.02^a$ , $d = 0.05$	$F = 0.14^a$ , $d = 0.20$	$F = 1.05^a$ , $d = 0.29$	$F = 0.95^a$ , $d = 0.08$	$F = 1.01^a$ , $d = 0.01$	$F = 2.06^a$ , $d = 0.18$	$F = 0.77^a$ , $d = 0.16$	$F = 3.54^a$ , $d = 0.09$
Counseling											
Yes	26	9.19	13.42	8.88	13.04	45.81	7.62	12.65	6.81	13.58	40.19
	(12.94)	(3.07)	(3.32)	(2.60)	(3.33)	(19.93)	(2.53)	(3.78)	(2.53)	(2.94)	(19.81)
No	175	8.33	14.89	8.39	13.37	37.50	7.11	12.21	6.89	12.59	31.80
	(87.06)	(3.07)	(4.68)	(2.56)	(3.63)	(18.90)	(2.69)	(4.43)	(2.72)	(3.71)	(18.89)

Primary	137	8.26	14.84	8.44	13.31	37.48	7.32	12.21	6.83	12.47	32.89
	(68.16)	(2.95)	(4.62)	(2.60)	(3.85)	(19.38)	(2.77)	(4.30)	(2.65)	(3.62)	(19.57)
Secondary	64	8.83	14.41	8.50	13.38	40.92	6.86	12.38	6.98	13.23	32.88
	(31.84)	(3.34)	(4.41)	(2.50)	(2.99)	(18.70)	(2.43)	(4.48)	(2.78)	(3.62)	(18.43)
		$F = 0.09^a$ ,	$F = 2.22^a$ ,	$F = 0.42^a$ ,	$F = 0.16^a$ ,	$F = 2.06^a$ ,	$F = 0.70^a$ ,	$F = 0.56$ ,	$F = 0.43$ ,	$F = 0.33^a$ ,	$F = 0.00^a$ ,
		$d = 0.19$	$d = 0.09$	$d = 0.02$	$d = 0.02$	$d = 0.18$	$d = 0.17$	$d = 0.04$	$d = 0.06$	$d = 0.21$	$d = 0.00$
Abortions	45	9.29	14.82	8.58	13.22	43.71	7.00	11.98	6.80	12.98	32.69
	(70.31)	(3.37)	(4.73)	(2.48)	(3.19)	(17.91)	(2.27)	(3.76)	(2.67)	(3.63)	(15.76)
Live births	19	7.74	13.42	8.32	13.74	34.32	6.53	13.32	7.42	13.84	33.32
	(29.69)	(3.07)	(3.49)	(2.60)	(2.49)	(19.37)	(2.82)	(5.87)	(3.06)	(3.61)	(24.11)
		$F = 2.98^b$ ,	$F = 1.35^b$ ,	$F = 0.15^b$ ,	$F = 0.39^b$ ,	$F = 3.51^b$ ,	$F = 0.50^b$ ,	$F = 1.20^b$ ,	$F = 0.66^b$ ,	$F = 0.76^b$ ,	$F = 0.02^b$ ,
		$d = 0.48$	$d = 0.32$	$d = 0.11$	$d = 0.18$	$d = 0.52$	$d = 0.20$	$d = 0.30$	$d = 0.23$	$d = 0.24$	$d = 0.03$

Inferility cause

Female factor	76	8.62	14.70	8.51	13.32	41.88	7.53	12.67	7.08	13.05	33.38
	(37.81)	(2.87)	(4.06)	(2.50)	(3.39)	(19.26)	(2.68)	(4.56)	(2.62)	(3.14)	(19.02)
Male factor	55	7.84	13.71	8.33	13.31	35.82	7.05	12.47	6.85	13.20	34.40
	(27.36)	(3.21)	(4.06)	(2.75)	(3.68)	(19.90)	(2.66)	(4.48)	(2.76)	(4.11)	(20.14)
Mixed	35	8.74	15.43	8.03	13.60	35.77	6.54	12.37	7.00	12.06	30.54
	(17.41)	(2.95)	(5.31)	(2.43)	(3.71)	(18.98)	(2.38)	(4.77)	(2.91)	(3.56)	(20.84)
Unexplained	35	8.69	15.54	8.97	13.11	38.51	7.23	10.94	6.37	11.89	31.77
	(17.41)	(3.42)	(5.32)	(2.55)	(3.87)	(17.70)	(2.89)	(2.91)	(2.51)	(3.79)	(16.53)
$F = 1.23^c$ , $F = 0.27^c$ , $F = 0.90^c$ , $F = 0.55^c$ , $F = 1.07^c$ , $F = 0.37^c$ , $F = 1.02^c$ , $F = 1.46^c$ , $F = 1.80^c$ , $F = 0.43^c$ , $\eta^2 = 0.02$ $\eta^2 = 0.01$ $\eta^2 = 0.02$ $\eta^2 = 0.01$ $\eta^2 = 0.02$ $\eta^2 = 0.01$ $\eta^2 = 0.02$ $\eta^2 = 0.02$ $\eta^2 = 0.02$ $\eta^2 = 0.03$ $\eta^2 = 0.01$											
Total	201	8.44	14.70	8.46	13.33	38.57	7.17	12.26	6.88	12.72	32.89
	(100)	(3.08)	(4.55)	(2.57)	(3.59)	(19.19)	(2.67)	(4.35)	(2.69)	(3.63)	(19.17)

*Note.* MAR = medically assisted reproduction treatments. Total score range was 4-16 for active-avoidance, 7-28 for active-confronting, 3-12 for passive-avoidance, 5-20 for meaning-based, and 12-84 for stress.  $\eta^2$  of .01, .09, and .25 were considered small, medium and large, respectively.

<sup>a</sup>  $df = 1,176$

<sup>b</sup>  $df = 1,62$

<sup>c</sup>  $df = 3,176$

\*  $p < .05$

*Supplemental Figure 1.* Simple APIM with direct individual and partner associations of infertility-specific support with infertility stress. Standardized path estimates are reported. Standard errors are in parentheses. Nonsignificant paths and within- and between-partner correlations are omitted from the figure for clarity.

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

