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Couples' resolution of infertility diagnosis before undergoing in vitro fertilization

This work was conducted at the University of Lausanne in the Departments of Psychiatry and Gynecology, Obstetrics and Medical Genetics and at the Center for Medically Assisted Procreation in Lausanne, Switzerland.

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Abstract

Objective: Although the use of assisted reproductive technology has become more familiar, the suffering associated with the infertility experience remains. This study aims to assess couples' emotional resolution of infertility diagnosis by examining their narratives.

Methods: 57 couples were recruited from fertility clinics to participate in a semi-structured interview prior in vitro fertilization. Two aspects of the couples' reactions to the infertility diagnosis were assessed: (1) each individual's capacity to acknowledge the emotional reality of the diagnosis (diagnosis resolution) and (2) the couple's ability to construct a shared meaning of the infertility diagnosis experience (narrative co-construction). Associations between these aspects and self-reported marital satisfaction, infertility-related stress, and diagnosis-related variables were analyzed.

Results: 73.7% of women and 61.4% of men had acknowledged the emotional reality of the diagnosis, and their scores for narrative co-construction were comparable to reference samples. Marital satisfaction, but not infertility-related stress, was associated with diagnosis resolution and narrative co-construction.

Conclusion: Results indicate the importance of detecting couples with fewer of the individual and marital resources needed to face the reality of the diagnosis. The capacity of the couple to perceive the infertility diagnosis as "their" problem is also essential to dealing with this common life event.

Keywords: emotional reactions; infertility diagnosis; infertility-related stress; marital satisfaction; narratives

Introduction

Infertility affects approximately 9% of couples (Boivin, Bunting, Collins, & Nygren, 2007), and the use of assisted reproductive technology (ART) is rising steadily worldwide (de Mouzon et al., 2010; Sundby, Schmidt, Heldaas, Bugge, & Tanbo, 2007). Infertility has been described as a life crisis, that may have serious socio-emotional repercussions (Cook, 1987; Lalos, 1999). At the individual level, emotional responses to an infertility diagnosis may include: diminished self-esteem, uncertainty about social status, a disrupted sense of life's continuity, and chronic stress while awaiting pregnancy (Stanton, Tennen, Affleck, & Mendola, 1992; Wright, Allard, Lecours, & Sabourin, 1989; Braverman, 1997; Greil, 2010). Infertility can also alter many aspects of the couple's functioning, as the diagnosis affects both members of the couple even if it concerns only one of them. It may provoke stress related to the partners' sexual functioning, the potential threat to their future together, their disagreement about treatment decisions, and their isolation from family and friends who have children (Peterson, 2006; Newton, Sherrard, & Glavac, 1999; Salvatore, Gariboldi, Offidani, Coppola, Amore, & Maggini, 2001).

Couples confronted with the stress of infertility adjust in different ways to regain control of their lives (Peterson, Pirritano, Block, & Schmidt, 2011). Exploring the coping strategies of couples undergoing in vitro fertilization (IVF) has been the primary method for assessing a couple's adjustment to infertility and its treatment. Although infertility is a stressor for both genders, several studies have shown that women and men differ in their use of coping strategies. Women reportedly favor coping strategies that involve positive reframing of the situation, confrontative coping, seeking social support, accepting responsibility (criticizing or blaming oneself for the problem), and escape and avoidance (Jordan & Revenson, 1999; Peterson et al., 2011), whereas men reportedly use distancing, self-control, and plan-oriented problem-solving to cope with infertility (Peterson et al., 2011; Stanton et al., 1992). Data have

shown that strategies such as escaping/avoiding the problem and blaming oneself for infertility are related to elevated stress and lower marital satisfaction for both women and men (Jordan & Revenson, 1999; Stanton, 1991; Litt, Tennen, Affleck, & Klock, 1992; Terry & Hynes, 1998; Stanton et al., 1992). Data have also shown that poor adjustment to infertility before IVF causes increased anxiety and depression shortly after one or several unsuccessful treatments (Terry & Hynes, 1998; Litt et al., 1992; Verhaak, Smeenk, Evers, van Minnen, Kremer, & Kraaimaat, 2005; Lukse & Nicholas, 1999; Schmidt, Holstein, Christensen, & Boivin, 2005).

Studies on emotional responses and adjustment to infertility have mostly examined the infertility experience as a whole, without specifying which aspect was considered: the childlessness itself, the diagnosis revelation, or the negative outcome of medical fertility treatments. The diagnosis revelation is a defining moment for the infertile couple; it can lead to acute stress but may also come as a relief by providing an explanation for the couple's inability to conceive a child (Pook, Krause, & Drescher, 2002) and opening the door to medical treatment if they so desire. The type of diagnosis received varies considerably: some individuals receive a well-defined diagnosis, while for others the source of infertility may be unclear due to multiple biological impairments or no specific impairment (Silva & Machado, 2008; Webster, 2002). Diagnosis resolution has rarely been assessed for infertility but it has been studied for several other health issues (e.g., Stanton & Snider, 1993; Perry et al., 1993; Lawson, Bundy, Belcher, & Harvey, 2010; McCorry et al., 2012). Marvin and colleagues, who assessed mothers' resolution of loss/trauma associated with the revelation of their child's illness or disability (Marvin & Pianta, 1996; Pianta, Marvin, Britner, & Borowitz, 1996), proposed a way to conceptualize diagnosis resolution, namely, as a redefinition of reality that allows individuals (1) to move on with their lives, (2) to feel that the crisis of the diagnosis is over, and (3) to recognize the reality of the diagnosis and its consequences. Thus "diagnosis resolution" does not mean overcoming the diagnosis definitively. Rather, an individual is

considered resolved when "on the path" toward resolution, that is, able to acknowledge the pain and feelings associated with the diagnosis, but still experiencing moments of distress or crisis (Pianta & Marvin, 1993). At the couple level, the challenge of diagnosis resolution is for the partners to co-construct a shared meaning of their diagnosis experience. "Meaning making" of a life event or a couple/family experience through co-construction of a story has been examined in several studies (Fiese & Spagnola, 2005; Fiese et al., 1999). It has been associated with the way a couple or family adapts to and emotionally resolves various life situations, such as developmental stages (Wamboldt & Wolin, 1989) and chronic illness (Patterson & Garwick, 1994).

The literature has demonstrated that infertility is a challenging experience that has a profound impact on the couple's relationship. Poor overall adjustment to infertility before the first IVF treatment is associated with marital distress, elevated stress, and poorer long-term adjustment. However, the diagnosis resolution of couples before their first IVF treatment—a key aspect of adjustment to infertility—has not yet been studied. This study aims to explore the infertility-diagnosis resolution of these couples through their narratives, which are considered indicators of the ability to resolve the diagnosis and co-construct a shared meaning of the experience. Our first objective is to test the relevance of the conceptualization and method developed by Marvin and colleagues for assessing infertility diagnosis resolution. The second objective is to assess the diagnosis resolution at the individual level (*individual diagnosis resolution*), that is, each individual's capacity to acknowledge the emotional reality of the diagnosis regardless of whether or not the physical problem is clearly diagnosed, and at the couple-level (*couple's narrative co-construction*), that is, the couple's ability to construct a shared meaning of the infertility-diagnosis experience. The third objective is to assess the relationship between diagnosis resolution and marital satisfaction and infertility-related stress to test whether that relationship is the same as the association between coping with infertility

and stress and marital satisfaction shown in the literature (e.g., Peterson et al., 2011; Jordan & Revenson, 1999).

The hypotheses were that diagnosis resolution and narrative co-construction were associated with (1) high marital satisfaction and (2) low perceived infertility-related stress. We also examined the potential association between diagnosis resolution and narrative co-construction on the one hand, and diagnosis-related variables on the other (e.g., time since diagnosis, type of diagnosis) (Freeman et al., 1987; Koropatnick, Daniluk, & Pattinson, 1993; Oppenheim et al., 2007). From a clinical perspective, measuring diagnosis resolution before beginning IVF will provide insight into couples' resources and on whether psychological support should be provided to the couples during treatment.

Method

Design and Data Collection

A sample of 57 couples participated in a research session before their first in vitro fertilization (IVF) or intracytoplasmic injection (ICSI) treatment. During the session, the couples participated in a videotaped semi-structured interview about each partner's emotional reactions to the infertility diagnosis. They also filled out self-reported questionnaires about marital satisfaction, infertility-related stress, and social desirability. Coding of the interview allowed the individual diagnosis resolution and the couple's narrative co-construction to be measured. Diagnosis-related variables were collected through the medical file and through a socio-demographic questionnaire that the couple filled out before the research session. These variables were: duration of infertility, duration of medical investigation, time since diagnosis, source of infertility (male factor, female factor, mixed factor, unexplained), and type of treatment (IVF or ICSI). The time between the reported diagnosis date and the interview date was also calculated. At the time of the study, all the couples had received a diagnosis, whether medically well defined or otherwise.

Procedure

At the end of the routine counseling session prior to starting a first IVF/ICSI treatment (Emery et al., 2003), the infertility counselor gave the couples an informational letter about the study. The counselor specified that participation in the study was independent of the medical follow-up and that the medical staff, including the counselor, would not be aware of their participation. The researcher then called the couples and fully explained the study. Couples who agreed to participate received a written consent form and the socio-demographic questionnaire to return before the research session. The research session consisted of a discussion based on the socio-demographic questionnaire, followed by the semi-structured interview on the reactions to the infertility diagnosis. Then the couples filled out the self-reported questionnaires on-site or at home. Approval for this study was granted by the Ethics Committee of the Faculty of Medicine at the University of Lausanne (Protocol 37/04).

Sample

The sample of 57 couples starting their first IVF/ICSI treatment was recruited from two fertility clinics in French-speaking Switzerland. The response rate was around 35%. To be included, the couples had to be French-speaking and not already parents. The IVF/ICSI procedure is the most invasive fertility treatment, with a fair chance of success. Physically, emotionally, and financially, it is considered the most demanding medical treatment (Harata et al., 2012; Levin, Sher, & Theodos, 1997). Couples are therefore recruited prior to beginning IVF/ICSI so that their emotional resources can be assessed before such a challenging medical procedure.

Instruments

Reaction to Infertility Interview. The couples participated in the Reaction to Infertility Interview (RII), a semi-structured interview modified from the Reaction to Diagnosis Interview, which was originally developed and validated for mothers whose child had received a medical diagnosis (Marvin & Pianta, 1996; Pianta et al., 1996). Like the Reaction to Diagnosis Interview, the RII consists of five questions designed to explore emotional reactions to a medical diagnosis. Specifically, the RII investigates the partners' feelings associated with receiving a diagnosis, and changes in these feelings since diagnosis. Participants are asked about: (1) discovering that they had a fertility problem; (2) their partner's feelings about the infertility diagnosis and how have these feelings changed over time; (3) what they thought and felt when they first received the infertility diagnosis (reliving the moment); (4) whether or not they shared their difficulty having children and plans for treatment with friends and family; (5) the reasons why they must go through infertility (the "why us?" question). The Reaction to Diagnosis Interview was adapted by introducing circular questioning into questions 2 and 3. The original questions 2 ("What were your feelings when you first realized that your child had a medical problem?") and 3 ("How have these feelings changed over time?") were combined into one question adapted to a couple interview (Cf. question 2, RII: "What were your husband's/wife's feelings when you first realized that you had a problem having a baby? And how have your husband's/wife's feelings changed over time?"). In addition, another question deemed necessary was added (question 4, RII). Each interview lasted around 20-30 minutes, was videotaped, and part of the verbal interaction was transcribed for further analysis.

Coding of the Reaction to Infertility Interview. Couples' narratives in the RII were submitted to a two-level coding process: (1) coding the *diagnosis resolution*, that is, identifying the elements of diagnosis resolution and non-resolution in each person's speech using the Reaction to Diagnosis Classification System (RTDCS) (Pianta & Marvin, 1992)

and (2) coding the *narrative co-construction*, that is, assessing the couple's capacity to co-construct a narrative about their infertility diagnosis experience using the Family Narrative Consortium coding system (FNC) (Fiese et al., 1999).

Reaction to Diagnosis Classification System (RTDCS). The RTDCS is a category coding system with two main categories: resolution and lack of resolution (Pianta & Marvin, 1993). Coding was done for each individual, taking account of both verbal content and non-verbal manifestations (such as facial expressions, affect, gesture and tone of voice). Most individual narratives include elements of both resolution and non-resolution. There is no set number of elements corresponding to a particular classification. Resolved individuals may still go through difficult periods. The coder has to precisely identify all elements present in the interview and then decide whether or not the configuration of elements ultimately indicates that the individual is on the path toward resolution (Pianta & Marvin, 1993).

The elements of resolution are: capacity to describe the changes since the diagnosis; conviction to move on with life; letting go of the search for an existential cause; precise representation of the diagnosis; acknowledging benefits of having to go through the infertility experience. The elements non-resolution are: cognitive distortions about the diagnosis; actively pursuing an existential reason for infertility; sadness, anger or any other sufficiently strong affect suggesting that the person is "stuck in the past"; episodic memory and/or unavailable affect indicating that the person is "disengaged from the diagnosis experience"; incoherence and disorientation blocking the ability to share the experience with a third party.

The RTDCS's reliability was assessed by two pairs of coders (developers of the system and trained graduate students) in 91 interviews, with a 92% rate of agreement for the "resolution" and "lack of resolution" categories (Pianta et al., 1996). Levels of agreement were tested against chance at the $p < .05$ level. Validity was established by using the RTDCS in several studies involving parents whose children had various medical conditions (Barnett

et al., 2006; Dolev, Oppenheim, Koren-Karie, & Yirmiya, 2009; Lord, Ungerer, & Wastell, 2008; Milshtein, Yirmiya, Oppenheim, Koren-Karie, & Levi, 2010; Oppenheim, Koren-Karie, Dolev, & Yirmiya, 2009; Pianta et al., 1996; Sheeran, Marvin, & Pianta, 1997) and involving parents who had received an infertility diagnosis and their adopted child (results not yet published, *R. S. Marvin, personal communication, July 30, 2010*).

In this study, we added levels of diagnosis resolution to Pianta and Marvin's coding system. A low level of diagnosis resolution means limited recognition of the emotional impact of the diagnosis (factual speech including a few emotional descriptions). Average and high levels of resolution imply recognition of the emotional impact of the diagnosis, with either mixed factual and emotional speech (average) or subtle emotional description of the diagnosis experience (high).

Narrative co-construction coding system. The Family Narrative Consortium coding system (FNC) (Fiese et al., 1999) is a multidimensional coding system comprising three subscales (narrative coherence, narrative interaction and narrative beliefs) with scores ranging from 1 to 5 (1 being the lowest and 5 the highest). For each individual, the following dimensions were coded: internal consistency, organization and flexibility of the narratives, congruence of emotions with content (narrative coherence subscale); each individual's degree of confirmation/disconfirmation of their partner's opinions (narrative interaction subscale); expectations in terms of perceived social relations with friends and family (narrative beliefs subscale).

Inter-rater reliability estimates for the FNC coding system were determined by the FNC teams at each research site (based on paired ratings of 10 to 27 cases) and were in the good to excellent range (Cohen's K from .57 to .96, (Fiese et al., 1999)). The reliability of the scores was calculated through cross-site analyses and has been described as satisfying (Fiese et al., 1999). Convergent validity of the narrative scales was established in the four FNC studies

with different measures of child and family functioning, through self-reporting or directly observed behavior (Dickstein, St.Andre, Sameroff, Seifer, & Schiller, 1999; Fiese & Marjinsky, 1999; Fiese et al., 1999; Grotevant, Fravel, Gorall, & Piper, 1999; Wamboldt, 1999).

Inter-rater reliability. Coding the infertile couples' narratives with the RTDCS and FNC coding systems involved viewing the videotape twice and working with the transcripts. The first and the third authors were the coders. Training lasted around 25 hours for the RTDCS and 20 hours for the FNC coding system, and both coders obtained formal certification for the RTDCS (from R. Marvin, University of Virginia). The coders were blind to other study data. Reliability for the RTDCS and the FNC coding system was established by independently coding 17 interviews. All disagreements were resolved by consensus and agreements were entered into the dataset. For the diagnosis resolution coding, there was a coefficient of concordance of .80 (Kendall's W test). For the narrative co-construction coding, coefficients ranged from .73 to .87 for 8/10 dimensions. Reliability was low for "internal consistency" and "organization"; these dimensions were thus excluded from further statistical analyses.

Questionnaires.

***Marital satisfaction*.** Marital satisfaction was assessed using the Dyadic Adjustment Scale (DAS) (Spanier, 1976). This scale contains 32 items for evaluating the four aspects of dyadic adjustment: consensus, satisfaction, cohesion, and affective expression. The global score ranges between 0 and 151, with higher scores indicating greater marital satisfaction. Under the cut-off of 107, a couple is judged to be distressed (Crane, Allgood, Larson, & Griffin, 1990). The DAS has been validated in the French-speaking part of Switzerland (Vandeleur, Fenton, Ferrero, & Preisig, 2003).

Infertility-related stress. Infertility-related stress was assessed using the Fertility Problem Inventory (FPI) (Newton et al., 1999). This 46-item tool results in a global score of perceived infertility-related stress and five sub-scores: social, sexual and relationship stress, need for parenthood, and feelings about living a child-free life. The global score ranges from 46 to 276, with higher scores indicating higher fertility-related stress.

Social desirability. Social desirability was evaluated using the short version of the Balanced Inventory of Desirable Responding (Paulhus, 1984) to check for any biases in the questionnaires' answers. This 18-item questionnaire results in a global social desirability score ranging from 18 to 126, with higher scores indicating greater social desirability.

Statistical Analyses

Data from each individual was analyzed using hierarchical linear modeling (HLM 6) software (Raudenbush, Bryk, Cheong, & Congdon, 2004) to account for the non-independence of partner scores (individuals within couples). A two-level hierarchical model was used, with individuals at level one and couples at level two. The dependent variables were diagnosis resolution (dichotomic) and narrative co-construction (continuous), both measured at the individual level. Marital satisfaction and infertility-related stress, also measured at the individual level, were the independent variables explaining the variation in outcomes. The social desirability score was considered a confounder.

Four models were fitted: two logistic regression models using HLM to estimate the probability of resolution based on marital satisfaction and infertility-related stress, adjusted for social desirability; and two hierarchical linear regression models to explain the variation of the narrative co-construction based on marital satisfaction and infertility-related stress, adjusted for social desirability. In all cases there was a random effect only for the intercept. The equations for each model are presented in the tables (cf. Tables V and VI).

Results

Sample Characteristics

Table I shows the sample characteristics. The women were in their early thirties (M = 32.4, SD = 3.26), and the men in their mid-thirties (M = 34.1, SD = 4.60). The couples had been in the relationship for approximately 6 years (M = 6.3, SD = 3.13) and most were married. The majority of the women and men were skilled employees or middle managers.

Diagnosis-related Variables

Preliminary analyses were carried out to determine the necessity of controlling for the effects of the following diagnosis-related variables (see Table I for the results on the diagnosis-related variables): duration of infertility, which was around three years (M = 3.3, SD = 1.72); duration of medical investigation, which averaged two years (M = 2.0, SD = 1.55); time since diagnosis, which was one to two years on average (M = 1.5, SD = 1.29); the source of infertility, which was a male factor in more than half the cases (54.4%) and less often a female factor (12.3%), mixed factor (26.3%) or unexplained (7.0%); and the treatment, which was of intracytoplasmic sperm injection (ICSI) for the majority of couples (82.5%).

The preliminary regression analysis showed no effect from the above diagnosis-related variables on diagnosis resolution and narrative co-construction; the diagnosis-related variables were therefore not included in the multilevel regression analysis.

Descriptive Statistics of Narratives (Diagnosis Resolution and Narrative Co-construction), Marital Satisfaction and Infertility-related Stress

Table II shows descriptive statistics for the above variables: resolution/lack of resolution categories and levels of resolution, scores for narrative co-construction, and global scores for marital satisfaction and infertility-related stress.

Most of the women (73.7%) and more than half the men (61.4%) were resolved with respect to the infertility diagnosis. Table III gives examples of resolution. However, very few (7.1% of women and 5.3% of men) had acknowledged the emotions related to the diagnosis to an advanced degree. Thus, couples generally had a low or average level of diagnosis resolution, meaning that they were able to recognize its impact but with limited emotional description (cf. Table III, example of low-level diagnosis resolution).

For narrative co-construction, the average score was above 3 (scores range from 1 to 5, 1 being the lowest and 5 the highest). These results are similar to reference samples or higher for certain aspects (Fiese et al., 1999) (cf. Table IV, example of high coordination, narrative interaction subscale).

The global marital satisfaction score for women and men was higher than the reference norms (Crane et al., 1990) ($t(246) = 4.16$, $p<.001$), with only three women and six men scoring below the cut-off of 107. The global infertility-related stress scores for our sample were comparable to the reference norms (Newton et al., 1999) ($t(580) = 0.49$, ns for women and $t(580) = 0.19$, ns for men). For both men and women, "need for parenthood" was the highest sub-score (female: $M = 40.83$, $SD = 7.95$; male: $M = 37.49$, $SD = 7.57$; scores range from 10 to 60). "Need for parenthood" means a close identification with the parental role, with parenthood being perceived as a primary goal in the couple's life (Newton et al., 1999). These scores were higher for women than for men ($F(1) = 5.08$, $p = .026$), whereas all other sub-scores were similar between genders.

Diagnosis Resolution and Narrative Co-construction: Associations with Marital Satisfaction and Infertility-related Stress

Table V shows the results for the logistic regression using HLM, with marital satisfaction and infertility-related stress as independent variables and diagnosis resolution as the dependent variable, controlled for social desirability.

Table VI presents the results for the hierarchical linear regression with marital satisfaction and infertility-related stress as independent variables and narrative co-construction as the dependent variable, controlled for social desirability.

Results showed that marital satisfaction was associated with diagnosis resolution (OR = 1.07, p = .002) and narrative co-construction (β = 0.01, p = 0062). The higher the marital satisfaction, the more likely the individuals were to be classified as resolved and to obtain a higher narrative co-construction score. The level of infertility-related stress was not associated with diagnosis resolution (OR = 0.98, p = .119) or narrative co-construction (β = -0.01, p = .829).

Discussion

Our data from coding the interviews showed that most couples starting IVF/ICSI treatment were on the path toward resolution of their infertility diagnosis and that they managed to articulate their points of view and make sense of their shared infertility experience. However, their level of diagnosis resolution was low to average, suggesting that at an early stage of treatment resolved individuals still tend to repress their negative emotions related to the diagnosis or events surrounding it. This is probably necessary in order to be optimistic enough about outcome of the IVF procedure (Johnston, Shaw, & Bird, 1987; Verhaak et al., 2005).

The results supported our first hypothesis, that high marital satisfaction is related to diagnosis resolution and narrative co-construction. This finding underscores the association between a satisfying marriage and the partners' capacity to deal with stressful life events, such as an infertility diagnosis, and to give meaning to these events in the context of the couple's relationship. Our results are similar to those observed in previous studies, where high marital satisfaction is related to emotional adjustment to the infertility diagnosis (Schmidt et al., 2005; Peterson, Newton, & Rosen, 2003) and to the coherence and emotional

quality of a couple's narrative indicating meaning making of a critical life event (Brunell, Pilkington, & Webster, 2007; Buehlman, Gottman, & Katz, 1992; Daigen & Holmes, 2000; Oppenheim, Wamboldt, Gavin, Renouf, & Emde, 1996; Patterson & Garwick, 1994; Veroff, Sutherland, Chadiha, & Ortega, 1993).

The results did not support our second hypothesis, that infertility-related stress is related to non-resolution and lower narrative co-construction. The fact that the couple faces two different types of stressors—the chronic stressor of the threat of definitive childlessness and the acute stressor from the medical procedure itself—could explain why some couples continue to experience stress despite having overcome the stress of the diagnosis (Verhaak et al., 2001). The couples may therefore be resolved with regard to the infertility diagnosis, but be sensitive to the stress of beginning a first IVF treatment.

The Reaction to Infertility Interview used in this study was an adaptation of an interview originally designed to explore mothers' reactions in relation to their child's medical diagnosis (Marvin & Pianta, 1996; Pianta et al., 1996). The original interview was used in several studies but always with the goal of exploring the parent's resolution of their child's diagnosis. It is therefore difficult to compare our results to the results of those studies. Resolving a child's diagnosis of an autism spectrum disorder (Milhstein et al., 2010; Oppenheim et al., 2009), epilepsy and cerebral palsy (Pianta et al., 1996) or a congenital anomaly (e.g. Barnett et al., 2006; Lord et al., 2008) is not comparable to resolving an infertility diagnosis, although all are critical life events. The first group involves adjusting to a child's severe and lifelong developmental problems, whereas resolving an infertility diagnosis involves adjusting to a "non-event" (Koropatnick et al., 1993), given the potential of never becoming a parent. Each type of diagnosis may thus lead to specific emotions and adjustment challenges (Brown & Harris, 1989). That said, the percentage of resolved individuals in our study was similar to (Lord et al., 2008) or higher than (Barnett et al., 2006

Milshtein et al., 2010; Oppenheim et al., 2009) those found in the literature on parents' resolution of their child's diagnosis. This could be explained by the fact that couples beginning IVF still have a chance to become parents. More studies are needed to establish the similarities and differences between parents' resolution of a child's diagnosis and adults' resolution of their own medical condition. In addition, the fact that the Reaction to Infertility Interview is an interview for couples also has certain consequences. An advantage of an interview for couples is that it allows study of how the couple as a unit adapts to a life event that affects both of them (Fiese & Spagnola, 2005; Fiese et al., 1999). However, the presence of the other person has also been described as having the potential to alter or shade responses to sensitive questions (Sudman & Bradburn 1974; Anderson & Silver 1987; Aquilino, 1993; Coenen-Huther, 1994). It is therefore possible that the individuals minimized the responses that could displease their partners, such as disagreements over medical treatment or the lack of support within the couple in dealing with being childless.

The marital satisfaction results for the couples in the sample showed that they had satisfying relationships, as is generally the case for IVF couples according to infertility literature (Berg & Wilson, 1991; Cook, Parsons, Mason, & Golombok, 1989; Sabatelli, Meth, & Gavazzi, 1988), and a level of infertility-related stress similar to other samples of IVF couples (Newton et al., 1999). Diagnosis-related variables were not associated with either diagnosis resolution or narrative co-construction. In particular, time does not appear to reduce the emotional impact of the diagnosis. These results are similar to those of other studies that used the RDI, which found no association between the parents' resolution and the time since diagnosis (Milshtein et al., 2010; Oppenheim et al., 2009; Pianta et al., 1996). They are also similar to the results of studies that analyzed coping with different medical diagnoses (Herth, 1989; Kupst & Schulman, 1988; Freeman et al., 1987).

Among the limits of this study is a probable bias due to couples' self-selection. As in other studies involving in-depth interviews, the couples who agree to participate are generally those who are willing to reflect on themselves and share their emotional experience. Thus, the level of non-resolution is probably higher among all couples consulting fertility clinics. Another limit is that the interview was developed for a different context and our results could not be compared to other studies using the Reaction to Diagnosis Interview on adults diagnosed with a medical condition or even infertility. The results must therefore be repeated to be validated because of the lack of comparison. Finally, patients beginning their first IVF treatment tend to overestimate their chances of success (Johnston et al., 1987; Verhaak et al., 2005) and minimize the negative effects of the infertility diagnosis. It would be interesting to assess the level of stress when the diagnosis is received and to re-evaluate it at different treatment stages.

The data collected in this interview provides information that could prove useful for both research and clinical work. The RDI appears to be a relevant tool for assessing resolution in adults of a medical diagnosis. Moreover, studies analyzing IVF couples' interviews, instead of or in addition to self-reported questionnaires (Evers et al., 2001; Krouse et al., 2009; Viane et al., 2003), make it possible not only to explore the individual experience of infertility but also the couple's shared reality of infertility (Chachamovich et al., 2010; Greil, Slauson-Blevins, & McQuillan, 2010). The results of this study must be repeated before clinical conclusions can be drawn, but the results do provide some general indications. First of all, the results are globally reassuring in that most couples in our sample were on the path toward resolution at the start of IVF. However, many were still repressing the emotional repercussions of the diagnosis and some had not even acknowledged the emotional reality of the diagnosis. Routine counseling could help detect these couples and offer psychological support, as treatment failures in particular may complicate the diagnosis acceptance process.

Health professionals could look out for potential indicators of non-resolution, for example, avoiding discussions about the diagnosis experience, repressed emotions or, on the contrary, strong negative emotions related to the diagnosis experience. Infertility is a challenging experience that affects both members of the couple individually, but one that they must face together. Difficulty coping with infertility as a couple, which may prevent them from constructing a shared meaning of the experience, is a key indicator of non-recognition of the reality of the diagnosis emphasized in this study. Longitudinal research is needed to determine if the quality of the marriage before undergoing IVF is predictor of the ability to accept the infertility diagnosis in the long term.

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Table I

Descriptive statistics for the sample characteristics and diagnosis-related variables (N = 57 couples)

	Female		*Male*	
Age *(M, SD)*	32.40	3.26	34.10	4.60
Socioeconomic status *(N, %)*				
Unskilled employees	4	7.0%	1	1.8%
Skilled employees	36	63.2%	28	49.1%
Administrative personnel, small business owners	15	26.3%	22	38.6%
Business managers	2	3.5%	6	10.5%
Years of relationship *(M, SD)*	6.30	3.13		
Married *(N, %)*	43	75.44%		
Diagnosis-related variables				
Duration of infertility work-up *(M, SD)*	3.30	1.72		
Duration of medical investigation *(M, SD)*	2.00	1.55		
Time since diagnosis *(M, SD)*	1.50	1.29		
Source of infertility *(N, %)*				
Male factor	31	54.4%		
Female factor	7	12.3%		
Mixed factor	15	26.3%		
Unexplained	4	7.0%		
ICSI *(N, %)*	47	82.5%		

Table II

Descriptive statistics for the narratives (diagnosis resolution and narrative co-construction), marital satisfaction and infertility-related stress (N = 57 couples)

	Female		*Male*	
Narratives				
Diagnosis resolution *(n, %)*				
Resolved	42	73.7%	35	61.4%
Low acceptance	21	36.8%	15	26.4%
Average acceptance	17	29.8%	17	29.8%
High acceptance	4	7.2%	3	5.4%
Unresolved	15	26.3%	22	38.7%
Narrative co-construction* (*M, SD)*				
Narrative coherence				
Internal consistency	4.19	0.52	4.11	0.70
Organization	3.60	0.98	3.44	0.93
Flexibility	3.74	0.74	3.70	0.82
Congruence	3.79	0.75	3.81	0.83
Narrative interaction				
Confirmation/Disconfirmation	4.32	0.74	4.33	0.66
Narrative beliefs				
Relationship expectation	3.33	1.15	3.11	1.16
Mean score†	3.79	0.52	3.74	0.58
Global marital satisfaction (*M, SD)*	124.00	11.68	120.20	11.05
Global infertility-related stress (*M, SD)*	130.46	25.36	121.96	21.47

*Each score ranges from 1 (lowest) to 5 (highest)

†The narrative co-construction score is the mean of the four subscales that were deemed reliable: flexibility, congruence, confirmation/disconfirmation and relationship expectation.

Table III

Examples of resolution

Resolution
High level of resolution of the diagnosis
Husband A: "*At first [when I was told about the diagnosis], it was very hard. I was withdrawn, surprised, I had to absorb the shock… Now I have accepted the situation … I had to find my way ... and I think I will get over it more easily than my wife if the treatment fails.*" (Conviction of moving on in life)
Wife B: "At *first, I was wondering what I did wrong to deserve this [diagnosis] … I thought maybe I deserved it because I was very rebellious as a teenager … I didn't get into serious trouble, just conflicts with my mother … but it came to mind when I was looking for a reason for the diagnosis … Now no, no, I have accepted it, and the fact of accepting it lets you overcome it."* (Letting go of the search for an existential cause)
Low level of resolution of the diagnosis
Husband C: (asked about his emotional reaction when he learned of the diagnosis of male infertility and the need for ICSI) "*I would say … how should I put it … It was very hard to absorb … too much at once, psychologically or technically or even financially … it's a lot… it's not difficult to handle … but it's quite strange."* (In a neutral tone of voice)
Wife D: "*In our situation, doctors are unable to find what the problem is, it is awful … I think it is my fault as I did some things in the past that prevented me from becoming pregnant … Every time I think about it or I see the doctor, I cry and I rethink the past*" (Pursuing an existential reason for infertility and strong negative affects suggesting that the person is "stuck in the past")

Table IV

Example of narrative co-construction

High narrative coordination (narrative interaction subscale)
Wife E [looks at the interviewer]: "*When we got the results, the very first time, it was like a slap in the face, I would say.*" [looks at her husband]: Husband E [turns toward his wife and looks at her then at the interviewer]: "*Yes, I think that … many things came to mind … We told ourselves that now we'd have to fight.*" Wife E [turns toward her husband and looks at him then at the interviewer]: "*Yes, that's how I felt, it's a slap in the face, but we told ourselves we had to move forward, we are lucky to start treatment.*" In this example, each individual actively acknowledged the other's comment and endorsed the other's right to feel. The verbal response to the other's comments was relevant and more than a low-level speech encourager ("uh huh"). The nonverbal behavior was appropriate (turned towards partner, directed remarks to the other, made eye contact). This brief conversation illustrates how both partners contribute to the give-and-take of conversation (speak when reply is appropriate, alternate listening/speaking, comment on what was just said).

Table V

Logistic regression using HLM: Marital satisfaction and infertility-related stress as predictors of diagnosis resolution (N = 57 couples)

	Fixed effect			Random effects
	OR*	CI (95%)†	*p*	
Intercept	0.01	0.01 - 0.09	.004	
Marital satisfaction	1.07	1.03 - 1.12	.002	
Social desirability	0.17	0.01 - 2.69	.207	
Intraclass correlation (rho)		0.02 - 0.79		0.20
Intercept	0.98	0.13 - 7.42	.061	
Infertility-related stress	0.99	0.96 - 1.00	.119	
Social desirability	0.76	0.07 - 8.68	.823	
Intraclass correlation (rho)		0.02 - 0.78		0.19

*OR = odds ratios

†CI = confidence intervals

Note. Equations for logistic regression models 1 and 2:

$$logit(z_{ij}) = \quad (\gamma_0 + u_i) + \gamma_1 Marital\ satisfaction_{ij} + \gamma_2 Social\ desirability_{ij}$$

$$logit(z_{ij}) = \quad (\alpha_0 + u_i) + \alpha_1 Infertility\ stress_{ij} + \alpha_2 Social\ desirability_{ij}$$

Where z_{ij} is the indicator of diagnosis resolution for the j-th individual of the i-th couple and u_i is the random intercept, a factor at the couple level. For the logistic models, the intraclass correlation coefficient (rho) is given.

Table VI

Hierarchical linear regression: Marital satisfaction and infertility-related stress as predictors of narrative co-construction (N = 57 couples)

	Fixed effect			Random effects
	Coefficient	CI (95%)*	*p*	Variance
Intercept	2.31	1.22 - 3.40	<.001	
Marital satisfaction	0.01	0.01 - 0.02	.006	
Social desirability	-0.34	-0.81 - 0.14	.163	
Couple (u_i)				0.17
Individual (r_{ij})				0.10
Intercept	3.86	3.29 - 4.42	<.001	
Infertility-related stress	-0.01	-0.01 - 0.03	.829	
Social desirability	-0.06	-0.50 - 0.39	.805	
Couple (u_i)				0.19
Individual (r_{ij})				0.10

*CI = confidence intervals

Note. Equations for hierarchical linear regression models 3 and 4:

$$y_{ij} = (\beta_0 + u_i) + \beta_1 Marital\ satisfaction_{ij} + \beta_2 Social\ desirability_{ij} + r_{ij}$$

$$y_{ij} = (\delta_0 + u_i) + \delta_1 Infertility\ stress_{ij} + \delta_2 Social\ desirability_{ij} + r_{ij}$$

Where y_{ij} is the mean score of narrative co-construction for the j-th individual of the i-th couple and u_i is the random intercept, a factor at the couple level. For the linear models, both variance components are given: the estimated variance at the couple level (variance of u_i) and the residual variance at the individual level (variance of r_{ij}).

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