

JOËLLE DARWICHE *University of Lausanne*

NICOLAS FAVEZ *University of Geneva**

ALESSANDRA SIMONELLI *University of Padua***

JEAN-PHILIPPE ANTONIETTI *University of Lausanne****

FRANCE FRASCAROLO *University of Lausanne*****

Prenatal Coparenting Alliance and Marital Satisfaction When Pregnancy Occurs After Assisted Reproductive Technologies or Spontaneously

Although the coparenting relationship has been described as key in family dynamics, very few studies have assessed its development during pregnancy after assisted reproductive technology (ART). In this study, the authors compared the prenatal coparenting relationship in 33

couples who conceived through ART with that of 49 couples who conceived spontaneously, and assessed the association between marital satisfaction and the prenatal coparenting alliance. The first-time parents were met during the second trimester of pregnancy. A validated observational task (the Prenatal Lausanne Trilogue Play) was used to assess their prenatal coparenting relationship, and the Dyadic Adjustment Scale was used to evaluate marital satisfaction. No differences were observed in the two groups' global prenatal coparenting scores, but the ART couples showed less coparental playfulness than those who conceived spontaneously. Marital satisfaction was higher in women who conceived through ART. These data suggest that infertility and its treatment affect the prenatal coparenting and marital relationships in different ways.

Institute of Psychology, Faculty of Social and Political Sciences, University of Lausanne, Geopolis, UNIL-Moulines, 1015 Lausanne, Switzerland (joelle.darwiche@unil.ch).

*Faculty of Psychology and Educational Sciences, University of Geneva, Boulevard du Pont-d'Arve 40, 1211 Genève 4 and Center for Family Studies, Department of Psychiatry, University of Lausanne, Avenue de Morges 10, 1004 Lausanne, Switzerland.

**Department of Developmental and Social Psychology, University of Padua, Via Venezia 8, 35131 Padua, Italy.

***Institute of Psychology, Faculty of Social and Political Sciences, University of Lausanne, Geopolis, UNIL-Moulines, CH-1015 Lausanne, Switzerland.

****Center for Family Studies, Department of Psychiatry, University of Lausanne, Avenue de Morges 10, 1004 Lausanne, Switzerland.

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The birth of a first child is one of the most challenging family transitions (Holmes, Sasaki, & Hazen, 2013). It is an even greater adjustment for infertile couples who conceive through assisted reproductive technology (ART). In addition to the transition from a dyadic unit to a family unit that all couples undergo, infertile

couples must also transition from infertility to medically assisted fertility (Hammarberg, Fisher, & Wynter, 2008). Several reviews have shown that the experience of being infertile and undergoing infertility treatment can alter many aspects of the individual's and the couple's functioning (e.g., Chachamovich et al., 2010; Greil, Slauson-Blevins, & McQuillan, 2010). Particularly among women, these alterations include high distress, depression and anxiety symptoms during ART treatments, stress related to their sexual relationship, and isolation from family and friends who have children (Domar, Broome, Zuttermeister, Seibel, & Friedman, 1992; Newton, Sherrard, & Glavac, 1999). By researching couples who conceived through ART, we sought to understand whether the experience of infertility and its treatment affects the pregnancy experience. More generally, we aimed to add to the knowledge about the risk and protective factors at work in the transition to parenthood.

PREGNANCY AFTER ART

Experiences specific to pregnancy after ART have been described in a number of studies. Infertile couples are more often confronted with adverse perinatal outcomes and obstetrical complications (Pinborg et al., 2013). These risks have been attributed to infertility itself and to various aspects of the medical procedure. During pregnancy, couples who conceived via ART have more pregnancy-related anxieties than couples who conceived spontaneously (Gameiro, Moura-Ramos, Canavaro, & Soares, 2010; Hjelmstedt, Widström, Wramsby, & Collins, 2003; McMahan, Ungerer, Beaurepaire, Tennant, & Saunders, 1997). However, they are not different from control couples in other aspects, such as prenatal depression or attachment to the fetus (e.g., Hjelmstedt, Widström, & Collins, 2006; Hjelmstedt, Widström, Wramsby, & Collins, 2004; McMahan et al., 1997; Ulrich, Gagel, Hemmerling, Pastor, & Kentenich, 2004).

COPARENTING RELATIONSHIP

For all couples, the transition to parenthood requires the development of a coparenting relationship. The *coparenting relationship* is defined as the way in which partners support or undermine each other in their parental roles (McHale,

2007). It is thought to exist at a different level of the family system from the marital relationship: at a triadic or whole-family (i.e., including a child) level of analysis rather than at a dyadic level of analysis (e.g., Hayden et al., 1998; Schoppe-Sullivan, Mangelsdorf, Frosch, & McHale, 2004).

The coparenting relationship has been studied most often in parents with children of various ages and has been described as a key aspect of family functioning (McHale & Lindahl, 2011). The quality of the coparenting relationship is associated with children's socioemotional and cognitive outcomes, in particular their self-regulation, quality of peer interaction, ability to discuss emotional topics, and quality of attachment (e.g., Belsky, Putnam, & Crnic, 1996; Gable, Crnic, & Belsky, 1994; McHale & Sullivan, 2008).

The development of the coparenting relationship starts during pregnancy, if not earlier. At this stage, parents tend to coordinate their expectations for their partner's parenting behavior "in learning to cooperatively parent a child" (Van Egeren, 2004, p. 457). Von Klitzing, Simoni, and Bürgin (1999) examined how, during a couple interview in the last trimester of pregnancy, each parent was able to anticipate themselves as an important relational person for the infant while also including the other partner in their representations of the future family (*triadic capacity*). The results indicated that this triadic capacity was predictive of the quality of family interactions when the child was 4 months old. In addition, McHale et al. (2004; McHale & Rotman, 2007) demonstrated the link between positive prenatal expectations about coparenting on the one hand, and coparental cohesion and solidarity on the other (e.g., cooperation concerning division of child care labor, ability to recall positive coparenting and family moments), at 3 and 12 months after birth.

Studies of the prenatal coparenting relationship have focused on parents' representations rather than their interactions. However, as McHale and Rotman (2007, p. 79) suggested, it is necessary to give "more intensive empirical and clinical attention to both representational and observational indicators of early coparental solidarity and support" to understand the family dynamics at work as the child grows up. The Prenatal Lausanne Trilogue Play (Prenatal LTP; Carneiro, Corboz-Warnery, & Fivaz-Depeursinge, 2006) was developed to

observe the developing coparental subsystem at the prenatal stage. In this child-oriented task, future parents act out the first time they meet their infant, using a doll. By observing their coparenting interactions, their *prenatal coparenting alliance* (i.e., the parents' capacity to work together as a team in relation to their infant-to-be) can be reliably assessed (Carneiro et al., 2006; Favez, Frascarolo, & Fivaz-Depeursinge, 2006).

Several studies with different populations have shown that the prenatal coparenting alliance was predictive of postnatal mother–father–infant interactions (e.g., Altenburger, Schoppe-Sullivan, Lang, Bower, & Kamp Dush, 2014; Favez, Frascarolo, & Fivaz-Depeursinge, 2006; Schoppe-Sullivan, Kamp Dush, & Bower, 2013; Simonelli, Bighin, & Palo, 2012). The quality of the prenatal coparenting alliance, in particular coparental cooperation and warmth and each parent's intuitive parenting behaviors, has been shown to predict the quality of the triadic family interactions at 3 months (Carneiro et al., 2006; Favez, Frascarolo, Lavanchy Scaiola, & Corboz-Warnery, 2013), 9 months, and 18 months after birth (Favez, Frascarolo, et al., 2006). Other data show that a high prenatal coparenting alliance predicted high quality family interactions after birth, when the child was 18 months old, and when the child was of preschool age (Simonelli et al., 2012). Other results showed an association between a high prenatal coparenting alliance and the parents' perception of a positive coparenting relationship at 3 months postpartum (Schoppe-Sullivan et al., 2013). A significant continuity was also shown between the future parents' prenatal coparenting behavior and their observed coparenting behavior at 9 months postpartum. Higher quality prenatal coparenting behavior was linked to more supportive and less undermining behavior postpartum, even after controlling for prenatal observed couple behavior and reported couple functioning (Altenburger et al., 2014).

However, to our knowledge, only two studies have investigated future parents' prenatal coparenting relationship after ART: one at the representational level and one at the interactive level. The representational study showed no differences between ART and control groups in terms of partners' prenatal expectations for their and their spouse's relationship with the child, or in terms of the link to later parenting stress (Flykt et al., 2009). The interactive study showed that

the quality of the prenatal coparenting alliance in ART couples was not associated with the quality of the family interactions at 9 months (Cairo et al., 2012). One possible reason raised for the lack of continuity between pre- and postnatal data in couples who conceived through ART was that the transition to parenthood was more challenging for these couples, which in turn created greater variability in their relationship dynamic (Cairo et al., 2012).

MARITAL RELATIONSHIP

Prenatal marital satisfaction has been widely studied in the general population and in couples who conceived through ART. Studies using community samples have shown that marital satisfaction tends to decrease over the transition to parenthood (e.g., Mitnick, Heyman, & Smith-Slep, 2009). This decline appears to be moderate for the majority of couples, with smaller subgroups experiencing larger declines (Don & Mickelson, 2014). Prenatal marital satisfaction is another important predictor of postnatal family functioning (e.g., Cowan & Cowan, 1992; Shapiro, Gottman, & Carrère, 2000). Lack of partner support and marital conflict during pregnancy have predicted higher maternal emotional distress after birth (Stapleton et al., 2012), maternal postpartum depressive and anxiety symptoms (Whisman, Davila, & Goodman, 2011), and lower father–infant attachment (Yu, Hung, Chan, Yeh, & Lai, 2012).

Hammarberg et al. (2008) observed no differences in marital satisfaction during pregnancy between couples who conceived via ART and couples who conceived spontaneously. In other studies, marital satisfaction was even higher in couples who conceived via ART (e.g., Fisher, Hammarberg, & Baker, 2007; Sydsjö, Wadsby, Kjellberg, & Sydsjö, 2002). In addition, the habitual decline in marital satisfaction over the transition to parenthood was not present in a group of couples who conceived via ART (Sydsjö et al., 2002). These results have been interpreted as potentially being attributable to the infertility experience, which, while being stressful and weakening certain individual aspects, can also activate resources, strengthen the couple relationship, and lead to improved functioning of the marital relationship (Peterson, Newton, & Rosen, 2003; Schmidt, Holstein, Christensen, & Boivin, 2005). Moreover, couples who undergo ART have generally

functioned as a marital unit longer than couples who conceive spontaneously, which could explain why couples undergoing ART have high levels of marital satisfaction during the pregnancy (Hjelmstedt et al., 2004).

INTERPLAY BETWEEN PRENATAL COPARENTING AND MARITAL RELATIONSHIPS

Marital satisfaction is the variable that has most often been studied in relation to coparenting in the general population (e.g., Schoppe-Sullivan et al., 2004). The available results show a spillover effect from marital satisfaction onto the coparenting relationship. A positive marital relationship affects the couple's ability to emotionally support each other in their coparenting relationship (McHale & Lindahl, 2011).

However, data also show that coparenting and marital satisfaction do not completely overlap and that they contribute to different aspects of child development (Teubert & Pinguart, 2010). Some authors hypothesize that during the transition to parenthood, one of the relationships is maintained "at the expense of the other" (Van Egeren, 2004, p. 473). Longitudinal data are still needed to examine the developmental trajectory of each variable and explore both the continuities and discontinuities between them (Margolin, Gordis, & John, 2001).

STUDY OBJECTIVES

Our objectives were twofold: (a) to examine the prenatal coparenting alliance in a sample of couples who conceived through ART and compare it with that of couples who conceived spontaneously, and (b) to examine the association between marital satisfaction and the prenatal coparenting alliance in both the ART and spontaneous-pregnancy groups. The study is original, given that the prenatal coparenting relationship has only rarely been assessed in studies on the ART population.

Our hypotheses were as follows. First, we predicted that the prenatal coparenting alliance would be higher in couples who conceived via ART than in couples who conceived spontaneously, because undergoing ART symbolically communicates a strong commitment to the future of the relationship and to the other partner as a future coparent. These couples have likely been ready for parenthood longer and could more readily envision themselves as parents

(Flykt et al., 2009). Second, we hypothesized that high marital satisfaction would be linked to a higher prenatal coparenting alliance, given that marital satisfaction can have a spillover effect onto the coparenting relationship (McHale & Lindahl, 2011).

The fact that the infertility experience weakens the development of a coparenting relationship—or, on the contrary, reinforces the tie and the solidarity of the partners in their coparenting relationship—could lead mental health professionals to alter their understanding of the steps these couples need to go through and the type of treatment they offer such couples.

METHOD

Participants

The couples were French-speaking and living in Switzerland. All the couples included were first-time parents, and all their pregnancies were medically uncomplicated. No parent reported having a diagnosed psychiatric disorder. The sociodemographic and medical data for the two groups of couples are presented in Table 1.

ART Group: Couples Who Conceived Through In Vitro Fertilization or Intracytoplasmic Sperm Injection. Thirty-three couples volunteered to participate in a study on the transition to parenthood after medically assisted reproduction (see Cairo et al., 2012, and Darwiche et al., 2013, for more details). They were recruited at two fertility units before starting their medical treatment and were informed that their participation in the study would be independent of the medical follow-up. For reasons related to study length, only couples whose treatment was successful within a year of their first in vitro fertilization/intracytoplasmic sperm injection treatment were met with during pregnancy.

Spontaneous-Conception Group. Forty-nine couples volunteered to participate in a study on family interactions and child development (see Favez, Frascarolo, et al., 2006, for more details). They were recruited during pregnancy through advertisements in the press and in a maternity ward.

The two groups were similar in terms of socioeconomic status, the majority in both groups being middle or upper middle class (see

Table 1. Sociodemographic and Medical Data for the Two Groups

Type of Data	ART Group (<i>n</i> = 33)	Spontaneous-Conception Group (<i>n</i> = 49)	Statistics
Sociodemographic			
Age of women (<i>M/SD</i>) ^a	33.6/3.0	30.3/3.3	3.11**
Age of men (<i>M/SD</i>) ^a	34.4/4.3	32.6/5.3	1.57, <i>ns</i>
Married (%/ <i>n</i>) ^b	81.8/27	85.7/42	0.22, <i>ns</i>
Socioeconomic class (%/ <i>n</i>) ^b			
Upper middle	36.4/12	49.0/24	5.35, <i>ns</i>
Middle	48.5/16	49.0/24	
Lower middle and lower	15.1/5	2.0/1	
Years living together (<i>M/SD</i>) ^a	5.9/3.1	3.8/2.9	3.11**
Months of desiring a child (<i>M/SD</i>) ^a	53.1/20.1	22.7/17.0	7.29**
Medical			
Years infertility work-up ^c (<i>M/SD</i>)	2.0/1.6		
Source of infertility (%/ <i>n</i>)			
Male	51.5/17		
Female	9.1/3		
Mixed	30.3/10		
Unexplained	9.1/3		
ICSI (%/ <i>n</i>)	81.8/27		

Note. Socioeconomic status was calculated using Hollingshead's (1975) Index of Social Status. ART = assisted reproductive technology; ICSI = intracytoplasmic sperm injection.

^a*t* test. ^b χ^2 . ^cConsisted of a routine fertility workup (e.g., ultrasound exams, hormone tests, hysterosalpinogram) followed in some cases by hormonal stimulation or artificial inseminations.

***p* < .01.

Table 1). However, women in the ART group were older, and the ART couples had lived together longer and had desired a child for longer than the couples in the spontaneous-conception group.

Procedure

The medical team at the hospital gave their consent for the study. The study protocol for both the ART group and the spontaneous-conception group received approval from the Ethical Committee of the Faculty of Biology and Medicine of the hospital.

The couples went to the hospital laboratory to participate in a research session between the 25th and 28th weeks of pregnancy, after the routine morphological ultrasound. They were met by a trained researcher with a clinical background who talked with them about how the pregnancy was progressing and about their representations of the child-to-be. The couples signed forms consenting to participating in the research and being videotaped for a role play. The couples then completed the role play.

Afterward, they were split up to fill out the paper-and-pencil questionnaires individually in the laboratory. The couples were given remuneration after completing the research procedure.

Measures

Prenatal LTP. In the Prenatal LTP, the parents-to-be are asked to imagine and role play their first encounter with their newborn, which is simulated by a doll. The doll is made of cloth and is the weight and shape of an infant, but it does not have particular facial characteristics. The goal is to measure the capacity of the parents-to-be to work together as a team in relation to their infant-to-be, which is defined as their prenatal coparenting alliance (Fivaz, Frascarolo, & Corboz-Warnery, 2010). Rather than asking the parents whether they feel they cooperate well or are affectionate toward each other and the "infant," researchers can observe these behaviors (Fivaz-Depeursinge et al., 2010). This method also allows the future parents' intuitive parenting behaviors—the

specific behaviors that people use spontaneously when they are with infants—to be observed (Fivaz-Depeursinge & Philipp, 2014; Papoušek & Papoušek, 1987). The instructions are the following:

Imagine that the baby has been delivered and everything went fine. This is the first time the three of you have been alone together. Act out this amazing moment for us. We'd like you to follow these four stages: First, each of you plays with the baby individually, then both of you play with the baby together, and finally, you let the baby sleep and discuss the experience amongst yourselves. You can hold the baby in your arms if you like. The role-play should last four or five minutes and you can signal me when you have finished.

The researcher helps the couples by role-playing the nurse bringing the infant to them. All the play is recorded by three cameras: one wide-angle camera and one camera for each parent's face.

Coding. The prenatal alliance was assessed using the full version of the Prenatal LTP (with five Likert scales, ranging from 1 = *inappropriate* to 5 = *appropriate* [Cairo et al., 2012] instead of three Likert scales [Carneiro et al., 2006]). The scores of the five scales were summed to obtain a global score that could range from 5 to 25. Higher scores indicate a stronger alliance. The five scales were the following (see Carneiro et al., 2006, for a complete description of the scales): (a) coparental playfulness toward the task (the couple's capacity to create a playful space and to co-construct the game), (b) structure of the play (the couple's capacity to structure the play in four parts according to the instructions), (c) intuitive parenting behaviors (use of intuitive parenting behaviors, e.g., baby talk and holding), (d) couple's cooperation (degree of active cooperation reached by the couple during the play), and (e) family warmth (positive bond and mood between parents during play that includes the infant). The internal consistency of the Prenatal LTP coding was high ($\alpha = .80$ for the ART group, $\alpha = .78$ for the spontaneous-conception group).

Reliability. Reliability of the coding was tested using independent pairs of coders. One coder was an experienced researcher and clinician who has done several years of research and clinical work in family interactions; the other was a

trained research assistant and PhD student in psychology. The experienced researcher was one of the developers of the Prenatal LTP situation and of the associated coding procedure and had several years of coding experience. The research assistant had received 16 hours of training and coded ten Prenatal LTP situations before being considered fully trained.

The experienced researcher coded all the Prenatal LTP sessions, and the second coder coded 25%. The two coders were blind to all other measures. Interrater reliability for Prenatal LTP was assessed using two-way random intraclass correlation coefficients. The coefficient was .82 for the ART group and .77 for the spontaneous-conception group, with all correlations being significant at at least $p < .05$.

Marital Satisfaction. The Dyadic Adjustment Scale (Spanier, 1976) was used as a continuous measure of couple satisfaction. It is a 32-item scale assessing four aspects of dyadic adjustment: (a) consensus, (b) satisfaction, (c) cohesion, and (d) affective expression. The global score can range from 0 to 151, with higher scores indicating greater marital satisfaction. Couples who fall below the cutoff score of 107 are judged to be distressed (Crane, Allgood, Larson, & Griffin, 1990). The construct validity of the French version of this widely used instrument was established with a sample of 1,131 parents (Vandeleur, Fenton, Ferrero, & Preisig, 2003). In our sample, the internal consistency of the questionnaire was good for both groups: $\alpha = .77$ for the women and $\alpha = .80$ for the men in the ART group, and $\alpha = .77$ for the women and $\alpha = .74$ for the men in the spontaneous-conception group.

Statistics

We performed the statistical analyses using SPSS software. Hierarchical multiple regressions were used first to examine the effect of mode of conception (ART or spontaneous conception) on the coparenting alliance and then to examine the effect of marital satisfaction on the coparenting alliance. In Step 1, we controlled for the effect on the prenatal coparenting alliance of socioeconomic status, age, years of living together, and months of desiring a child. In Step 2, we entered the mode of conception (ART or spontaneous conception). In Step 3, we entered the mothers' and fathers' prenatal marital satisfaction scores. The variance

Table 2. Prenatal Coparenting Alliance Scores and Marital Satisfaction in the ART and Spontaneous-Conception Groups

Variable	ART Group (<i>n</i> = 33)		Spontaneous-Conception Group (<i>n</i> = 49)		<i>t</i> (76) ^a
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Prenatal alliance					
Coparenting playfulness	3.29	0.57	3.84	0.96	2.65**
Structure of play	3.45	1.00	3.61	1.29	0.53
Intuitive behavior	3.97	0.98	3.71	1.22	-0.92
Couple cooperation	3.21	0.70	3.16	1.01	-0.44
Family warmth	3.29	0.67	3.41	1.12	-0.02
Global score	17.21	2.98	17.73	4.07	0.38
Marital satisfaction					
Women	125.67	9.17	118.73	12.76	-2.72**
Men	121.85	12.72	117.59	10.10	-1.69

Note. ART = assisted reproductive technology.

^a*t* test after controlling for the sociodemographic variables (socioeconomic status, age, years of living together, months of desiring a child).

***p* < .01.

inflation factor (VIF) was used to quantify the risk of multicollinearity for the predictive variable (marital satisfaction).

RESULTS

Descriptive Analyses

The prenatal coparenting alliance and marital satisfaction scores for the ART group and the spontaneous-conception groups are presented in Table 2. These descriptive analyses, which controlled for the sociodemographic variables (age, socioeconomic class, years of living together, and months of desiring a child) indicated no difference between the groups in terms of their global prenatal coparenting alliance scores. However, differences were found between the groups in terms of coparental playfulness: The ART group obtained lower coparental playfulness subscores compared to the spontaneous-conception group.

In addition, the analyses did show a difference between the groups in terms of marital satisfaction, with the women in the ART group scoring higher than the women in the spontaneous-conception group. No women and only four men in the ART group scored below the cutoff of 107, whereas seven women and seven men were below the cutoff in the spontaneous-conception group. Last, the results indicated that the global prenatal coparenting alliance scores and the marital satisfaction scores for men and women were not correlated

for the ART group ($r = -.039$, *ns*, for the women; $r = .229$, *ns*, for the men) or for the spontaneous-conception group ($r = -.001$, *ns*, for the women; $r = .178$, *ns*, for the men).

Hierarchical Multiple Regression Analyses

The hierarchical multiple regression analyses (see Table 3) did not show that the mode of conception (Step 2) or marital satisfaction (Step 3) affected the global prenatal coparenting alliance score. However, the women's age was predictive of the prenatal coparenting alliance, with the coparenting alliance being lower with increasing age. The VIF values were between 1.07 and 1.57.

The same analyses carried out for each of the five prenatal coparenting alliance subscales showed that mode of conception significantly affected coparental playfulness (see Table 4). The VIF values were between 1.05 and 1.29. In addition, for both modes of conception, the duration of desiring a child affected the prenatal coparental playfulness: the longer the child had been desired, the more playful the parents.

DISCUSSION

The purpose of this study was to broaden the literature on the association between infertility and ART treatments and the developing coparenting relationship. This objective was achieved by observing couple interactions during the second trimester of pregnancy in parents-to-be who had conceived via ART or spontaneously.

Table 3. Hierarchical Regressions Predicting Prenatal Coparenting Alliance (Global Score) from Mode of Conception and Marital Satisfaction

Predictor	Prenatal Coparenting Alliance		
	Step 1	Step 2	Step 3
Control variables			
Socioeconomic status (ref.: middle class)			
Upper middle class	-.19	-.22 [†]	-.17
Lower middle class	-.08	-.05	-.04
Age (women)	-.28*	-.26*	-.24 [†]
Age (men)	.06	.05	.03
Years living together	.07	.08	.06
Months of desiring a child	.11	.23	.26
Mode of conception		-.20	-.22
Marital satisfaction (women)			-.15
Marital satisfaction (men)			.25 [†]
R ²	.100	.122	.162
F	1.349	1.427	1.502
ΔR ²	.022	.040	
ΔF	0.179	1.672	

Note. For each step, standardized β are presented. ref. = reference category.

[†]p < .10; *p < .05.

Table 4. Hierarchical Regressions Predicting Prenatal Coparental Playfulness from Mode of Conception and Marital Satisfaction

Predictor	Prenatal Coparenting Alliance		
	Step 1	Step 2	Step 3
Control variables			
Socioeconomic status (ref.: middle class)			
Upper middle class	-.16	-.23*	-.22 [†]
Lower middle class	-.04	.03	.05
Age (women)	-.14	-.10	-.08
Age (men)	-.02	-.06	-.07
Years living together	-.07	-.04	-.06
Months of desiring a child	.02	.35*	.35*
Mode of conception		-.54***	-.58***
Marital satisfaction (women)			.05
Marital satisfaction (men)			.09
R ²	.050	.203	.216
F	0.634	2.622*	2.147*
ΔR ²	.153	.013	
ΔF	13.72***	.559	

Note. For each step, standardized β are presented. ref. = reference category.

[†]p < .10; *p < .05; ***p < .001.

The hypotheses were that couples who conceived via ART would have a higher level of prenatal coparenting alliance and that the level of marital satisfaction would be associated with the prenatal coparenting alliance in both groups.

Contrary to our first hypothesis, the mode of conception was not related to the global prenatal coparenting alliance scores. The subscale scores indicated that coparental playfulness was lower in the ART group compared to the

spontaneous-conception group. Coparental playfulness is reduced when the future parents adhere too literally to the instructions and do not have a playful distance from the task, or they remain constrained and denigrate the task (Carneiro et al., 2006). In couples who conceive via ART, reduced playfulness might indicate difficulty, as shown in the quality of their interactions, in playing at being parents. Our observations from the videos showed that these couples tended to make a very intense emotional investment as if it were real and not a game. For example, one future mother took the infant doll in her arms and asked the father to give her a moment alone with the “infant.” She held the doll in her arms for a long time—gazing at it, stroking it, and crying. Her emotions ran high. To a certain extent, that prevented her from enjoying meeting the infant along with her partner.

Such difficulty in imagining oneself in the parental role after having been confronted with many obstacles in the path to parenthood has already been demonstrated in qualitative studies. These studies have shown that previously infertile couples describe the pregnancy as being more intense and also focus more readily on the medical risks. They have the impression of “walking on eggshells” throughout the pregnancy (e.g., Harris, Sandelowski, & Holditch-Davis, 1991; Olshansky, 1990). The greater difficulty of the ART couples in being playful might therefore reflect their feelings of anxiety during pregnancy. Quantitative research findings have shown higher pregnancy-related anxiety in ART couples (e.g., Gameiro et al., 2010) and more elevated levels of general anxiety and psychological stress in ART women than in spontaneous-pregnancy samples (Darwiche et al., 2014). However, the association between a longer duration of desiring a child and more coparental playfulness suggests that a firm desire to have a child may be a protective factor regardless of the mode of conception.

Clinicians treating future ART parents during the transition to parenthood in hospitals or community settings could include the Prenatal LTP in their interventions to assess and bolster the budding coparenting relationship (Fivaz-Depeursinge, Corboz-Warnery, & Keren, 2004). Through video feedback, professionals could specifically help ART couples reflect on their resources in order to strengthen the therapeutic alliance. Then they could address areas of

concern, such as difficulties in playing at being parents. Areas of concern can in turn be used to explore other issues, such as pregnancy-related anxieties (Fivaz-Depeursinge & Philipp, 2014).

Finally, women’s age affected the global prenatal coparenting alliance score, with older women scoring lower regardless of the mode of conception. This result contrasts with that of some studies, in which being an older mother predicted greater postpartum satisfaction with coparenting (Van Egeren, 2003). However, it is in line with other findings indicating that older couples have less enjoyable marital interactions at 6 months postpartum (Frosch, Mangelsdorf, & McHale, 1998). In addition, primiparous women of advanced age were found to have a lower degree of satisfaction with life during pregnancy (Aasheim, Waldenström, Rasmussen, Espehaug, & Schytt, 2014), higher psychological distress scores, and a higher prevalence of pregnancy complications compared to their younger counterparts (Aasheim et al., 2012). Those factors may influence their overall well-being and their behavior in a prenatal task. Additional data, including those based on measures of individual psychological and physical well-being and symptomatology, would be needed to better understand the association between age and coparenting alliance during the prenatal period.

Our results did not indicate that level of marital satisfaction played any particular role in the prenatal coparenting alliance. There are several ways to interpret this. First, marital satisfaction scores were generally high: No women and only four men in the ART group were considered maritally distressed. Thus, it is possible that there was no effect because of the lack of variability in the marital scores. Moreover, other researchers have also failed to find an association between the prenatal coparenting alliance and marital satisfaction and have interpreted it as possibly being due to the lack of correlation between self-reported measures and observations (Favez et al., 2013; Favez, Frascarolo, et al., 2006). Longitudinal data are needed to understand the extent to which these results, obtained in diverse populations, indicate a discontinuity in the development of the coparenting and marital relationships in the transition to parenthood.

Marital satisfaction was higher in women who conceived via ART compared to those who conceived spontaneously, while there was no difference for the men. This result could coincide

with research findings showing that the feeling of relief and reward during pregnancy after ART is greater in women than men (McMahon, Tennant, Ungerer, & Saunders, 1999). Given that women have been described as especially affected by the distress of infertility compared to men (Demyttenaere et al., 1998; Newton et al., 1999), women might also experience the pregnancy as particularly gratifying, which could spill over to satisfaction with their couple relationship.

In sum, the overall impression of couples who conceive via ART that emerges from these results is that they experience satisfactory coparenting and marital relationships. The results further indicate that the experience of pregnancy after ART appears to be specific, affecting the marital relationship (i.e., higher marital satisfaction in ART women) and coparental playfulness (i.e., lower coparental playfulness in ART couples). Our findings suggest that pregnancy after ART is qualitatively different, with both benefits and vulnerabilities associated with the transition from infertility to parenthood.

This study has some limitations. First, because of the small sample size, the results should be repeated before they can be generalized. Second, it would be important to have an observational measure of marital satisfaction to test whether the quality of the coparenting interactions is associated with the quality of the marital interactions (Altenburger et al., 2014). Before the results on the lack of association between coparenting and marital satisfaction can be generalized to other populations, more research that uses similar types of assessments is needed. Furthermore, the fact that the study was limited to couples who became pregnant within the first year of treatment may have restricted participants to a subpopulation of couples who had a rather prompt successful ending to their medical treatment. They are not representative of the broader population, because some couples must be treated longer before conceiving (e.g., Malizia, Hacker, & Penzias, 2009). Longer treatment could increase their infertility-related distress. In addition, we did not control whether differences in medical treatment during pregnancy could affect the results. We know that pregnancies achieved via ART generally tend to be monitored more closely, in part because of couples' and doctors' anxiety (Jackson, Gibson, Wu, & Croughan, 2004). In particular, the incidence of elective caesarean sections is higher in

women who conceive via ART (Helmerhorst, Perquin, Donker, & Keirse, 2004). This closer monitoring could perhaps affect the emotional state of couples who conceive via ART.

From a clinical point of view, these results suggest that health professionals, such as those present in a maternity ward (e.g., midwives, psychologists), should provide support for ART couples when needed but also emphasize their resources as a marital unit and as a developing team of future parents. The lack of playfulness in the ART couples in this study suggests that the infertility experience leaves traces of anxiety behind and that some couples could benefit from support to reduce their anxieties and have a more positive pregnancy experience.

Future research should focus on comparing the postnatal family interactions between couples who underwent ART with those who conceived spontaneously and on the pre- and postnatal development of their interactions, to further our understanding of the transition to parenthood after ART.

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