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Transition to parenthood and quality of parenting among gay, lesbian and heterosexual couples who conceived through assisted reproduction

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ABSTRACT

Little research has focused on the emotions felt during pregnancy and early parenthood as well as the initial quality of parenting displayed by first-time parents who conceived using assisted reproduction technologies (surrogacy, donor insemination, and in vitro fertilization). Research on primary and secondary caregivers in gay, lesbian, and heterosexual families is especially sparse. The current study examined 35 gay-father families, 58 lesbian-mother families, and 41 heterosexual-parent families with their infants. Families were assessed at home when their infants were 4 months old (± 14 days), and each parent participated in an audio-recorded standardized semi-structured interview in which we explored parental feelings during pregnancy, feelings about the parental role, perceived parental competence, the enjoyment of parenthood, expressed warmth, and emotional over-involvement. Heterosexual parents reported less positive feelings in early pregnancy than lesbian parents, while gay parents reported less positive feelings at the end of pregnancy than lesbian mothers and more positive feelings about parenthood during the first post-partum weeks than heterosexual parents. Family type and caregiver role did not interact to affect reported feelings, perceived competence, enjoyment, warmth, and involvement. The present findings elucidate the transition to parenthood among first-time parents who conceived using assisted reproductive technologies.

Introduction

The number of couples pursuing parenting using assisted reproductive technologies (ARTs) has increased in Western societies over recent decades (Ferraretti et al., 2012), and a growing number of children have been born following the use of ARTs

(Adamson et al., 2006). The procedures involved include *in vitro* fertilization (IVF), sperm donation, egg donation, embryo donation, and surrogacy. Initially designed for infertile heterosexual couples, with the first baby born via IVF in 1978 (Steptoe & Edwards, 1978), these techniques have increasingly been used by single women and by same-sex couples (Friedman, 2007; Johnson & O'Connell, 2002). There are important differences between heterosexual parents and same-sex parents who have utilized ARTs. For example, many heterosexual users have experienced infertility whereas infertility is not the main reason why same-sex intended parents use ARTs. Same-sex couples choose ARTs because they wish to raise children from birth (Bigner & Jacobson, 1989; Lev, 2006) and because ARTs allow them to have biological connections to their children (Lev, 2006; Mitchell & Green, 2007; Murphy, 2013).

Heterosexual and same-sex couples who conceive using ARTs are similar in that they face difficulties becoming parents. For heterosexual parents, a history of infertility can be associated with increased psychological distress relating to both the infertility and the infertility treatment (Ellison & Hall, 2003). In addition, it may diminish self-esteem (Gibson, Ungerer, Tennant, & Saunders, 2000), due in large part to the importance given by both women and men in Western societies to childbearing and the transition to parenthood. In some countries, same-sex couples lack access to ARTs and receive less legal, cultural, and institutional support (Riskind, Patterson, & Nosek, 2013). Moreover, they have to overcome public beliefs that children should ideally be raised in traditional families with both mothers and fathers (Van de Meerendonk & Scheepers, 2004). Thus, both heterosexual and same-sex couples who conceive using ARTs have to cope with the stress induced by social stigma which may result in higher parenting stress and thus may affect the transition to parenthood and the quality of parenting (Bos, van Balen, & van den Boom, 2004) which in turn affect child functioning (e.g. Patterson, 1988). Understanding the experience of gay-father, lesbian-mother, and heterosexual parents as they become parents is especially significant in light of the increasing numbers of couples using ARTs. The present research therefore focused on the transition to parenthood and on the quality of parenting in families using ARTs: surrogacy in the gay-father families, insemination with donor sperm in the lesbian-mother families, and IVF in the heterosexual-parent families.

Although the routes to parenthood might be different, becoming a parent is a major life event for both heterosexual and same-sex individuals and all new parents have to cope with novel experiences. According to Belsky (1984), the transition to parenthood generates changes in the couple's relationship, with consequences for parenting quality, parent-child relationships, and children's psychological well-being. The arrival of the first baby also causes major changes in the couple's working lives (Cappuccini & Cochrane, 2000; Mercer, 2004). In heterosexual couples, one of the greatest sources of conflict during the transition to parenthood is the division of household labor (Cowan & Cowan, 1992), especially regarding child care (Belsky & Pensky, 1988). New heterosexual parents often report increasingly sex-stereotyped roles and expectations, with mothers expected to assume primary responsibility for parenting and become the primary caregivers (McBride et al., 2005; Wall & Arnold, 2007). In same-sex couples, the assignment of parenting roles depends on other factors and tends to be more egalitarian (Farr & Patterson, 2013) with satisfaction regarding the division of household labor positively associated with relationship satisfaction (Tornello, Kruczkowski, & Patterson, 2015).

Research on the transition to parenthood has largely focused on heterosexual families with naturally conceived children. Researchers have shown that pregnant women have more negative feelings towards pregnancy and less positive feelings about parenthood than do men (Hildingsson & Thomas, 2014), and that both maternal and paternal satisfaction increase in the months following birth (Hudson, Elek, & Fleck, 2001). Research on the transition to parenthood by same-sex couples has focused on decisions about conception (Dempsey, 2013; Goldberg, 2006), perceptions of social support (Bergman, Rubio, Green, & Padron, 2010), relationship quality (Goldberg & Sayer, 2006). Little is known about feelings about parenthood during pregnancy or about parental roles after birth in parents who used ARTs to conceive, although early caregiving patterns influence parents-infant interaction and perceptions of pleasure and gratification associated with parenting (Hudson et al., 2001). Suffering induced by infertility can arouse negative feelings such as fear of miscarriage during pregnancy (Mathews & Mathews, 1986) and anxiety (McMahon, Ungerer, Beaurepaire, Tennant, & Saunders, 1997) in heterosexual parents. Gay couples may be anxious about the fetus's and the surrogate's health (Klempeter, 2002) and may be concerned about the surrogate's pregnancy (Ziv & Freund-Eschar, 2015), especially when this is their first experience of surrogacy. The current study therefore aimed to compare the parental feelings during pregnancy and early feelings about parental roles in same-sex parent families and heterosexual-parent families who conceived using ARTs.

Research on early experiences of parenthood has largely focused on heterosexual families. In a study of assisted reproduction families, IVF-mothers of 4-month-old infants felt less able than natural-conception mothers to understand their infants' signals and to soothe them effectively (McMahon & Gibson, 2002) although they were equally sensitive to their infants (Gibson, Ungerer, McMahon, Leslie, & Saunders, 2000). There were no differences between fathers with IVF- and naturally conceived children in perceptions of parenting competency. Although heterosexual ART parents and naturally conceiving parents report similar levels of parental satisfaction (Gameiro et al., 2011), social stigma and the lower self-esteem related to infertility may adversely affect perceptions of parental competence (Gibson, Ungerer, Tennant, et al., 2000). Early parenting by same-sex couples has not been studied but lesbian and heterosexual mothers with older children experience parenthood similarly and report the same levels of parental competence and nurturance (for a review see Golombok & Tasker, 2015). Adoptive gay fathers and heterosexual fathers appear to have similar parenting skills (Goldberg & Smith, 2009; Golombok et al., 2014) and their children have equivalent levels of well-being and adjustment (Bos, Kuijper, & Gartrell, 2017; Farr, Forssell, & Patterson, 2010). Studies of gay-father families formed through surrogacy have observed positive parenting outcomes (Baiocco et al., 2015), but gay fathers are exposed to stigma regarding their sexual identity (Goldberg, 2010) and it is widely believed that fathers are less nurturant than mothers (see Biblarz & Stacey, 2010). This may result in negative parenting experiences for gay fathers. The present study was thus designed to compare early experiences of parenting in gay-father families, lesbian-mother families, and heterosexual-parent families formed using ARTs.

IVF-mothers seemed warmer and more emotionally involved than natural-conception parents in some early studies (for a review see Golombok & Tasker, 2015) but other researchers have found no family-type differences in warmth (Gibson, Ungerer,

McMahon, et al., 2000) or parental involvement (Barnes et al., 2004). Lesbian mothers were as warm and responsive as single heterosexual mothers in one study (MacCallum & Golombok, 2004) and warmer than single heterosexual mothers in another (Golombok, Tasker, & Murray, 1997), suggesting that lesbian mothers may give children a 'double dose' of warmth (Biblarz & Stacey, 2010). Findings regarding fathers are inconsistent, however. Bos (2010) found no differences in emotional involvement (i.e. expression of affection and enjoyment of parenthood) between gay and heterosexual fathers whereas Golombok et al. (2014) reported that gay adoptive fathers expressed more warmth than heterosexual parents and were similar to lesbian mothers. However, most researchers have focused on parents with preschool age and school-age children. The first months post-partum may be particularly important because new parents are actively forming relationships with their infants during this period (Loutzenhiser & Sevigny, 2008). Therefore, the present research explored differences in parental warmth and involvement between first-time heterosexual parents and same-sex parents who conceived through ARTs in early infancy.

The current study

The aim of the present study was to investigate the transition to parenthood by first-time parents with infants born using ARTs. We compared parental feelings during pregnancy, early feelings about parental roles, experiences of parenting and the quality of parenting in three types of families: gay-father families with infants born through surrogacy, lesbian-mother families with children born through insemination by sperm donation, and heterosexual-parent families who used IVF (without sperm or egg donation). Parents in all three types of families used ARTs which might cause social stigma and parenting stress which in turn might influence their feelings during pregnancy and early parenthood. The gender composition of the parental dyads also varied and these differences might influence how parents experience the transition to parenthood. Because degree of responsibility for caregiving may also influence the way first-time parents experience parenthood (Deutsch, 2001) this, too, was explored.

Method

Recruitment of participants

The participants in the present study were involved in an international research project on couples who became parents through ARTs. The project was carried out by collaborating researchers in France, The Netherlands, and The United Kingdom (UK). Ethical approval for the study was obtained from the relevant committees at each of the researchers' home institutions. In each country, participants were recruited through several sources, such as specialist lawyers with expertise in surrogacy (for the recruitment of gay fathers), lesbian and gay parenting support groups, infertility support groups (for the recruitment of heterosexual parents), fertility clinics (for the recruitment of lesbian and heterosexual parents), and online forums and magazines (for recruitment into all three groups).

According to the inclusion criteria, all participants were couples who had used assisted reproductive techniques to conceive. Concerning methods of conception, gay-father

families had to have used surrogate carriers with or without egg donation, lesbian-mother families had to have used anonymous sperm donors with one of the two mothers carrying the fetus, and heterosexual-parent families had to have used IVF without sperm or egg donation with mothers carrying the fetus. Additionally, all parents had to be primiparous and families with singletons or twins were included. Only families who provided active consent were allowed to participate in the project. One hundred and forty families participated in this international research project: 38 gay-father families, 61 lesbian-mother families, and 41 heterosexual-parent families. Both parents in all families were invited to participate in a project that included an audio-recorded standardized semi-structured interview, standardized questionnaires online, and video-recorded observations.

Participants in the current study

The present paper presents results for families who took part in the interview. We thus excluded three families because the home visit could not be arranged (parents were not available), one family because only one parent was interviewed, and two more families because there were missing data. The study reported here thus involves 134 families: 35 gay-father families, 58 lesbian-mother families, and 41 heterosexual-parent families.

The parent who was most involved with the baby on a day-to-day basis was designated as the primary caregiver and the other parent was categorized as the secondary caregiver. To identify the primary and secondary caregivers in each family, 6 items on the 'Who does what' instrument (Cowan & Cowan, 1990) were used. Both parents were asked who was responsible for their infant's weekday care: (a) when getting up, during breakfast, and when dressing the infant, (b) during the day from 9:00 am to 1:00 pm, (c) during the day from 1:00 pm to 5:00 pm, (d) when having dinner, during playtime, at bedtime, (e) in the evening until midnight, and (f) when the infant needed care in the middle of the night. Response options ranged from 1 ('I do it all') to 9 ('Partner does it all'). The primary caregiver was therefore the parent with the lower average score on these six items. In eight families (5.71%) both parents had the same average score on the abovementioned six items and in 34 families (24.29%) one of the parents in a family unit had a missing value on one of the six items. Therefore, in these 42 families, the answer to the question 'During the past week, who spent most time with [infant's name]?' (asked by the research assistant when arranging the home visit) was used to identify the primary caregiver.

Demographics characteristics for these 134 families are specified in Table 1. Nineteen (14%) had twins and 115 families (86%) had singletons. Gay couples were more likely to have twins (31%) than lesbian couples (5%) and heterosexual couples (12%) ($\chi^2(2) = 12.56, p < .01$). About 44% of the infants were male and 56% female, with no difference between gay, lesbian, and heterosexual couples ($\chi^2(2) = 0.36, ns$). A two-way analysis of variance of parents' age with family type and caregiver role as independent variables revealed no significant effect for caregiver role, $F(1, 257) = 0.64, p > .05$ and a significant effect for family type, $F(2, 257) = 26.62, p < .001$. A Bonferroni post hoc test revealed that gay fathers were older ($M = 38.63, SD = 6.11$) than lesbian mothers ($M = 33.16, SD = 4.05$) and heterosexual parents ($M = 34.85, SD = 4.89$) ($p_s < .001$). The interaction between caregiver role and family type was not significant, $F(2, 257) = 2.60, p > .05$.

Table 1. Difference between family types for demographics characteristics.

	Family type						<i>F</i> / <i>X</i> ² -value	Bonferroni post hoc group comparison		
	Gay-father families <i>N</i> = 35		Lesbian-mother families <i>N</i> = 58		Heterosexual families <i>N</i> = 41					
Part A										
Relationship status, %							8.20*			
Married/civil partnered	69		91		76					
Cohabiting	31		9		24					
Relationship duration, <i>M</i> (<i>SD</i>)	9.86 (4.15)		6.77 (2.77)		8.13 (3.62)		9.43***	LF < GF; LF < HF		
Residential location, %							13.78*			
Rural area (<2000 hab)	3		3		12					
Small city (2000–150,000 hab)	20		36		41					
Medium city (150,000–4,000,000 hab)	29		36		27					
Large city (<4,000,000 hab)	48		25		20					
Family income, %							7.06			
<12,706 \$	0		2		2					
12,706–42,356 \$	11		33		32					
>42,356 \$	89		65		66					
Working status PC, %							11.61*			
No	34		12		27					
Part-time	23		41		17					
Full-time	43		47		56					
Working status SC, %							10.55*			
No	3		5		7					
Part-time	23		31		5					
Full-time	74		64		88					
Multiple birth (yes), %	31		5		12		12.56**			
Gender child (female), %	63		59		56		0.36			
Part B										
	PC	SC	PC	SC	PC	SC	Family type (FT)	Caregiver role (CR)	FT × CR	
Age of the parents, <i>M</i> (<i>SD</i>)	38.97 (6.37)	38.27 (5.91)	33.31 (3.50)	33.00 (4.57)	33.61 (4.06)	36.10 (4.89)	26.62***	0.64	2.60	GF > LF; GF > HF

Notes: hab: habitants; GF: Gay fathers families; LF: Lesbian mothers families; HF: Heterosexual families; PC: primary caregiver; SC: secondary caregiver.

**p* < .05.

***p* < .01.

****p* < .001.

Parents had been in relationships between 2 and 16.5 years, with an average duration of 8.13 years ($SD = 3.62$). Relationship duration differed by family type ($F(2, 131) = 9.43, p < .001$); a Bonferroni post hoc test revealed that relationship duration was shorter for lesbian parents ($M = 6.77, SD = 2.77$) than for gay parents ($M = 9.86, SD = 4.15$) and heterosexual parents ($M = 8.13, SD = 3.62$). There were also group differences in relationships status ($\chi^2(2) = 7.88, p < .05$), with lesbian couples more likely to be married or in civil partnerships (91%) than gay couples (69%) or heterosexual couples (76%). Families lived in large (29%), medium (33%), or small-sized cities (33%), and 6% lived in rural settings. Residential location differed by family type ($\chi^2(6) = 13.78, p < .05$) with more gay parents living in medium or large cities (77%) than lesbian parents (61%) and heterosexual parents (47%). There were no significant group differences in family income ($\chi^2(4) = 7.06, ns$). Working status differed by family type for primary caregivers ($\chi^2(4) = 11.61, p < .05$) with more lesbian mothers than gay parents and heterosexual parents having part-time jobs. Differences were also found for secondary caregivers ($\chi^2(4) = 10.55, p < .05$) with fewer heterosexual parents than gay or lesbian parents having part-time jobs.

Procedure

The families were assessed at home when their infants were 4 months old (± 14 days), by one or two investigators trained in the study techniques. Infants' postnatal and corrected age at the 4-month visit did not differ by family types. Before the home visit, the parents each completed online questionnaires (protected by unique passwords for each parent) on their demographics characteristics and on their infants' temperament. During the home visit, each parent participated in an audio-recorded standardized semi-structured interview. Data unrelated to the scope of this paper were also collected during the visit (each parent completed standardized questionnaires online and participated in three video-recorded observations).

Measures

Data regarding parental feelings during pregnancy, feelings about the parental role, and parental experiences of parenting, warmth, and involvement were collected by means of an interview designed to measure the quality of the parenting. Responses to the relevant items might be influenced by the temperament of the infant, so we also asked the parents to complete a questionnaire about the infant's characteristics.

Parent interview

Each parent was interviewed separately using an adaptation of a standardized semi-structured interview designed by Quinton and Rutter (1988) to assess the quality of parenting, which had been successfully used in previous studies of non-traditional families (e.g. Golombok et al., 2017; Golombok, Cook, Bish, & Murray, 1995; Golombok, Murray, Jadv, MacCallum, & Lycett, 2004). In the current study, some questions were adapted to be suitable for parents with infants or were removed because the content was not relevant for parents of infants, and additional questions relating to the pregnancy were also asked. Detailed questions were asked about the parents' feelings about pregnancy, the

parental role, the infant, relationships within the family unit, babysitting, and child care (e.g. ‘How did you feel when you first found out the surrogate/you/your partner was pregnant?’; ‘How did you feel about having him/her/them home in the first few weeks after birth?’; ‘How do you feel about leaving him/her/them in the daycare?’; ‘How did you feel about the role of looking after the baby, with the other roles you have in the family/work?’). Using a detailed and standardized coding scheme, (Golombok et al., 1995; Golombok et al., 2004; Golombok et al., 2017; Quinton & Rutter, 1988) research assistants completed the ratings described below.

The following variables were coded: (a) *feelings at the beginning of pregnancy*, rated on a 4-point scale from 0 (*high anxiety*) to 3 (*happy*), assessed the parents’ feelings when they first found out about the pregnancy; (b) *feelings at the end of pregnancy*, rated on a 4-point scale ranging from 0 (*high anxiety*) to 3 (*happy*), evaluated the parent’s feelings at the end of pregnancy; (c) *initial feelings about the parental role*, rated on a 5-point scale from 0 (*rejecting*) to 4 (*happy*), assessed feelings about being a parent during the first post-partum weeks; (d) *current feelings about the parental role*, rated on a 5-point scale from 0 (*rejecting*) to 4 (*happy*), assessed feelings about being a parent when the infant was 4 months old; (e) *perceived competence*, rated on a 4-point scale from 0 (*a lot of difficulties*) to 3 (*no difficulties*), evaluated the parent’s sense of competence, the level of problems associated with parenting, and parental beliefs about the other parent’s experiences; (f) *enjoyment of parenthood*, rated on a 4-point scale ranging from 0 (*none*) to 3 (*a great deal*), measured expressed enjoyment as well as reservations about parenthood; (g) *expressed warmth*, rated on a 6-point scale from 0 (*none*) to 5 (*high*), evaluated the parent’s tone of voice, facial expressions and gestures when talking about their infant, spontaneous expressions of warmth, sympathy, and concern about any difficulties experienced by the infant, as well as enthusiasm and interest in the infant as a person; and (h) *emotional over-involvement*, rated on a 4-point scale ranging from 0 (*little or none*) to 3 (*enmeshed*), measured the extent to which family life and the parent’s emotions were centered on the baby, the extent to which the parent was overprotective regarding the child, and the extent to which the parent had interests apart from those relating to the child. In order to calculate inter-rater reliabilities, 20% of the interviews were coded by a second coder; intra-class correlation coefficients for these variables ranged from .76 to .96.

Infant temperament

The primary caregiver completed the Infant Characteristics Questionnaire (English version: Bates, Freeland, & Lounsbury, 1979; French version: Bertrais, Larroque, Bouvier-Colle, & Kaminski, 1999; Dutch version: Kohnstamm, 1984), an instrument designed to measure parental perceptions of infant temperament. This instrument produces scores on Fussy/Difficult, Unadaptable, Dull, and Unpredictable subscales, with higher scores representing more difficult temperaments. For the current analyses, scores on the 7-item Fussy/Difficult subscale were combined to create the covariate used in the analyses reported below. Parents were asked to rate their infants’ behavior (e.g. *How easy or difficult is it for you to calm or soothe your baby when he/she is upset?*) using a 7-point scale (1 = *easier behavior*; 7 = *most problematic behavior*), with higher scores representing more fussy temperament. The internal consistency coefficient for the Fussy/Difficult subscale was adequate ($\alpha = .71$).

Statistical analysis

For descriptive analyses, Pearson correlations coefficients were calculated using the IBM Statistical Package for the Social Sciences (SPSS) Statistics 19 for Windows. To investigate the transition to parenthood by first-time parents with infants born using ARTs, we used multilevel modeling (with HLM 7.01; Raudenbush, Bryk, & Congdon, 2013), because parents (Level 1) were nested within couples (Level 2), and therefore we took into account the within-couple dependency on the outcome variable scores (Smith, Sayer, & Goldberg, 2013). At level 1, parents were distinguished by caregiver role, and at level 2, comparisons were made on all parents independent of caregiver role. In line with Belsky's (1984) model, measures of parental characteristics (caregiver role and parent gender), child characteristics (infant temperament, number of baby), and contextual factors (family type) were distinguished. At level 1, caregiver role and parent gender were entered as predictors. At level 2, family type was entered as a predictor and both child temperament and the number of children (singleton versus twins) were entered as covariates. As family type was a categorical variable, a dummy variable was created. For each model, a first analysis was run with heterosexual parents as the reference category. Then, in order to test for the difference between gay and lesbian parents, a second analysis was run with lesbian parents as the reference category.

Results

Descriptive statistics and correlations

Descriptive statistics for measures based on gender, family type and caregiver role are presented in Table 2. Looking at mean levels of the studied variables across the total sample, parents reported high positive feelings at the beginning of pregnancy ($M = 2.39$, $SD = 0.85$), moderately high positive feelings at the end of pregnancy ($M = 2.07$, $SD = 0.97$), moderately high positive initial feelings about the parental role ($M = 2.98$, $SD = 0.99$), highly positive current feelings about the parental role ($M = 3.38$, $SD = 0.72$), high levels of perceived competence and enjoyment of parenthood (respectively $M = 2.33$, $SD = 0.64$, and $M = 2.55$, $SD = 0.67$), moderately high expressed warmth ($M = 3.70$, $SD = 1.26$), and low emotional over-involvement with the child ($M = 0.59$, $SD = 0.80$).

Correlations among the studied variables are presented in Table 3. Correlational analyses revealed significant positive associations between feelings during pregnancy and feelings regarding parenthood during the first months after the baby's birth: the more positive the feelings at the beginning of pregnancy, the more positive they were at the end of pregnancy and during early parenthood. When parents reported positive feelings at the end of pregnancy, they were more likely to evaluate their experiences of parenting and perceive competence positively. Moreover, there were significant correlations between feelings at the end of pregnancy and feelings towards the child: higher positive feelings at the end of pregnancy were associated with less emotional over-involvement with the child. Finally, all inter-correlations among initial positive feelings about parenthood, current positive feelings about parenthood, parental experiences, and perceived competence, enjoyment of the child, and expressed warmth were positive and significant.

Table 2. Means and standard deviations for measures based on gender, family type, and caregiver role.

	Feelings beginning pregnancy	Feelings end pregnancy	Initial feelings parental role	Current feelings parental role	Perceived competence	Enjoyment of parenthood	Expressed warmth	Emotional over-involvement
Parent gender								
Male	2.38 (0.89)	1.91 (1.03)	3.19 (0.81)	3.40 (0.58)	2.45 (0.58)	2.54 (0.70)	3.72(1.18)	0.49 (0.72)
Female	2.40 (0.81)	2.18 (0.91)	2.83 (1.07)	3.36 (0.80)	2.25 (0.67)	2.56 (0.64)	3.69 (1.31)	0.65 (0.85)
Family type								
Gay	2.41 (0.88)	1.73 (1.06)	3.27 (0.74)	3.44 (0.60)	2.47 (0.61)	2.56 (0.67)	3.83 (1.13)	0.60 (0.77)
Lesbian	2.55 (0.69)	2.34 (0.79)	2.89 (1.04)	3.35 (0.85)	2.26 (0.71)	2.58 (0.65)	3.74 (1.38)	0.66 (0.87)
Heterosexual	2.14 (0.97)	1.98 (1.02)	2.85 (1.05)	3.37 (0.60)	2.32 (0.54)	2.51 (0.69)	3.54 (1.18)	0.46 (0.72)
Caregiver role								
Primary	2.29 (0.90)	1.93 (1.02)	2.85 (1.07)	3.34 (0.81)	2.29 (0.61)	2.59 (0.63)	3.72 (1.27)	0.72 (0.87)
Secondary	2.49 (0.78)	2.20 (0.90)	3.10 (0.88)	3.41 (0.60)	2.37 (0.67)	2.52 (0.70)	3.69 (1.25)	0.45 (0.71)
All	2.39 (0.85)	2.07 (0.97)	2.98 (0.99)	3.38 (0.72)	2.33 (0.64)	2.55 (0.67)	3.70 (1.26)	0.59 (0.80)

Notes: Feelings beginning pregnancy: positive feelings at the beginning of pregnancy (from 0 to 3); Feelings end pregnancy: positive feelings at the end of pregnancy (from 0 to 3); Initial feelings parental role: initial feelings about the parental role (from 0 to 4); Current feelings parental role: current feelings about the parental role (from 0 to 4); Perceived competence: sense of competence and experiences of parenting (from 0 to 3); Enjoyment of parenthood (from 0 to 3); Expressed warmth (from 0 to 5); Emotional over-involvement (from 0 to 3).

Table 3. Correlations among and descriptive statistics for outcome variables at the individual level.

Outcomes	1	2	3	4	5	6	7	8
(1) Feelings beginning pregnancy	–							
(2) Feelings end pregnancy	.35***	–						
(3) Initial feelings parental role	.14*	.13*	–					
(4) Current feelings parental role	–.08	.12	.42***	–				
(5) Perceived competence	–.05	.17**	.30***	.37***	–			
(6) Enjoyment of parenthood	.06	.03	.30***	.38***	.22***	–		
(7) Expressed warmth	.04	.11	.32***	.45***	.23***	.58**	–	
(8) Emotional over-involvement	–.02	–.21***	–.05	–.08	–.12	.08	.03	–

Notes: Feelings beginning pregnancy: positive feelings at the beginning of pregnancy; Feelings end pregnancy: positive feelings at the end of pregnancy; Initial feelings parental role: initial feelings about the parental role; Current feelings parental role: current feelings about the parental role; Perceived competence: sense of competence and experiences of parenting.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Multilevel modeling

Table 4 presents results for the models with heterosexual families as the reference family type category. The analyses revealed that lesbian parents expressed more positive feelings at the beginning of pregnancy ($M = 2.55$, $SD = 0.69$) than heterosexual parents ($M = 2.14$, $SD = 0.97$) ($\beta = .52$, $SE = .18$, $p < .01$), with no significant difference between gay parents and heterosexual parents. Lesbian parents also expressed more positive feelings at the end of pregnancy ($M = 2.34$, $SD = 0.79$) than heterosexual parents ($M = 1.98$, $SD = 1.02$) ($\beta = .51$, $SE = .19$, $p < .01$), while gay parents expressed less positive feelings at the end of pregnancy ($M = 1.73$, $SD = 1.06$) than heterosexual parents ($M = 1.98$, $SD = 1.02$) ($\beta = -.44$, $SE = .22$, $p < .01$) did.

Analyses with lesbian parents as the reference category also revealed that lesbian parents reported more positive feelings at the end of pregnancy ($M = 2.34$, $SD = 0.79$) than gay parents ($M = 1.73$, $SD = 1.06$) ($\beta = -.95$, $SE = .26$, $p < .001$) did. Moreover, gay parents expressed more initially positive feelings about the parental role ($M = 3.27$, $SD = 0.74$) than heterosexual parents ($M = 2.85$, $SD = 1.05$) ($\beta = .37$, $SE = .18$, $p < .05$) did.

Caregiver role predicted emotional over-involvement, with primary caregivers reporting more emotional over-involvement ($M = 0.72$, $SD = 0.87$) than secondary caregivers ($M = 0.45$, $SD = 0.71$) ($\beta = -.24$, $SE = .10$, $p < .05$). There were no caregiver role differences in feelings during pregnancy, feelings about the parental role, perceived competence, enjoyment of parenthood, and expressed warmth. There were also no gender of parent differences in feelings during pregnancy, feelings about the parental role, perceived competence, enjoyment of parenthood, expressed warmth, and emotional over-involvement.

Discussion

This study explored the transition to parenthood and the quality of parenting in first-time parents who conceived using ARTs and revealed strikingly few differences between gay-father families, lesbian-mother families, and heterosexual-parent families. At the beginning of pregnancy, lesbian couples reported more positive feelings than heterosexual couples whereas at the end of pregnancy, they reported more positive feelings than both heterosexual and gay couples. Gay couples reported less positive feelings than

Table 4. Multilevel models predicting outcome variables.

Predictor	Feelings beginning pregnancy <i>N</i> = 268	Feelings end pregnancy <i>N</i> = 267	Initial feelings parental role <i>N</i> = 267	Current feelings parental role <i>N</i> = 267	Perceived competence <i>N</i> = 268	Enjoyment of parenthood <i>N</i> = 266	Expressed warmth <i>N</i> = 268	Emotional over-involvement <i>N</i> = 268
Intercept	2.03 (.28)***	1.93 (.34)***	2.89 (.34)***	3.35 (.27)***	2.73 (.24)***	2.84 (.27)***	4.19 (.42)***	.66 (.30)*
Nb of children	-0.01 (.19)	-0.05 (.24)	-0.20 (.18)	-0.24 (.16)	-0.32 (.15)*	-0.14 (.14)	-0.49 (.32)	.10 (.18)
Child temp.	0.14 (.07)	-0.09 (.08)	0.05 (.09)	-0.12 (.06)	-0.21 (.05)***	-0.09 (.05)	-0.19 (.10)	.03 (.06)
GP vs. HP	0.23 (.20)	-0.44 (.22)*	0.37 (.18)*	0.18 (.12)	0.04 (.12)	0.01 (.16)	0.28 (.26)	.17 (.15)
LP vs. HP	0.52 (.18)**	0.51 (.19)**	0.13 (.22)	-0.15 (.15)	-0.02 (.11)	0.09 (.13)	0.17 (.25)	.17 (.16)
Parent gender	-0.21 (.22)	-0.32 (.18)	-0.21 (.21)	0.21 (.13)	-0.16 (.11)	-0.07 (.16)	-0.04 (.21)	.08 (.15)
Caregiver role	0.14 (.09)	0.18 (.11)	0.19 (.11)	0.13 (.08)	0.04 (.08)	-0.09 (.09)	-0.04 (.12)	-.24 (.10)*

Notes: Values are unstandardized coefficients, and values in parentheses represent standard errors. Nb of children: number of children; Child temp.: child temperament; GP: gay parents; LP: lesbian parents; HP: heterosexual parents; Parent gender: male: 0, female: 1; Caregiver role: primary: 1, secondary: 2; Feelings beginning pregnancy: positive feelings at the beginning of pregnancy; Feelings end pregnancy: positive feelings at the end of pregnancy; Initial feelings parental role: initial feelings about the parental role; Current feelings parental role: current feelings about the parental role; Perceived competence: sense of competence and experiences of parenting.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

heterosexual parents at the end of pregnancy but expressed more positive initial feelings about the parental role than heterosexual parents did. In all types of families, primary caregivers reported more emotional over-involvement than did the secondary caregivers.

Feelings during pregnancy were related to feelings about the parenting role during the first four post-partum months. Parents who had more positive feelings during pregnancy reported experiencing higher levels of competence 4 months post-partum. Feelings concerning parenting during the first weeks at home were also associated with positive feelings about the parenting role at 4 months, as well as greater perceived competence, enjoyment of parenthood, and warmth.

Differences between gay couples and the other couples at the end of the pregnancy may be explained by the fact that their pregnancies were experienced more remotely. Gay parents reported that, although they were frequently in contact with the surrogates, the fact that they were not physically present during the pregnancies generated 'fear about missing the baby's birth' or 'fear of administrative or legal difficulties that might delay them coming home with the baby' which in turn made their feelings less positive. Gay couples choose surrogacy in order to ensure their biological relatedness and legal status but this generated anxiety during pregnancy which was sometimes exacerbated by legal obstacles (Ryan & Berkowitz, 2009).

By contrast, difficulties related to the infertility of heterosexual couples may explain differences between them and lesbian couples during pregnancy. The heterosexual parents had experienced infertility and had to use IVF, whereas the lesbian mothers chose ART as a way of becoming parents. Moreover, IVF is a more stressful procedure than donor insemination. Indeed, heterosexual parents indicated that conceiving children through IVF was an 'exhausting' and 'stressful process'. They also reported being anxious throughout the pregnancy, resulting in 'waiting to tell relatives and friends about the pregnancy', 'fear of having a miscarriage in the first trimester' and 'being afraid that pregnancy would be terminated prematurely'. Such feelings have also been reported in other studies exploring the emotional reactions of heterosexual parents who have used IVF (Mathews & Mathews, 1986; McMahan et al., 1997).

The current findings with respect to feelings during pregnancy and those about the parental role are consistent with other reports that feelings during pregnancy are associated with feelings both in the perinatal period and during toddlerhood (e.g. de Cock et al., 2016). During pregnancy, more positive feelings are related to better prenatal health practices and measures of the children's well-being (Lindgren, 2001; Van den Bergh & Simons, 2009). Positive parental evaluations of their capacities and competence affect motivation, satisfaction, and behavior (Hudson et al., 2001) and this was the first study to document these associations in parents who conceived using ARTs.

The few differences between gay parents' and heterosexual parents' feelings about their parental roles during the first post-partum weeks could be explained by the gender composition of the parents. In heterosexual families, the mothers experienced pregnancies and deliveries which may have affected their feelings during the first post-partum weeks. Some heterosexual mothers described that the first-weeks as 'difficult' because the delivery had sapped their health and energy and others reported difficulties initiating breastfeeding. Such pain and tiredness have been associated with reduced satisfaction in other research (Bell et al., 2008; Indraccolo, Bracalente, Di Iorio, & Indraccolo, 2012). Moreover, new heterosexual fathers sometimes feel helpless and anxious, while perceiving mothers as more

experienced and naturally equipped to provide childcare (Kowlessar, Fox, & Wittowski, 2015). In gay-father families, by contrast, both parents are men, so neither can experience possible difficulties caused by delivery or breastfeeding. Instead, participants described their experiences in egalitarian terms. Gay parents generally appeared to share in domestic and childcare tasks and to have similar levels of parental involvement (Fossoul, D'Amore, Miscioscia, & Scali, 2013) whereas in heterosexual families, mothers usually spend more time in childcare than fathers do. Heterosexual and lesbian mothers did not describe parental roles differently because pain and tiredness were likely experienced by the lesbian mothers too. In addition, lesbian mothers' and gay fathers' feelings about parental roles did not differ, probably because both gay fathers and lesbian mothers tend to share childcare and domestic tasks (Gartrell & Bos, 2010).

Regardless of family type, primary caregivers reported that their lives were more centered on childcare, they were more likely to be concerned and protective, and they had fewer interests apart from the baby than secondary caregivers, some of whom worked outside the home. Nevertheless, the mean emotional over-involvement scores for both primary and secondary caregivers were low, indicating appropriate levels of involvement.

Overall, the parents' quality of parenting, their feelings about parenting, their perceived competence, and their enjoyment of parenthood, generally did not vary depending on family type or parental gender. Previous studies have also reported similarities with respect to parenting experiences, parental competence, warmth and responsiveness between same-sex parents and heterosexual parents (Bos et al., 2004; MacCallum & Golombok, 2004). When differences have been found, they have shown better outcomes for families which had used ARTs (Golombok & Tasker, 2015; Van Balen, 1996). In the current study, gay fathers conceiving through surrogacy, lesbian mothers conceiving through donor insemination, and heterosexual parents conceiving through IVF were equivalently warm, experienced as much pleasure with and enjoyment of their babies, reported similar levels of competence, and were equivalently involved.

The small sample sizes made it impossible to explore differences among the parents' feelings in the three countries where they lived. Future studies with larger samples are needed because the legal and cultural contexts in the UK, France, and the Netherlands differ quite substantially. Moreover, because all the participants had experienced planned pregnancies and had moderate to superior incomes, the findings cannot be generalized more widely. Another limitation could be that participants were asked to describe their feelings retrospectively; this might have reduced the validity of our findings regarding the parents' feelings during pregnancy and its association with feelings about parental role at first weeks. However, the ratings were made taking into account very detailed information obtained during the interviews as in previous studies using this procedure (e.g. Golombok et al., 2014). A further limitation was that the poles on the feeling scales ('high anxiety' vs. 'happy') reference different constructs, and it might be valuable in the future to employ both happiness and anxiety separately.

Notwithstanding these limitations, the findings make clear that, regardless of sexual orientation, parents who conceive using ARTs described similar feelings and experiences of parenthood during the first months of parenthood and expressed as much as warmth and involvement, although there were small differences between the heterosexual parents and parents in the other types of families on some dimensions. These findings may have implications for the development of policy and legislation regarding ARTs procedure in

the countries we studied, especially in relation to the laws that prevent same-sex couples from realizing their wish to become parents and by improving access to IVF procedures for heterosexual couples.

Further longitudinal research is needed to explore the stability and change in feelings about parental roles and in the quality of parenting, and the mechanisms by which such trajectories are shaped. Indeed, research on families formed through ARTs advances our understanding of the psychological consequences for children conceived by surrogacy, sperm donation, and IVF procedure. In particular, the quality of the relationships between parents and their children conceived through ARTs and its impact on child development and on secure attachment should be examined.

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