

1 Wellbeing of gay fathers with children born through surrogacy: A comparison with lesbian-
2 mother families and heterosexual IVF parent families

3 Van Rijn – van Gelderen, L.^{1,*}, Bos, H.W.M.¹, Jorgensen, T.D.¹, Ellis-Davies, K.^{2,3},
4 Winstanley, A.³, Golombok, S.⁴, Rubio, B.⁵, Gross, M.⁶, Vecho, O.⁷, & Lamb, M.E.³

5

6 **Author affiliations and addresses**

7 ¹Research Institute of Child Development and Education, University of Amsterdam, Nieuwe
8 Achtergracht 127, 1018 VZ, Amsterdam, The Netherlands. ²Division of Psychology,

9 Nottingham Trent University, 50 Shakespeare St, Nottingham NG1 4FQ, United Kingdom

10 ³Department of Psychology, University of Cambridge, Free School Lane, Cambridge CB2

11 3RQ, United Kingdom ⁴Centre for Family Research, University of Cambridge, Free School

12 Lane, Cambridge CB2 3RQ, United Kingdom ⁵IFSTTAR Versailles, 25 Allée des

13 Marronniers, F-78000 Versailles, France ⁶Centre d'études en sciences sociales du religieux,

14 Centre National de la Recherche Scientifique, Ecole des Hautes études en Sciences Sociales,

15 10 Rue Monsieur le Prince, 75006 Paris, France ⁷Université Paris Nanterre, 200 Avenue de la

16 République, 92000 Nanterre, France

17

18 *Correspondence address: L.vanRijn-vanGelderens@uva.nl

19

20 Running title: Wellbeing of gay fathers with children

21

22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

Abstract

Study question: Are there differences in levels of parental wellbeing (parental stress, psychological adjustment, and partner relationship satisfaction) between gay-father families with infants born through surrogacy, lesbian-mother families with infants born through donor insemination, and heterosexual-parent families with infants born through IVF?

Summary answer: There were no differences in parental wellbeing.

What is known already: The only other study of parental wellbeing in gay-father families formed through surrogacy (mean age children: 4 years old) found no difference in couple relationship satisfaction between these families and lesbian-mother families formed through donor insemination and heterosexual-parent families formed without assisted reproductive technologies.

Study design, size, duration: This cross-sectional study is part of an international research project involving 38 gay-father families, 61 lesbian-mother families, and 41 heterosexual-parent families with 4-month-olds. In each country (the U.K., the Netherlands, and France), 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, fertility clinics (for the recruitment of lesbian and heterosexual parents), and/or online forums and magazines.

Participants/materials, setting, methods: During a home visit when their infants were between 3.5 and 4.5 months old, participants completed standardized measures of parental stress, parental psychological adjustment (anxiety and depression), and partner relationship satisfaction.

Main results and the role of chance: All parents reported relatively low levels of parental stress, anxiety, and depression, and were all relatively satisfied with their intimate relationships. After controlling for caregiver role (primary or secondary caregiver role), there

47 were no significant family type differences in parental stress, $p = .949$, depression, $p = .089$,
48 anxiety, $p = .117$, or relationship satisfaction, $p = .354$.

49 **Limitations, reasons for caution:** The findings cannot be generalized to all first-time ART
50 parents with infants because only families from relatively privileged backgrounds
51 participated.

52 **Wider implications of the findings:** Our findings may have implications for the
53 development of policy and legislation in relation to these new family forms, as well as the
54 regulation of surrogacy in the Netherlands and France. In addition, our findings might
55 encourage professional organizations of obstetricians and gynecologists in these countries to
56 recommend that requests for assisted reproduction should be considered regardless of the
57 applicants' sexual orientation.

58 **Study funding/competing interest(s):**

59 This research was supported, under the auspices of the Open Research Area (Application BO
60 3973/1-1; Principal Investigator, Michael E Lamb), by grants from the UK Economic and
61 Social Research Council (ESRC; Grant ES/K006150/1; Principal Investigator, Michael E.
62 Lamb), The Netherlands Organisation for Scientific Research (NWO; Grant NWO 464-11-
63 001, Principal Investigator, Henny Bos), and the French Agence Nationale de Recherche
64 (ANR ; Grant ANR-12-ORAR-00005-01, Principal Investigator, Olivier Vecho) whose
65 support is gratefully acknowledged. There were no competing interests.

66

67

Keywords

68 Gay father, surrogacy, parental stress, anxiety, depression, partner relationship satisfaction

69 **Introduction**

70 Gay men now have opportunities to become parents within same-sex relationships (i.e.,
71 “planned gay father families”), through, for example, adoption and surrogacy. Some
72 researchers have studied planned gay-father families who adopted children (e.g., Farr et al.,
73 2010; Goldberg & Smith, 2013; Golombok et al. 2014). The two existing studies on gay
74 father families created through a surrogacy arrangement have focused on families with older
75 children (Baiocco et al., 2015; Golombok et al. 2017). The present research focused on
76 planned gay families and compared them on three important determinants of parental and
77 child functioning (parental stress, parental psychological adjustment, and partner relationship
78 satisfaction) with parents in lesbian-parent families and heterosexual-parent families whose
79 infant offspring were also conceived by means of assisted reproductive technologies (ARTs),
80 namely insemination with donor sperm (DI) for the lesbian mother families and *in vitro*
81 *fertilization* (IVF) for the heterosexual parent families.

82 **Gay fathers choosing surrogacy**

83 An increasing number of gay men are choosing surrogacy as their route to parenthood
84 (Bos et al., 2016). There are two types of surrogacy: (1) genetic (or traditional) surrogacy,
85 whereby the sperm of one of the prospective gay fathers is used to fertilize the surrogate’s
86 egg in an artificial insemination procedure; and (2) gestational surrogacy, in which a
87 woman’s egg(s) is/are fertilized with the sperm of one of the prospective gay fathers by
88 means of an IVF procedure in a laboratory, after which the embryo is transferred to the
89 surrogate’s womb (Lev, 2004). Gay men who want to become parents through surrogacy
90 usually opt for gestational surrogacy (e.g., Blake et al., 2017).

91 Gay couples may choose surrogacy for various reasons. For example, they may prefer
92 surrogacy to adoption because they want at least one parent to have a biological link to the
93 child (e.g., Blake et al. 2017). The route through surrogacy, however, is complicated. In some

94 countries, including France, surrogacy is forbidden (Depadt, 2015). In other countries, such
95 as the United Kingdom (U.K.) and the Netherlands, intended parents can compensate
96 surrogates for their expenses but it is illegal to advertise for a surrogate or to offer surrogacy
97 services (see Dutch Penal Code of 1993, article 151b; 151c; Surrogacy Arrangements Act,
98 1985), and there may still be barriers that restrict gay men's access to clinics arranging
99 gestational surrogacy. For example, in the Netherlands, clinics can conduct gestational
100 surrogacy for couples for medical reasons only (Boele-Woelki et al., 2011). In many
101 countries, therefore, gay couples seeking parenthood through gestational surrogacy travel to
102 countries where surrogacy is allowed and where there are no regulations that deny access to
103 gay couples (Vonk & Boele-Woelki, 2012). This means that the procedures are expensive,
104 currently between \$90,000 and more than \$120,000 (Gays with Kids, 2016).

105 **Family stress theory and the unique circumstances of gay fathers**

106 Since the surrogacy route to parenthood for gay couples is a relatively new one, little is
107 known about the parental stress, psychological adjustment, and relationship satisfaction
108 experienced by these fathers when their children are only a few months olds. The birth of a
109 couple's first child brings about many changes in the household (e.g. increases in household
110 labor associated with caring for the baby; Deutsch, 2001) which might be stressful.

111 According to family stress theory, high levels of parental stress may be associated with
112 parental psychological problems, and partner relationship dissatisfaction (Patterson, 1988),
113 which in turn might be associated with children's adjustment (e.g., Stone et al., 2016). Higher
114 levels of parental stress are associated with dysfunctional parent-child relationships and less
115 positive parenting behaviors (e.g., Anthony et al., 2005). A meta-analysis conducted by
116 McCabe (2014) showed that mothers with lower levels of psychopathology exhibited higher
117 levels of positive parenting behavior, such as warmth and adaptive control. With regard to
118 couple relationship satisfaction, it has been shown that positive attitudes towards partners

119 allow parents to participate in engaging, consistent, and inductive parenting practices (e.g.,
120 Krishnakumar & Buehler, 2000).

121 All parents experience some degree of parental stress and psychological problems or
122 difficulties in their partner relationships while rearing children. However, the circumstances
123 of gay-father families might be somewhat different from those of lesbian-mother and
124 heterosexual-parent families. This is not only because it is rare for men to be primary
125 caregivers and it is commonly supposed that men are less nurturing (Golombok et al., 2014),
126 but also because gay fathers may be exposed to greater prejudice than lesbian women (e.g.
127 Golombok, et al. 2017). Based on the sexual minority stress model, one could also assume
128 that gay fathers may be stigmatized in relation to their sexual identity (e.g., Meyer, 2003).
129 The exposure to sexual minority stressors might have a negative influence on the levels of
130 parental stress, parental psychological adjustment, and partner relationship satisfaction.

131 Nevertheless, studies of gay adoptive parents have shown that these fathers report less
132 stress than population norms would predict (e.g. Farr et al., 2010) and lower levels of parental
133 stress and depression than are reported by heterosexual couples with adopted children
134 (Golombok et al., 2014). However, the situation might be different for gay fathers who
135 conceive through surrogacy. Although the only existing study of parental wellbeing in gay
136 father families formed through surrogacy found no difference in couple relationship
137 satisfaction between these families and lesbian-mother and heterosexual-parent families, the
138 children in that study averaged 4 years of age (Baiocco et al., 2015). During infancy, the
139 unique circumstances of gay-father families using surrogacy may be more salient because
140 their experiences are still fresh.

141 In addition to being exposed to sexual minority stressors, gay fathers with infants born
142 through surrogacy may also confront other stressors resulting from the fact that surrogacy is
143 less familiar and so its use by gay parents may be considered less acceptable (e.g., media

144 accounts of surrogacy often focus on negative or illegal practices; Van den Akker et al.,
145 2016). During the surrogate's pregnancy, the fathers may be concerned about her health and
146 that of the baby because of the medical risks associated with gestational surrogacy (Damelio
147 & Sorensen, 2008). These gay fathers thus face unique circumstances that might have a
148 negative influence on their parental wellbeing, especially if they are first-time parents.

149 **Current study**

150 The aim of the study was to examine levels of parental wellbeing (parental stress,
151 psychological adjustment, and partner relationship satisfaction) in gay-father families with
152 infants born through surrogacy. The gay-father families were compared with lesbian-mother
153 families with children born through donor insemination and heterosexual-parent families with
154 infants born through IVF. The lesbian families controlled for the number of same-sex parents
155 in the family as well as the use of gamete donation; the heterosexual families comprised a
156 comparison group of traditional families who used ARTs to conceive.

157 We also examined levels of parental wellbeing associated with caregiver role (primary
158 versus secondary), taking into account family type (gay/lesbian/heterosexual), because one of
159 the greatest sources of conflict for couples during the transition to parenthood is the division
160 of labor, especially regarding who will be the primary caregiver (Belsky & Pensky, 1988).

161 **Materials and Methods**

162 **Participants**

163 The participants in the present research were involved in an international research
164 project on gay couples who became parents through surrogacy. The project was carried out
165 by researchers in the U.K., the Netherlands, and France who recruited 38 gay- father families,
166 61 lesbian-mother families, and 41 heterosexual-parent families. In all families ($N = 140$)
167 both parents participated in the study. Ethical approval was granted by the appropriate

168 committees at the three home institutes, namely University of Cambridge, University of
169 Amsterdam, and Centre Universitaire des Saints-Pères.

170 Data were collected from both parents in each family when the infants were on average
171 3.7 months old ($SD = 0.59$). Fifteen percent of the families had twins. About 55% of the
172 infants were female. The parents had been in their current relationships for between 2 and 21
173 years; the average duration was 8.1 years ($SD = 3.73$). Almost 80% of the parents were
174 married or in civil partnerships. Their ages ranged from 22 to 59 years ($M = 34.8$, $SD = 5.07$).
175 About two-thirds (63%) of the parents were employed fulltime. Most families (71%) had an
176 annual household income of more than 42,365 US dollars. The majority of the British and
177 Dutch parents were White (96.2%); no information about the ethnicity of the French parents
178 was available (it was not permissible to obtain information about the ethnic background of
179 participants in France). Only nine of the families (6%) lived in rural areas. The remaining
180 families resided in small (46 families; 33%), medium (44 families; 31%), and large cities (41
181 families; 29%). As shown in Table I, there were no significant differences between the family
182 types with respect to the age of the infants, the infants' gender, or annual family income.
183 However, there were significant differences between the family types with respect to the
184 number of twins, whether the parents were cohabiting or were married/registered civil
185 partners (marital status/civil partner registration), relationship duration, and where the
186 families lived (residency).

187 The parent who was most involved with the child on a day-to-day basis was labeled as
188 the primary caregiver and the co-parent was labeled as the secondary caregiver. To identify
189 the primary and the secondary caregiver in each family, six items on the "Who does what"
190 instrument (Cowan & Cowan, 1990) were used. Both parents were asked who was
191 responsible for their infant's weekday care: (1) when getting up, during breakfast, and when
192 dressing the infant, (2) during the day from 9.00 a.m. to 1.00 p.m., (3) during the day from

193 1.00 p.m. to 5.00 p.m., (4) when having dinner, during playtime, at bedtime, (5) in the
194 evening until midnight, and (6) when the infant needed care in the middle of the night.
195 Response options ranged from 1 (“*I do it all*”) to 9 (“*Partner does it all*”). The primary
196 caregiver was therefore the parent with the lower average score on these six items. In eight of
197 the families (6%), both parents had the same average score on the abovementioned six items
198 and in 34 families (24%) one of the parents in a family unit had a missing value on one of the
199 six items. To establish who was the primary and secondary caregiver in these 42 families, the
200 answer to the question “During the past week, who spent most time with [name infant(s)]?”
201 (asked by the research assistant when arranging the home visit) was used to identify the
202 parent with the primary caregiver role. Primary and secondary caregivers in the different
203 types of families differed in age and working status (see Table I). There were no family type
204 differences regarding the ethnic identity of the primary and secondary caregivers in the Dutch
205 and British families.

206 **Procedure**

207 In each country, participants were recruited through specialist lawyers with expertise in
208 surrogacy (for the recruitment of gay fathers), parenting support groups, fertility clinics (for
209 the recruitment of lesbian and heterosexual parents), and/or online forums and magazines.
210 Inclusion criteria concerning methods of conception were: Gay-father families had to have
211 used surrogate carriers, lesbian-mother families had to have used sperm donors, and
212 heterosexual-parent families had to have used IVF without sperm or egg donation. All
213 families gave written informed consent.

214 The families were assessed at home when their infants were between 3.5 and 4.5
215 months old. Before the home visits, the parents completed an online questionnaire (protected
216 by a unique password for each parent) on their demographics, and during the visit both
217 parents separately completed an online questionnaire.

218 **Measures**

219 All instruments had been validated in studies carried out in the U.K. or in the United
220 States (Abidin, 2012; Cox et al., 1987; Spielberger & Gorsuch, 1983). The parental stress,
221 anxiety, and depression instruments had been translated and validated in French studies
222 (Bigras et al., 1996; Guedeny & Fermanian, 1998; Spielberger et al., 1993). Only the
223 instrument that was used to measure depression had been validated in the Netherlands (Pop et
224 al., 1992). When no French or Dutch versions of the instruments had been validated, the
225 items were translated into French and Dutch, respectively, and were back-translated into
226 English.

227 **Parental stress.** Parental stress was assessed using the Parental Distress subscale of the
228 short version of the Parenting Stress Index (Abidin, 2012). This subscale consists of 12 items
229 (e.g., “I feel alone and without friends”) with response categories ranging from 1 (*strongly*
230 *agree*) to 5 (*strongly disagree*). Scores ranged from 12 to 60; higher scores indicated greater
231 parental stress. For our sample, the internal consistency for the parental stress subscale was
232 good (Cronbach’s $\alpha = .85$).

233 **Parental psychological adjustment.** The Trait Anxiety Scale (T-Anxiety) of the State-
234 Trait Anxiety Inventory – adult version (Spielberger & Gorsuch, 1983) was used to measure
235 the parents’ general level of anxiety. Parents rated the frequency with which they experienced
236 20 feelings or emotions from 1 (*almost never*) to 4 (*almost always*). An example item is: “I
237 feel inadequate.” Scores ranged from 20 to 80, with higher scores reflecting a higher level of
238 anxiety. For our sample, internal consistency was high (Cronbach’s $\alpha = .87$).

239 Data on the parents’ depressive symptoms were obtained using the Edinburgh Postnatal
240 Depression Inventory (Cox et al., 1987). Parents rated 10 items (e.g., “I have been sad or
241 miserable”) from 0 (*not at all*) to 3 (*yes, all the time*). Scores ranged between 0 and 30, with
242 higher scores indicating higher levels of depression (scores > 10 indicate clinically relevant

243 levels of depression) (Cox et al., 1987). Internal consistency was adequate for our sample
244 (Cronbach's $\alpha = .64$).

245 **Relationship satisfaction.** Relationship satisfaction was measured using the Golombok
246 Rust Inventory of Marital State (Rust et al., 1986), which has been used in previous studies of
247 lesbian couples with children (e.g., Brewaeys et al., 1997). Parents rated 28 items (e.g., "Our
248 relationship is continually evolving") on a scale of 0 (*strongly agree*) to 3 (*strongly disagree*).
249 Scores range from 0 to 84, with higher scores indicating poorer relationship quality (Rust et
250 al., 1986).

251 **Analysis Plan**

252 The data gathered for the present investigation were dyadic in nature, meaning that both
253 parents in each family completed the same measures. Structural equation modeling (SEM)
254 accounts for the dependence of observations nested within dyads using a multivariate
255 framework for analyzing differences in means (Peugh et al., 2013) similar to the way lack of
256 independence is handled in repeated-measures ANOVA, but with less restrictive
257 assumptions. Furthermore, the SEM framework allows "robust means modeling" so that test
258 statistics are robust with respect to non-normality as well as the heterogeneity of variances
259 (Fan & Hancock, 2012).

260 SEMs were fitted to eight variables (primary and secondary caregivers' responses to
261 measures of parenting stress, anxiety, depression, and relationship satisfaction) in each of
262 three groups (gay, lesbian, and heterosexual parents). Due to some missing data, all eight
263 means, eight variances, and 28 covariances were freely estimated in each group using full
264 information maximum likelihood (FIML), which is the gold standard for handling missing
265 data (Little et al., 2014) under the standard missing-at-random (MAR) assumption.
266 Descriptive statistics, however, were calculated using complete cases for each variable, or
267 pairwise complete observations for correlations.

268 The SEMs were fitted using R statistical software (version 3.3.3) with the *lavaan*
269 package (version 0.6-1). In each analysis, hypotheses were tested using a robust likelihood
270 ratio test (LRT) statistic, distributed as a χ^2 random variable with *df* equal to the number of
271 equality constraints being tested.

272 To analyze the parental stress, psychological adjustment, and relationship satisfaction
273 scores for parents in the three family types, an SEM was fitted in which the means for an
274 outcome variable were constrained to be equal across the three groups. The saturated model
275 estimated six separate means for each outcome (i.e., for each of two caregivers in each of the
276 three groups), whereas the constrained model estimated only two means for each outcome
277 variable (e.g., parental stress): one for the primary caregivers across all groups, and another
278 for the secondary caregivers. Thus, these tests had $6 - 2 = 4$ *df*. In these analyses, the
279 familywise Type I error rate was controlled by testing each of the four outcomes using a
280 Bonferroni-corrected $\alpha = .05 / 4 = .0125$ as the criterion for statistical significance.

281 We also analyzed the scores on parental stress, psychological adjustment, and
282 relationship satisfaction across caregiver roles (primary versus secondary) by constraining
283 means to be equal across those two groups. This constrained model estimated only three
284 means for each outcome variable: one for gay-father families (both parents), one for lesbian-
285 mothers families (both parents), and one for heterosexual-parent families (both parents); thus,
286 these tests had $6 - 3 = 3$ *df*. In these analyses, the familywise Type I error rate was controlled
287 by testing each of the four outcomes using a Bonferroni-corrected $\alpha = .05 / 4 = .0125$ as the
288 criterion for statistical significance.

289 **Results**

290 Table II shows mean scores and standard deviations for parental stress, anxiety,
291 depression, and relationship satisfaction as reported by the primary and secondary caregivers
292 in each family type (gay-father families, lesbian-mother families, and heterosexual-parent

293 families). The mean score on parental stress for all parents was 21.9 ($SD = 6.75$). The average
 294 scores for anxiety were 33.2 ($SD = 7.50$), for depression 4.4 ($SD = 2.93$), and for relationship
 295 satisfaction 20.9 ($SD = 8.43$). See Table III for correlations between parental stress and the
 296 anxiety, depression, and partner relationship satisfaction variables. Further tests of
 297 differences between the correlations within the different groups and different partners are
 298 presented in the supplementary material.

299 **Family Type**

300 The average levels of parental stress, anxiety, depression, and relationship satisfaction
 301 for gay fathers were 22.0 ($SD = 8.39$), 31.9 ($SD = 7.30$), 4.0 ($SD = 2.95$), and 21.0 ($SD =$
 302 9.84), respectively. For the lesbian mothers, the average scores were 21.6 ($SD = 6.25$), 33.9
 303 ($SD = 7.44$), 4.6 ($SD = 2.92$), and 20.1 ($SD = 8.11$), respectively. For parents in heterosexual
 304 families, the average scores were 22.3 ($SD = 5.26$), 33.4 ($SD = 7.72$), 4.6 ($SD = 2.92$), and
 305 22.0 ($SD = 7.34$), respectively.

306 After controlling for caregiver role (primary or secondary caregiver role), there were no
 307 significant family type differences in parental stress, $\chi^2(4) = 0.72, p = .949$, depression, $\chi^2(4)$
 308 $= 8.08, p = .089$, anxiety, $\chi^2(4) = 7.38, p = .117$, or relationship satisfaction, $\chi^2(4) = 4.40, p =$
 309 $.354$. Thus, no post hoc tests were conducted.

310 **Caregiver Role**

311 For the primary caregivers the average scores for parental stress, anxiety, depression,
 312 and relationship satisfaction were 22.7 ($SD = 6.99$), 33.6 ($SD = 7.73$), 4.7 ($SD = 3.04$), and
 313 21.0 ($SD = 8.75$), respectively. The average scores for the secondary caregivers were 21.2
 314 ($SD = 6.42$), 32.8 ($SD = 7.26$), 4.1 ($SD = 2.80$), and 20.8 ($SD = 8.13$), respectively.

315 After controlling for family type, there were no significant differences between the
 316 primary and secondary caregiver on parental stress, $\chi^2(3) = 4.67, p = .197$, anxiety, $\chi^2(3) =$

317 3.40, $p = .334$, depression, $\chi^2(3) = 9.88$, $p = .020$, or relationship satisfaction, $\chi^2(3) = 2.79$, $p =$
318 $.425$. No post hoc tests were thus conducted.

319

320

Discussion

321 Our study was the first to investigate parental wellbeing (parental stress, psychological
322 adjustment, and partner relationship satisfaction) in a sample of gay fathers with infants born
323 through surrogacy, and to compare them with lesbian-mother families formed through donor
324 insemination and heterosexual-parent families formed through IVF, in order to control for the
325 use of assisted reproduction. It was assumed that levels of parental involvement might also
326 influence the new parents' levels of parental stress, psychological adjustment, and partner
327 relationship satisfaction. Therefore, the caregiver role was also taken into account.

328 The parents in our study reported relatively low levels of parental stress, anxiety and
329 depression, regardless of family type or caregiver role. Further, the parents in all family types
330 and regardless of their caregiver roles were relatively satisfied with their intimate
331 relationships. There were no significant effects for family type or caregiver role. However,
332 we did find a non-significant trend towards lower levels of depression for the primary gay
333 fathers when compared to the lesbian and heterosexual parents, which is in line with the
334 finding of Golombok et al. (2014) for adoptive gay fathers.

335 In light of the sexual minority hypothesis of Meyer (2003), which assumes that
336 experiences of rejection because of sexual orientation are related to mental health problems,
337 the absence of significant differences in levels of parental stress, parental psychological
338 adjustment, and relationship satisfaction might be somewhat surprising. Conceivably, there
339 were no differences because all the fathers and mothers had experienced difficulty fulfilling
340 their wish to become parents, and that, having overcome the obstacles, they experienced
341 relatively high levels of wellbeing (Taubman-Ben-Ari & Spielman, 2014). In addition, the

342 fact that all the parents (regardless of family type) had encountered difficulties fulfilling their
343 wish to become fathers or mothers might explain the absence of differences between primary
344 and secondary caregivers. Another explanation may be that, because parenthood is not a
345 common choice for gay men, becoming a parent might be experienced as a happy triumph
346 over the widespread message that gay men and lesbian women are not supposed to become
347 parents (Armesto, 2002), and this might influence their psychological adjustment in a positive
348 way (Erez & Shenkman, 2016). Another explanation might be that, for gay men, being a
349 father represents conformity to traditional heterosexual gendered parental roles and may thus
350 enhance a sense of belongingness, social acceptance, and social support from significant
351 others, like friends and family members (e.g., Bergman et al., 2010; Kama, 2011; Sumontha
352 et al., 2016) which, in turn, might enhance the wellbeing of same-sex couples with children.

353 Furthermore, secondary caregivers in gay-father families in our sample had fewer full-
354 time jobs than secondary caregivers in heterosexual-parent families (but not than those in
355 lesbian-mother families). This indicates that gay fathers with infants conceived through
356 surrogacy divide the household caregiving tasks more evenly than heterosexual couples,
357 which is in line with previous research on male same-sex couples who had their children via
358 surrogacy (Tornello et al., 2015).

359 Several limitations need to be acknowledged. First, the sample size made it impossible
360 to take into account differences between the three countries in which the participants lived.
361 Such differences should be explored in larger studies because of differences between the
362 U.K., the Netherlands, and France with regard to policy and social attitudes towards gay and
363 lesbian individuals and same-sex parenting (Takács et al., 2016). A Monte Carlo power
364 analysis showed that we had sufficient power to detect large effects between family types but
365 not necessarily smaller ones – and sufficient power to detect moderate effects between
366 caregiver roles. This implies that there might be small differences between the family types

367 and between caregiver roles which we were not able to discover because of the small sample
368 sizes. Secondly, all parents had moderate to high socioeconomic status and were mostly
369 White. As such, the findings cannot be generalized to the whole population of first-time ART
370 parents with infant children. In addition, poorer family finances have been linked to lower
371 parental well-being (e.g., Bøe et al., 2014) and it is thus possible that the average levels of
372 parental well-being of less economically privileged gay fathers, lesbian mothers, and
373 heterosexual parents who conceive through ART may be lower than reported by the parents
374 in our sample. Furthermore, the families were recruited using nonprobability sampling
375 techniques, such as specialist lawyers with expertise in surrogacy. Such recruitment
376 techniques have been criticized because they may hamper generalizability (Meyer & Wilson,
377 2009). In addition, participating parents might have sought to enhance their scores to
378 exaggerate their wellbeing. However, this could be true for parents in all three groups,
379 because all the families had used ARTs.

380 Notwithstanding these limitations, our findings may have implications for the
381 development of policy and legislation in relation to these new family forms, as well as the
382 regulation of surrogacy. Same-sex marriage is recognized in all three countries that we
383 studied, but the situation regarding same-sex parenthood and especially surrogacy differs. For
384 example, in France, surrogacy is illegal and lesbian couples do not have access to ARTs. In
385 the U.K. and the Netherlands, lesbian couples have access to ARTs and gestational surrogacy
386 is allowed, but commercial surrogacy is forbidden and it is illegal to advertise for or offer to
387 be a surrogate for payment. Our findings might encourage policymakers in the Netherlands
388 and France to change their laws and break down the barriers that prevent gay couples from
389 fulfilling their wish to become parents through surrogacy. Our findings might also encourage
390 professional organizations of obstetricians and gynecologists in these countries to recommend
391 that requests for assisted reproduction should be considered regardless of the applicants'

392 sexual orientation, as both the Human Fertilisation and Embryology Act in the United
393 Kingdom and the ethics committee of the American Society for Reproductive Medicine did
394 in 2008 (The Ethics Committee of the American Society for Reproductive Medicine, 2009).

395 **Acknowledgements**

396 The authors wish to thank Ellen van Reemst, Jeanine Baartmans, Mathilde Brewaeys, Marie
397 Michal-Schmelck, and Julie Brément for their help with collecting the data. We also would
398 like to thank the families for participating.

399 **Authors' roles**

400 As principal investigators, M.L., H.B, O.V., were responsible for the design of the study in
401 collaboration with S.G., M.G., K.E-D., A.W., L.v.R., and B.R. Data were collected by L.v.R,
402 H.B., K.D., A.W., B.R., O.V., and M.G under the oversight of K.E-D. T.J. and H.B.
403 conducted data analysis. L.v.R. and H.B. interpreted results and drafted this manuscript. All
404 authors contributed to its revision and have approved the final version for publication.

405 **Funding**

406 This research was supported, under the auspices of the Open Research Area (Application BO
407 3973/1-1; Principal Investigator, Michael E Lamb), by grants from the UK Economic and
408 Social Research Council (ESRC; Grant ES/K006150/1; Principal Investigator, Michael E.
409 Lamb), The Netherlands Organisation for Scientific Research (NWO; Grant NWO 464-11-
410 001, Principal Investigator, Henny Bos), and the French Agence Nationale de Recherche
411 (ANR ; GGrant ANR-12-ORAR-00005-01, Principal Investigator, Olivier Vecho) whose
412 support is gratefully acknowledged.

413 **Conflict of interest**

414 None to declare.

415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444

Reference List

- Abidin RR. *Parenting stress index*. 4th ed, 2012. PAR, Lutz, Florida, US.
- Anthony LG, Anthony BJ, Glanville DN, Naiman DQ, Waanders C, Shaffer S. The relationships between parenting stress, parenting behavior and preschoolers' social competence and behavior problems in the classroom. *Infant Child Dev* 2005; **14** : 133-154.
- Armesto JC. Developmental and contextual factors that influence gay fathers' parental competence: A review of the literature. *Psychol Men Masc* 2002; **3** : 67-78.
- Baiocco R, Santamaria F, Ioverno S, Fontanesi L, Baumgartner, E, Laghi F, Lingiardi V. Lesbian mother families and gay father families in Italy: Family functioning, dyadic satisfaction, and child well-being. *Sex Res Social Policy* 2015; **12** : 202-212.
- Belsky J, Pensky E. Marital change across the transition to parenthood. *Marriage Fam Rev* 1988; **12** : 133-156.
- Bergman K, Rubio RJ, Green R, Padrón E. Gay men who become fathers via surrogacy: The transition to parenthood. *J GLBT Fam Stud* 2010; **6**: 111-141.
- Blake L, Carone N, Raffanella E., Slutsky J, Ehrhardt AA, Golombok, S. Gay fathers' motivations for and feelings about surrogacy as a path to parenthood. *Hum Repro* 2017; **32** : 860-867.
- Bigras M, LaFreniere PJ, Dumas JE. Discriminant validity of the parent and child scales of the parenting stress index. et al. *Early Educ Dev* 1996; **7** : 167 – 178.
- Bøe, Sivertsen B, Heiervang E, Goodman R, Lundervold A.J., Hysing M. Socioeconomic status and child mental health: the role of parental emotional well-being and parenting practices. *J Abnorm Child Psychol* 2014; **42** : 705-715.

- 445 Boele-Woelki K, Curry-Sumner I, Schrama W, Vonk M. *Draagmoederschap en illegale*
 446 *opneming van kinderen* [Commercial surrogacy and the unlawful placement of children]. 2011.
 447 WODC, Ministerie van Veiligheid & Justitie, The Hague, The Netherlands.
 448
- 449 Bos HMW, Tornello S, van Rijn – van Gelderen L. *Childless Gay Men: Predictors of their*
 450 *intentions to have children*. Paper presented at the 31st International Conference of Psychology,
 451 Pacifico Yokohama, Yokohama, Japan, July 24 -29, 2016.
 452
- 453 Brewaeys A, Ponjaert I, Van Hall EV, Golombok S. Donor insemination: child development and
 454 family functioning in lesbian mother families. *Hum Repro* 1997; **6** : 1349- 1359.
 455
- 456 Cowan CP & Cowan PA. Who does what? In Touliatos J, Perlmutter BF, Straus MA (eds)
 457 *Handbook of family measurement techniques*. 1990. Sage, Beverly Hills, California, US, pp. 447
 458 – 448.
 459
- 460 Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression. Development of the 10-item
 461 Edinburgh Postnatal Depression Scale. *Br J Psychiatry*, 1987; **150** : 782-786.
 462
- 463 Damelio J, Sorensen K. Enhancing autonomy in paid surrogacy. *Bioethics* 2008; **22**: 269-277.
 464
- 465 Depadt V. Chapitre 10. La GPA : vers la légalisation ? *J Int Bioéthique* 2015 ; **26** : 139-151.
 466
- 467 Deutsch FM. Equally shared parenting. *Curr Dir Psychol Sci* 2001; **10** : 25-28.
 468
- 469 Erez C, Shenkman G. Gay dads are happier: Subjective well-being among gay and heterosexual
 470 fathers. *J GLBT Fam Stud* 2016; **12** : 1-18.
 471
- 472 Ethics Committee of the American Society for Reproductive Medicine. Access to fertility
 473 treatment by gays, lesbians, and unmarried persons. *Fertil Steril* 2009; **92** : 1190-1193.
 474
- 475 Farr RH, Forssell SL, Patterson, CJ. Parenting and child development in adoptive families: Does
 476 parental sexual orientation matter? *Appl Dev Sci* 2010; **14**: 164-178.
 477

- 478 Fan W, Hancock GR. Robust means modeling: An alternative for hypothesis testing of
479 independent means under variance heterogeneity and nonnormality. *J Educ Behav Stat* 2012; **37** :
480 137–156.
- 481
- 482 Gays with Kids. <https://gayswithkids.com/2015/09/17/the-cost-of-gay-fatherhood/> 2016.
- 483
- 484 Goldberg AE, Smith JZ. Predictors of psychological adjustment in early placed adopted children
485 with lesbian, gay, and heterosexual parents. *J Fam Psychol* 2013; **27** ; 431-442.
- 486
- 487 Golombok S, Blake L, Slutsky J, Raffanella E, Roman GD, Ehrhardt A. Parenting and the
488 adjustment of children born to gay fathers through surrogacy. *Child Dev* 2017. In press.
- 489
- 490 Golombok S, Mellish L, Jennings S, Casey P, Tasker F, Lamb ME. Adoptive gay father families:
491 Parent–child relationships and children's psychological adjustment. *Child Dev* 2014; **85** : 456-
492 468.
- 493
- 494 Guedeny N, Fermanian, J. Validation study of the French version of the Edinburgh Postnatal
495 Depression Scale (EPDS): New results about use and psychometric properties. *Eur Psychiatry*
496 1998; **13** : 83-89.
- 497
- 498 Kama A. Parading pridefully into the mainstream. In Ben-Porat G and Turner BS (eds) *The*
499 *contradictions of Israeli citizenship: Land, religion and state*. Routledge, London, UK, pp.180-
500 202.
- 501
- 502 Krishnakumar A, Buehler C. Interparental conflict and parenting behaviors: A meta-analytic
503 review. *Fam Relat* 2000; **49**: 25-44.
- 504
- 505 Lev AL (2004). *The complete lesbian and gay parenting guide*. 2004. Penguin, New York, US.
- 506 Lev AL. Gay dads: Choosing surrogacy. *Lesbian Gay Psychol Rev* 2006; **7**: 73-77.
- 507
- 508 Little TD, Jorgensen TD, Lang KM, Moore EWG. On the joys of missing data. *Journal of*
509 *Pediatr Psychol* 2014; **39** : 151–162.
- 510

- 511 McCabe JE. Maternal personality and psychopathology as determinants of parenting behavior: A
512 quantitative integration of two parenting literatures. *Psychol Bull* 2014; **140** : 722-750.
513
- 514 Meyer IH (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual
515 populations: Conceptual issues and research evidence. *Psychol Bull* 2003; **129** : 674-697.
516
- 517 Meyer IH, Wilson PA. Sampling lesbian, gay, and bisexual populations. *J Couns Psychol* 2009;
518 **56** : 23-31.
519
- 520 Patterson JM. Families experiencing stress: I. The Family Adjustment and Adaptation Response
521 Model: II. Applying the FAAR Model to health-related issues for intervention and research. *Fam*
522 *Syst Med* 1988; **6** : 202-237.
523
- 524 Peugh JL, DiLillo D, Panuzio J. Analyzing mixed-dyadic data using structural equation models.
525 *Struct Equ Modeling* 2013; **20** : 314–337.
526
- 527 Pop VJ, Komproe, IH, Van Son MJ. Characteristics of the Edinburgh post natal depression scale
528 in the Netherlands. *J Affect Disord* 1992; **26** : 105–110.10.
529
- 530 Rust J, Bennun I, Crowe M, Golombok S. The golombok rust inventory of marital state
531 (GRIMS). *Sex Marital Ther* 1986; **1** : 55-60.
532
- 533 Spielberger CD, Gorsuch RL. *State-trait anxiety inventory for adults: Manual, instrument, and*
534 *scoring guide*. 1983. Mind Garden, Redwood City, California, US.
535
- 536 Spielberger CD, Gorsuch R, Lushene PR, Vagg GA, Jacobs GA. *Manuel de l'inventaire*
537 *d'anxiété état-trait*. 1993. Editions du Centre Psychologie Appliquée, Paris, France.
538
- 539 Stone LL, Mares SH, Otten R, Engels RC, Janssens JM. The co-development of parenting stress
540 and childhood internalizing and externalizing problems. *J Psychopathol Behav Assess* 2016; **38**:
541 76-86.
542

- 543 Sumontha, J, Farr RH, Patterson, CJ. Social support and coparenting among lesbian, gay, and
544 heterosexual adoptive parents. *J Fam Psychol* 2016; **30** : 987-997.
- 545 Surrogacy Arrangements Act. 1985. Her Majesty's Stationary Office, London, UK.
546
- 547 Takács J, Szalma I, Bartus T. Social attitudes toward adoption by same-sex couples in Europe.
548 *Arch Sex Behav* 2016; x : 1787–1798.
- 549
- 550 Taubman–Ben-Ari O, Spielman V. Personal growth following the first child's birth: A
551 comparison of parents of pre-and full-term babies. *Soc Work Res* 2014; **38** : 91-106.
552
- 553 Tornello SL, Kruczkowski SM, Patterson CJ. Division of labor and relationship quality among
554 male same-sex couples who became fathers via surrogacy. *J GLBT Fam Stud* 2015; **11** : 375-394.
555
- 556 Van den Akker O, Camara I, Hunt B. ‘Together... for only a moment’: British newspaper
557 constructions of altruistic non-commercial surrogate motherhood. *J Reprod Infant Psychol* 2016;
558 **34**: 271-281.
559
- 560 Vonk MJ, Boele-Woelki K. Surrogacy and same-sex couples in the Netherlands. *Eur Fam Law*
561 2012;; **17**: 123-139.
562
563