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5	TITLE: Surrogate mothers 10 years on: A longitudinal study of psychological wellbeing and
6	relationships with the parents and child
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8	RUNNING TITLE: Surrogate mothers ten years on
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11	Authors: V Jadva ^{1*} , S Imrie ¹ and S Golombok ¹
12	
13	¹ Centre for Family Research, Department of Psychology, University of Cambridge, Free
14	School Lane, Cambridge CB2 3RF, United Kingdom.
15	
16	*Corresponding author: Vasanti Jadva: e-mail: vj227@cam.ac.uk).
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ABSTRACT

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Study Question: How do surrogates psychological health and experiences of surrogacy 19 change from one year to ten years following the birth of the surrogacy child? 20 21 Summary answer: Surrogates' psychological well-being did not change ten years following 22 the birth, with the majority continuing to report good mental health and all surrogates remained positive about the surrogacy arrangement. What is known already: Studies have 23 found that surrogates may find the weeks following the birth difficult, but do not experience 24 25 psychological problems 6 months and 1 year later. Research has also shown that surrogates can form close relationships with the intended parents during the pregnancy which may 26 27 continue after the birth. 28 Study design, size, duration: This study used a prospective longitudinal design. 20 surrogates were seen at two time points, one year following the birth of the surrogacy child and ten years 29 30 later. Participants/materials, setting, methods: Twenty surrogates (representing 59% of the original 31 sample) were administered a semi-structured interview and completed self-report 32 33 questionnaires. Eleven surrogates were gestational carriers and 9 surrogates had used their own egg (genetic surrogacy). Four were previously known to the intended parents and 16 34 were previously not known. 35 36 Main results and the role of chance: Ten years following the birth of the surrogacy child, surrogate mothers scored within the normal range for self-esteem and did not show signs of 37 depression as measured by the Beck Depression Inventory. Marital quality remained positive 38 over time. All surrogates reported that their expectations of their relationship with the 39

intended parents had been either met or exceeded and most reported positive feelings towards

like to maintain contact or would be available to the child if the child wished to contact them.

the child. In terms of expectations for the future, most surrogates reported that they would

None expressed regrets about their involvement in surrogacy.

- Limitations, reasons for caution: The sample size of this study is small and may not be
- 45 representative of all surrogates. Therefore the extent to which these findings can be
- 46 generalised is not known
- Wider implications of the findings: Contrary to concerns about the potentially negative long-
- 48 term effect of surrogacy, the findings suggest that surrogacy can be a positive experience for
- 49 some women at least. These findings are important for policy and practice of surrogacy
- around the world.
- 51 Study funding/competing interest(s): This work was supported by the Economic and Social
- Research Council (grant number ES/I009221/1). None of the authors has any conflict of
- 53 interest to declare.
- 54 KEYWORDS: Surrogacy, surrogate, psychological wellbeing

INTRODUCTION

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Despite the concerns that have been raised about the long-term impact of surrogacy for surrogate mothers (Brazier et al., 1998) there remains a lack of empirical research in this area. Thus we do not know whether women come to regret being surrogates later in their lives, and for surrogates who maintain contact with the family as the child grows up, whether their relationships break down over time (Brazier et al., 1998 Golombok, 2004). Furthermore, the impact on surrogate's psychological health and on relationships with members of her own family in the long-term is also unknown. Experiences may also be different for genetic surrogates (those who use their own egg for the surrogacy) compared to gestational surrogates (those who use the intended parents' gametes or donor gametes) or between known surrogates (family members and friends of the intended parents) and unknown surrogates (those who met the intended parents for the purpose of the surrogacy). Most research carried out with surrogates has focused on their motivations. Studies have largely found that the majority of surrogates are primarily motivated by a wish to help a childless couple, with few mentioning financial motives; a finding that has been found in both the UK where only altruistic surrogacy is permitted (Blyth, 1994, Jadva 2003, Van den Akker 2003), and in the US where commercial surrogacy is practiced (Hohman and Hagan, 2001, Ragoné, 1994). In terms of psychological well-being, some surrogates have been found to report minor difficulties in the weeks following the birth. However, these appear to lessen over time (Jadva et al., 2003). Studies have shown that the majority of surrogates do not experience psychological problems either six months (Van den Akker, 2005) or one year (Jadva et al., 2003) following the birth. Studies examining the relationship between surrogates and the intended couple have found that surrogates can place a great deal of importance on this relationship which can determine how they perceive their surrogacy experience (Ciccarelli & Beckman, 2005). In the longer term, surrogates' satisfaction of the surrogacy arrangement may similarly depend on the relationship with the intended couple with less frequent contact being associated with less satisfaction (Ciccarelli, 1997; Ciccarelli & Beckman 2005). Whether or not contact is maintained may also be an important factor for the child and intended parents: whilst ongoing contact may help the child form a clearer understanding of their origins, it may also undermine the intended mother's role as a parent (Brazier et al, 1998; Golombok, 2004). Children born as a result of surrogacy (referred to in this paper as surrogacy children) and who are aware of their birth, have been found to have a good understanding of surrogacy by the age of 10 years, with those who were in contact with their surrogate reporting that they liked her (Jadva et al., 2012). The majority of surrogates believe either that the resultant child should be told about their surrogacy birth, or that this decision should be up to the intended parents and not that the child should not be told (Blyth 1994, Braverman and Corson, 2002, Jadva et al., 2003). Most intended parents tell their child about their birth using surrogacy by the age of 10 years, although not all parents who use genetic surrogacy mention the use of the surrogate's egg (Jadva et al., 2012). Thus it appears that parents are may be more comfortable disclosing the absence of a gestational connection to their child than a genetic one. The adoption literature can provide a useful framework for examining surrogacy. Research on openness in adoptive families has shown that contact between the birth mother and the adopted child can be positive for birth mothers by reassuring them about their child's wellbeing (Grotevant and McRoy, 1998, Henney et al., 2004). Whilst adoption theory can guide the study of surrogacy it is important to remember that the two are not directly comparable. With adoption, the birth mother makes the decision to relinquish the child after she becomes pregnant whereas with surrogacy this decision is made before pregnancy is achieved. Indeed, the finding that birth mothers often feel a sense of loss, sadness and guilt after relinquishment (Kelly, 2009) has not been replicated in studies of surrogate mothers. Also, with gestational surrogacy, the surrogate has no genetic relationship to the child and therefore may not feel that she has lost a part of herself. It is unknown whether in the longer term surrogates

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(particularly those who are the genetic parent of the child) feel a sense of loss similar to that of birth mothers who have given up their child for adoption and, if so, whether such feelings lead to increased levels of depression and anxiety similar to those observed in women who experienced loss through adoption. It might be expected that surrogates who are genetically related to the child may experience a greater sense of loss compared to gestational surrogates. In 2003, Jadva et al. carried out a study of the experiences of surrogacy in a sample of 34 surrogates who were interviewed approximately one year following the birth of the surrogacy child. The study found that the main motivation for women to become surrogates was to help a couple who were unable to become parents. The majority of surrogates reported having positive relationships with the intended couple throughout the pregnancy and many maintained contact with them and the child at the time of the interview, i.e. when the child was aged 1. In response to being asked how they felt towards the surrogacy child, just over half of the surrogates reported that they had no feelings towards the child, with the remainder reporting feeling that the child was special to them. However none felt that the child was 'their own'. There was no difference in feelings towards the child between genetic and gestational surrogates, however surrogates who were previously known to the intended parents, that is, either a family member or friend, were more likely to feel a special bond towards the child compared to surrogates who were previously unknown and had met the intended couple specifically for the purpose of surrogacy. One year after handing over the child to the intended parents the large majority of surrogates were not experiencing psychological problems. The current study re-visited the surrogates from the original study. This investigation is the first to prospectively examine the experiences of surrogacy and the psychological health of surrogates longitudinally over a ten year period.

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Materials and Methods

The original sample of surrogates was recruited in two ways. Firstly, 19 women had acted as surrogates 1 year previously for intended parents who were participating in a longitudinal study of families created using surrogacy and secondly, 15 women were recruited through a surrogacy support organisation called Childlessness Overcome Through Surrogacy (COTS). All surrogate mothers who were registered with COTS and had given birth to a baby approximately 1 year previously were asked to participate in the original study. There was some overlap between the two recruitment methods, which meant that an exact response rate was difficult to calculate. However, it was estimated that 68% of those approached by the intended parents agreed to take part and a response rate of 76% was obtained for those recruited through COTS. Twenty surrogates from the original sample of 34 surrogates (Jadva et al., 2003) took part in this follow up, representing a response rate of 59% of the original sample. Of the 14 who did not take part, 12 could not be contacted and 2 declined to participate. In order to examine if any differences existed between those that took part at phase 2 and those that did not comparisons were carried between these two groups for the variables of interest in this study. No differences were found for any of the variables, including type of surrogacy undertaken, psychological well-being, relationship and contact with the surrogacy family and feelings towards the child. Demographic information for the sample is shown in Table I. The majority of surrogates had carried out subsequent surrogacy arrangements during the 10 year period. In order to examine changes over time, the data presented here relates to the same surrogacy child about whom surrogates were interviewed in the 2003 study. Data on all the surrogacy arrangements carried out by these surrogates and for an additional sample of surrogates who had carried out surrogacy arrangements at a similar time are presented elsewhere (Imrie and Jadva, 2014) The surrogates were interviewed at home using in-depth semi-structured interviews. The interviews were digitally recorded and later transcribed. Interviews were rated using the

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standardized coding criteria used in the original study. The original codes were adapted from a study of intended parents carried out by the same research team (MacCallum et al., 2003). Details of the codes are provided below. One third of the interviews were rated by a second coder by listening to the audio recordings of the interviews. Inter-rater reliability between the two coders ranged from .40 to 1.0 with a mean Kappa of 0.80. Surrogates were also asked to complete a booklet of questionnaires which assessed psychological health and marital quality. Ethical approval for this study was obtained from the Cambridge University Psychology Research Ethics committee.

Measures

Psychological well-being

Surrogates completed the Rosenberg Self-Esteem Scale (RSES: Rosenberg, 1965), a widely used measure of global self-esteem. Internal consistency for the RSES was reported to be .92 (Rosenberg, 1979). Surrogates also completed the Beck Depression Inventory-II (BDI-ii) (Beck & Steer, 1987) which has been found to show high internal consistency (Cronbach α of .93 in college students and .92 in outpatients) (Beck et al. 1996). In addition, those surrogates who had a cohabiting partner completed the Golombok Rust Inventory of Marital State (GRIMS) (Rust et al., 1990). The GRIMS is a valid and reliable measure of the quality of a couple's marital or cohabitating relationship with higher scores indicating poorer relationship quality. The scale has good reliability with internal consistency of of .90 for women and .92 for men. In terms of validity, the GRIMS has been shown to discriminate between couples who are about to separate and those who are not.

Relationship and contact with the parents and the child

Surrogates were asked in detail about their relationship with each member of the surrogacy family. Data were obtained on the surrogate's frequency of contact with the mother, the

father and the surrogacy child coded as '>1xweek', '1 x week – 1 x month', '1 x month – 1 every 3 months', '1 or 2 times a year' and 'not at all'. In addition, surrogates were asked about the nature of their relationship with the parents and the child. Their responses were coded according to the following categories: 'negative', 'neutral/ambivalent' or 'positive'. 'Negative' was coded when there was evidence of arguments or a breakdown in communication, 'neutral/ambivalent' was coded for a relationship that was described as unproblematic but with a sense of emotional distance, and 'positive' was coded when the surrogate described a warm or friendly relationship. Surrogates were asked if their relationship with the intended couple and child had changed over the years and if so, in what way. Responses were coded as either 'negative change' or 'positive change'.

Feelings towards the child and the child's awareness of surrogacy

The surrogate was asked how she viewed the relationship between herself and the surrogacy child. This information was coded according to one of three categories: `no special bond' (coded when the surrogate reported that she had no feelings towards the child); `special bond' (coded when the surrogate reported that the child was special to her) and `like own child' (coded when the surrogate saw the child as her own). Information was also obtained on whether the child was aware of their birth using surrogacy. Responses were coded as 'told', 'not told' 'do not know'.

Expectations for the future

Surrogates were asked about their hopes and expectations for their future relationship with the child. These responses were transcribed and later coded into themes based on the responses given.

Data Analysis

Data from phase II were examined to assess the impact of surrogacy ten years following the birth of the child. Comparisons were carried out between surrogates who had undergone genetic surrogacy and those who had undergone gestational surrogacy to assess differences between the type of surrogacy involved using t-tests, Fishers Exact or Chi-square analyses. In order to examine changes over time, data from surrogates at Phase I (1 year following the birth of the surrogacy child) were compared to findings at Phase II (10 years following the birth of the surrogacy child). T-tsest were carried out to examine changes in marital quality and non-parametric Friedman tests were conducted to examine changes in the frequency of contact with the surrogacy family. Where appropriate, the interview transcripts have been used to help illustrate the quantitative findings.

RESULTS

The psychological health and relationship quality of surrogates

At phase II, the average score for the 18 surrogates who completed the RSES was 23.6 which was at the upper end of the normal range for self-esteem (i.e. between 15 and 25). Looking at the individual scores, none of the surrogates scored below the normal range for self-esteem (i.e. below 15), 6 scored above the normal range (25+) indicating higher than average self-esteem. The mean score for the 18 surrogates who completed the Beck Depression Inventory was 3.8 indicating no signs of depression. Examination of the individual scores showed that 1 surrogate scored within the range for mild depression with the remainder showing no signs of depression. Three surrogates had been prescribed stimulants/sedatives since Phase I. Two of these women were on medication at the time of the interview and one had taken antidepressants following the birth of her own child, but was no longer on medication.

The GRIMS questionnaire for the 12 surrogates who were in a relationship at both time points, yielded a mean score at Phase I of 22.6 and at Phase II of 20.16. This difference was not significant. The raw scores were converted to standardised GRIMS scores which range from 1-9, with higher scores indicating poorer relationship quality. The mean standardised score was 3 which corresponded to a good relationship. Looking at the standardised scores individually, all women obtained an average or above average score for relationship quality. Frequency of contact with the parents and the child Three mothers had died since Phase I. The majority of surrogates remained in contact with the mother (15, 75%), the father (16, 80%) and the surrogacy child (15, 75%). Contact was predominately maintained face-to-face. Thirteen surrogates (65%) reported face-to-face contact with the mother, 14 (70%) with the father and 15 (74%) with the child. The frequency of contact with the surrogacy family at both time points can be seen in Table II. A significant difference was found for surrogates contact with the surrogacy child ($\chi^2(1)$) = 4.57, p < .05), with less frequent contact at age 10 compared to age 1. No differences were found for the frequency of contact with mothers. Contact with fathers approached significance ($\chi^2(1) = 3.27$, p = .07), indicating less frequent contact at Phase II in comparison to Phase I. At Phase I, 2 (10%) surrogates reported that they felt that the level of contact with the child was insufficient, with the majority being happy with their level of contact. At Phase II, 2 (10%) (different) surrogates reported that their level of contact with the child was insufficient. The remaining surrogates were happy with their level of contact with the child. Relationship with the parents and child Of the 15 surrogates who were in contact with the mother, 14 (93%) reported a positive relationships with her, and 1 (7%) reported that she had 'no relationship' with the mother.

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This mother maintained contact via letters once or twice a year. Eight (53%) surrogates stated that their relationship with the mother had changed over the years and all stated this change to be positive. Of the 16 surrogates who were in contact with the father, 15 (94%) reported a positive relationship with him and 1 (6%) (the same surrogate who reported no relationship with the mother) reported 'no relationship'. Seven (44%) reported that their relationship with the father had changed over time, and again all viewed this change as positive. An example of a change in the relationship with the couple included: "Well because, you know, at the start, [...] it's always at the back of a couple's mind that you might change your mind and keep the baby, and also, when you're carrying the baby, you're still getting to know them. But you know, once I've given the baby up, it's, they're, it's like a different mask, their whole demeanour, it relaxes, and "oh my god, we've got our son" and "thanks [surrogate]", "you're great", and so it's lighter, a lighter feel to the relationship, because there's no worries there anymore." Another surrogate said: "... when I was being a surrogate for them we were very close and, you know, used to go out for dinner and talk on the phone several times a week so yeah it has changed, but I think for the better because I think it's better for the child". Of the 15 surrogates who were in contact with the child, 14 (93%) reported positive relationships and 1 (7%) reported 'no relationship' (this surrogate, although in some contact with the child, did not see herself as having a relationship with him). Three (20%) reported that there had been a change in the relationship with the child; all 3 stated this change to be positive and most reflected age related changes, for example, "I would say it's probably got a little bit closer the older she's got..."

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Feelings towards the child and the child's awareness of surrogacy

Feelings towards the child remained relatively stable over time. At Phase I, 12 (60%)
surrogates reported feeling no special bond to the surrogacy child. Nine of these surrogates,
continued to feel no special bond ten years later and the remaining 3 reported a special bond.
Eight (40%) surrogates had reported feeling a special bond at age 1, six of whom continued
to feel a special bond 10 years later and 2 reported no special bond. There was an association
between type of surrogacy and whether or not surrogates felt a special bond to the child at
phase II (Fishers Exact = .018). The majority (8 of 11) of gestational surrogates reported
feeling a special bond towards the surrogacy child compared to most of the genetic surrogates
(8 of 9) who reported feeling no special bond. Comparisons between known and unknown
surrogates revealed no differences in their feelings towards the child. None of the surrogates
reported feeling that the child was their own.

An example of a special bond included:

"... to think that I was part of the reason she's here and I just think she's, you know, she'll always be really special, um, and just always a big part of what I did in my life."

An example of no special bond included:

"... I don't feel for my surrogate children like I feel for my own. So, when we're on the phone and we have a little chat it's just a little friendly chat."

At Phase I, 17 (85%) surrogates had felt that the child should be told about the surrogacy. At phase II, 9 of these 17 surrogates reported that the child had been told, 3 said that the child had not been told and 5 surrogates did not know.

Expectations for the future

313	All 20 surrogates reported that their expectations of their relationship with the parents had
314	either been met or exceeded. In terms of the future, 11 (55%) surrogates reported that they
315	would like to have contact with the parents and/or the child. For example:
316	" hopefully if they just keep in contact or text some way along the line I'd like that"
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318	Six (30%) surrogates mentioned being there for the parents and/or child if needed. For
319	example:
320	"they know that I'm always here, they've got my number if they ever need me, if they ever
321	need anything"
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323	"I don't expect to have any relationship with him, if he came knocking on my door and
324	wanted questions answered and was just curious, you know, he'd be welcome."
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326	DISCUSSION
327	This study enabled, for the first time, a prospective longitudinal examination of surrogates'
328	well-being ten years following the birth of the surrogate child. Contrary to the difficulties that
329	had been expected for surrogates in the long-term, the majority of surrogates in this sample
330	did not experience psychological problems in the decade following the birth of the surrogacy
331	child. Indeed, these findings suggest that overall, surrogates report positive well-being as
332	demonstrated by their high self-esteem, their lack of signs of depression and their good or
333	above average relationship quality with their husbands/partners.
334	In most cases, surrogates maintained contact with the parents and the child. The frequency of
335	contact with the parents did not change significantly over time. However it had lessened
336	significantly with the child, with one quarter of the surrogates who took part in this phase
337	having no contact with the child ten years on. A great deal of variability was found in the

frequency of contact that surrogates maintained with the parents and the child, and contrary

to other findings (Ciccarelli, 1997) this was not related to how surrogates viewed their relationship with the parents and child. That is, nearly all surrogates reported positive relationships irrespective of the frequency of contact that they maintained.. This is a similar finding to that found in a parallel longitudinal study of surrogacy families by the same research team. In the follow up at age 10 the frequency of contact reported by mothers, fathers and the surrogacy child did not affect their relationship with the surrogate (Jadva et al., 2011). Thus the amount of contact between the surrogate and the family she helped create does not appear to be associated with how those involved feel towards each other or towards the surrogacy process. Surrogates in this study felt positive about the child and the vast majority either wanted to continue contact or would be happy for the child to contact them in the future if they wished to do so. This finding could have important policy implications, as it would suggest that even those surrogates who have no contact with the parents and child may be willing to meet the child if the child wished this in the future. Of course, the extent to which children born using surrogacy feel the need to maintain contact, or to seek out their surrogate in cases where there is no contact, is not as yet known. Studies of surrogacy children are required to establish whether they wish to meet their surrogate and whether this differs for those born using genetic and gestational surrogacy. In the longitudinal study of surrogacy families mentioned above, most children at age 10 years felt either neutral or indifferent about their surrogacy birth (Jadva et al., 2011). However, the children were still relatively young, and their understanding of surrogacy may have been heavily influenced by the narratives used by their parents when explaining surrogacy to them. In addition, some children born using genetic surrogacy were unaware of their biological link to the surrogate. It is important to understand how children feel about surrogacy and towards the surrogate as they grow older and are able to form and express their own opinions about their birth. Gestational surrogates in the present study were more likely than genetic surrogates to feel a special bond to the child. This is contrary to the finding from the original study which found

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no differences between genetic and gestational surrogates in their feeling towards the child. A possible explanation for this discrepancy is that genetic surrogates may be more likely to distance themselves from the child emotionally either because they do not wish to interfere with the surrogacy family or because they want to create a clearer boundary between their own children and the surrogacy child. Jadva et al., (2011) found that genetic surrogates who were previously unknown to the intended parents were the least likely to maintain contact with the surrogacy family in the ten years following the birth of the child as reported by intended parents. The current findings show that genetic surrogates are also less likely to feel a special bond to the surrogacy child which could help explain why they are more likely to lose contact with the surrogacy family over time. Limitations of this study are the small sample size and the loss of some surrogates from the original study. However, rather than actively withdrawing, the main reason for nonparticipation was that the surrogate had moved home and the research team was unable to make contact. Although surrogates who did not take part in this follow up study may have had different experiences to those who did, comparisons between these two groups showed no differences in terms of their psychological well-being and experiences of surrogacy at age 1 suggesting there were no systematic biases. One third of the interviews were coded by a second coder. Only one variable which related to frequency of contact with the father yielded a low Kappa value of .4. Type of contact can be difficult to classify as contact may be sporadic. However, the discrepancy was never more than one point apart. Moreover, the same rating scale for contact with the mother and the child produced high kappa values of .86 and 1.0 respectively, suggesting the scale itself is a reliable measure. The extent to which the findings from this study, where the surrogacy arrangement was carried out 10 years previously, can be extrapolated to surrogacy arrangements that are being carried out currently is unclear. Whilst legislation on surrogacy in the UK has largely

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remained the same (the exception being that now same for heterosexual couples, the social acceptance and visibility of surrogacy has increased. Indeed, some of the surrogates who had carried out subsequent surrogacy arrangements reported that surrogacy is easier now than it was ten years ago, with some attributing this to surrogacy being more widely accepted, and there being more support available to surrogates. It is also unclear to what extent the findings from this study can be generalised to surrogates from other countries. The surrogacy arrangements reported in this study had all been for British intended parents. It has been suggested that surrogacy arrangements based on altruism rather than financial gain may be less likely to breakdown (Brazier et al., 1998) and it is possible that altruistic arrangements could lead to more beneficial outcomes in the longer term for all parties involved. However, more studies of the long-term impact of surrogacy in commercial settings would be required to fully assess this issue. In addition, with the greater increase in people going abroad for surrogacy, leading to intended parents and surrogates living in different countries, the impact on those involved is not known.

AUTHORS' ROLES

- All authors contributed to the acquisition and interpretation of data for this study. V.J. drafted
- 408 this manuscript and S.I. and S.G. contributed to its revision and have approved the final
- 409 version for publication.

FUNDING

- This work was funded by the Economic and Social Research Council (grant number RES-
- 413 061-25-0480).
- 414 CONFLICT OF INTEREST
- 415 None to declare.

416 ACKNOWLEDGEMENTS

- We are grateful to all the participants who took part in this research.
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Table I: Demographic information for all surrogates (N=20) who took part in Phase I and Phase II.

Phase I Phase II X SD X SD Age of surrogate (years) 34 +-6 43 +-6 % n n % Own children Yes No Marital Status Married/cohabiting Non-cohabiting partner Single Divorced/separated Social class Professional/managerial Skilled non-manual

Skilled manual	6	30	4	20	
Partly skilled/unskilled	6	30	3	15	
Surrogate working status					
No	9	45	8	40	
Part-time	8	40	7	35	
Full time	3	15	5	25	
No. of surrogacy births					
1-2	18	90	9	45	
3-5	2	10	7	35	
6+	0	0	4	20	
Type of surrogacy					
Genetic (traditional)	9	45			
Gestational	11	55			
Known surrogate	4	20			
Unknown surrogate	16	80			

Table II: Frequency of contact between surrogate and mother, father and surrogacy child

Phase I Phase II n % % n Frequency of contact with mother >1 x week 1 x week - 1 x month $1 \times month - 1 \times 3months$ 1 or 2 times a year Not at all Not applicable^a Total Frequency of contact with father >1 x week 1 x week - 1 x month $1 \times month - 1 \times 3months$ 1 or 2 times a year Not at all Total Frequency of contact with surrogacy child >1 x week

^aMother died since Phase I

Total

Not at all

1 x week - 1 x month

1 or 2 times a year

 $1 \times month - 1 \times 3months$