



Received: 20 October 2016  
Accepted: 07 March 2017  
First Published: 13 March 2017

\*Corresponding author: Mary P. Riddle,  
Department of Psychology, The  
Pennsylvania State University, University  
Park, PA, USA  
E-mails: [mpr12@psu.edu](mailto:mpr12@psu.edu),  
[maryriddle@aol.com](mailto:maryriddle@aol.com)

Reviewing editor:  
Ross Wilkinson, University of Newcastle,  
Australia

Additional information is available at  
the end of the article

## CLINICAL PSYCHOLOGY & NEUROPSYCHOLOGY | RESEARCH ARTICLE

# An investigation into the psychological well-being of the biological children of surrogates

Mary P. Riddle<sup>1\*</sup>

**Abstract:** *Study Objective:* The psychological well-being of surrogates' own children has not been examined in the US. This study seeks to examine whether having a mother who has served as either a traditional or gestational surrogate impacts the psychological well-being of the surrogates' own children. *Methods:* 7 surrogates and 13 children between the ages of 7–17 participated in this study. Surrogate mothers filled out questionnaires that assessed their perception of their children's experiences. Children filled out several measures of psychological well-being including the Strengths and Difficulties Questionnaire (SDQ) and the Piers–Harris Children's Self-Concept Scale, Second Edition (Piers–Harris 2). Children also filled out questionnaires including open-ended survey questions about their thoughts and feelings about having a mother who served as a surrogate. *Results:* Scores on the SDQ revealed profiles that were within normal limits with all the children falling into the low-risk category for developing emotional disorders, behavioral disorders, or hyperactivity/concentration problems. Total scores on the Piers–Harris 2 fell within the Average (64%) range while the remaining 38% approached or exceeded the very high range of scores indicating positive self-appraisal across multiple domains. According to the surrogates, the majority of children (61%) had a positive response to their mother's surrogate pregnancy with only 1 child being identified as having had a negative

### ABOUT THE AUTHOR

Mary Riddle, PhD, received her PhD in Clinical Health Psychology from the Albert Einstein College of Medicine/Ferkauf Graduate School of Psychology of Yeshiva University.

Dr. Riddle is on the faculty at The Pennsylvania State University in the Department of Psychology. Her private practice, Family Life Psychological Services, LLC specializes in Reproductive Medicine. She counsels patients who are experiencing infertility or who are considering utilizing Advanced Reproductive Technologies. Additionally, she has expertise in the area of psychological assessment of egg donors and gestational surrogates. Her research interests are in various aspects of gestational surrogacy.

This study represents the first phase of a larger study into understanding the impact of gestational surrogacy on surrogates' own families. Other current research projects include a study on the role of spirituality and religion on the process of gestational surrogacy and on the use of projective assessment with gestational surrogates.

### PUBLIC INTEREST STATEMENT

Gestational surrogacy is when a woman carries a baby for another couple that is not genetically connected to her. This process has received a lot of media attention due to the fact that a number of celebrity couples have used it to build their families. As the social construct of the "typical American family" continues to evolve and change, it is important to understand the implications for the people involved in these arrangements. Little is known about how surrogacy impacts the families of the surrogates, in particular, their own children. This study is the first study in the US to examine the impact of surrogacy on surrogates' own children. Findings suggest that most children are doing well. However, some children may be vulnerable to experiencing the event more negatively than others. This information is critically important for mental health professionals who work with intended parents, surrogates, and their families.

response. Mothers identified the majority of children (75%) as having been positively impacted by their mother's surrogacy experience. However, 38% of the children reported experiencing negative emotion with regards to their mother's surrogacy and 23% of the children reported negative feelings about the relinquishment of the child to another couple. *Conclusion:* The findings of this study show that while psychological well-being as assessed by standardized measures appears intact, there may be a subset of children who experience negative emotion about their mother serving as a surrogate. It is important to understand more about the children of surrogates and the impact that their mother's surrogate pregnancy has on them. Understanding factors that might impact which children are more vulnerable to experiencing negative emotion to their mother's surrogate pregnancy is critical to help guide mental health professionals who screen and counsel surrogates.

**Subjects:** Mental Health; Psychiatry & Clinical Psychology - Adult; Child & Adolescent Psychiatry & Clinical Psychology; Obstetrics, Gynecology & Women's Health; Maternal-Fetal Medicine; Reproductive Medicine

**Keywords:** surrogacy; children; psychological well-being; qualitative study

## 1. Introduction

Within any surrogacy arrangement, there are many ethical considerations. It is the oldest known reproductive intervention as it is referenced in the story of Abraham and Sarah in the Old Testament Book of Genesis. Sarah's handmaid, Hagar, has a child by Abraham for Sarah, because she isn't able to conceive. There is also a reference in the story to the complicated feelings that the two women have for each other (Metzger & Murphy, 1991). The dynamics of surrogacy are complex, as we see from the earliest reference. Even today, it remains the most controversial of the reproductive interventions. In the US, early controversies included cases that resulted in legal action and involved Traditional or Genetic Surrogacy. This is when a woman is inseminated with the sperm of the intended father and becomes pregnant with the intent of relinquishing the baby to the intended parents. More recent advances in reproductive technology have led to the evolution of gestational surrogacy, which is when the surrogate has no genetic connection to the baby she is carrying for another couple. In the case of gestational surrogacy, intended parents may use their own embryos to transfer to the gestational surrogate or a combination of egg donor, sperm donor, and/or one of the gametes of one of the intended parents.

Although a handful of studies have suggested that, psychologically, there are no serious negative consequences for surrogates (Imrie & Jadva, 2014; Jadva, Murray, Lycett, MacCallum, & Golombok, 2003; Parkinson et al., 1998; van den Akker, 2007), there is very little data on surrogates' families, in particular, their own children. A few studies have included surrogates' perceptions of their children's reactions to their surrogacy. These studies have suggested that surrogates' assessment of their children's reaction to their surrogate pregnancy as having been positive (Ciccarelli & Beckman, 2005; Jadva et al., 2003).

One of the many ethical considerations of a surrogacy arrangement is that of the surrogate's family and how the experience may impact them. Across the international literature, there is commentary on the lack of data on these children, all the while stressing the importance of understanding the psychological impact of having a mother who serves as a surrogate (Appleton, 2002; Jadva et al., 2003; Söderström-Anttila et al., 2016; Tehran, Tashi, Mehran, Eskandari, & Tehrani, 2014). International ethics recommendations include consideration of the children of surrogates as part of the psychosocial evaluation process for a potential surrogacy arrangement (British Medical Association, 1996; Ethics Committee of the American Society of Reproductive Medicine, 2013; Shenfield et al., 2005). However, this population remains sorely underrepresented in the literature

despite the fact that it has been hypothesized that these children may experience anxiety and distress over the relinquishment of a child carried by their mother (Edelmann, 2004).

Only one study to date has looked at this population (Jadva & Imrie, 2014). This study was carried out in the UK and looked at 36 children between the ages of 12–25. The majority of the children in the study (86%) held positive views of their mother’s involvement with surrogacy. A small number of participants (14%) held neutral or ambivalent views, but none of the participants expressed any negative emotion around their mother’s involvement with surrogacy. The conclusions of the study were that there appear to be no long-term negative psychological consequences to having been the child of a woman who served as a surrogate (either traditional or gestational).

This study is the first US study to examine the impact of surrogacy on the psychological well-being of the children of surrogates. For the purposes of this study, the term surrogate and surrogate pregnancy will be used even though the majority of participants were gestational carriers. One woman in the study was traditional (genetic) surrogate and therefore, surrogacy and surrogate will be a comprehensive term to indicate both traditional and gestational surrogates.

## 2. Materials and methods

### 2.1. Participants

Surrogates in this study were psychologically evaluated by this investigator between 2005 and 2012. All of the surrogates had been referred for psychological evaluation from a lawyer who matches potential surrogates with intended parents (IPs) or a fertility center that also matches surrogates with IPs. Surrogates for the study were identified by having been psychologically cleared to be a surrogate, had become pregnant, delivered and relinquished a child(ren) to another couple. Surrogates who had children who were at least 7 years of age were included. Seven years of age was the minimum age allowable to provide verbal assent by this investigator’s Institutional Review Board. Follow-up information was available on 13 surrogates who met study criteria. Eleven surrogates were contacted by phone. Of these, 10 surrogates with a total of 20 children agreed to participate in the study. There was no phone number available on the additional 2 surrogates. These 2 were mailed research packets, but did not return them. Seven surrogates (77%) and 13 children (65%) of those who committed to the study returned study data. Children took part from 7 families, 2 siblings took part from 4 families ( $n = 8$ ). Another 2 families had 1 child each in the study ( $n = 2$ ), and the one remaining family had 3 children in the study.

Sixty two percent ( $n = 8$ ) of the children who participated in the study were girls and the remaining 38% ( $n = 5$ ) of the children participants were boys. Children in the study ranged in age from 7–17 years.

The majority of children (92%) were told about their mother’s plan to become a surrogate prior to her becoming pregnant. Only 1 child (8% of sample) was told after the child’s mother had already become pregnant.

Seventy one percent ( $n = 5$ ) of the surrogates in the study carried for a couple unrelated to them. Of these 5 surrogates, 1 surrogate knew the person she were carrying for, but was not related to that person. The remaining 29% ( $n = 2$ ) carried a baby for someone related to them. All but one of the surrogates were financially compensated for being surrogates. The one surrogate who did not receive financial compensation carried a child for a family member.

Sample characteristics of the Surrogates are shown in Table 1.

Participants’ ages at the time of both the study and the surrogate pregnancy along with the amount of time that had passed since the surrogate pregnancy is shown for both surrogates and their children in Table 2.

**Table 1. Sample characteristics of surrogates**

7 surrogates (13 children)	
Gestational surrogates	n = 6
Traditional surrogate	n = 1
Marital status	
Married	n = 5
Divorced	n = 2
Religious preference (surrogate)	
Catholic	n = 4
“Christian”	n = 1
Methodist	n = 1
No preference listed	n = 1
Family income	
\$20,000–\$30,000	n = 2
\$30,000–\$40,000	n = 1
\$70,000–\$80,000	n = 1
\$90,000–\$100,000	n = 2
>\$100,000	n = 1
Education (surrogates)	
College degree	n = 3
Associates degree	n = 2
Technical college certificate	n = 1
High school diploma	n = 1
Compensation for being a surrogate	
Range between \$0–\$30,000 (average being \$20,000)	

**Table 2. Surrogates and children**

	Mean (Median)	Range
Age of surrogate at time of study	36 years	30–39 years
Age of surrogate at time of surrogate pregnancy	32.5 years	29–37 years
Age of children at time of study	11.5 years (12)	7–17 years
Age of children at time of surrogate pregnancy	8.4 years (8)	4–15 years
Average amount of time since surrogate pregnancy	3.7 years (2)	2–10 years

**2.2. Procedures**

Surrogates were contacted by phone by this investigator and told about the study. Those who expressed interest in participating were sent research packets with return postage. Packets contained a letter about the study, consent forms, and surveys on the surrogacy experience for mothers and their children. Standardized measures assessing behavioral issues and self-concept were included for the children only.

The information letter provided in the research packet gave information about the study which could be shared with the children. Consent for the children was obtained by their mother. Written assent was provided by the children by indicating that the study had been explained to them, that they had had the chance to ask questions, and that they did not have to take part and could change their mind about participating at any time. Institutional Review Board approval for the study was provided by this investigator’s IRB.

Two standardized measures were chosen to assess behavior and self-concept in the children. Additionally, this investigator designed a survey of surrogacy experiences for mothers and children. All of the measures used in the study are described below. Because of the geographic location of some of the surrogates, face-to-face interviews were not possible. All of the surrogates completed their own surveys. Four of the 13 child research data packets were completed with the help of the child's mother. These were the younger children in the study and their ages ranged from 7 to 10 years. One of the standardized measures had a parent version to be used if the child was aged 10 and under, so these 4 children fell into that category and therefore had parent versions of this measure filled out. These same 4 children also had their mother help them in answering the questions on the child survey in that the mothers wrote in their answers verbatim.

### **2.3. Measures**

#### **2.3.1. Surveys**

All participants were asked to complete surveys designed by this investigator. These included demographic information along with open-ended questions about various aspects of their experience. The focus of this study was on the children of surrogates, so mothers were asked about their perceptions of their child(ren)'s experience with their surrogate pregnancy. Children were asked to describe various aspects of the experience. They were also asked to describe their thoughts and feelings about the process.

Surrogates were asked to describe their perception of how they thought their child felt about their surrogate pregnancy. They were asked to describe how they told their children and what questions their children asked. They were asked if these questions changed over time. They were asked about how they felt about the surrogate children and what (if any) relationship they have with the children they relinquished. They were asked to describe the impact they felt the experience had on their child (either positive or negative). They were asked to describe any concerns they had regarding their child and this experience.

Children were asked to describe what they remembered about their mother's surrogate pregnancy. They were asked recall any questions they had asked their mother. They were asked how they felt when they realized that the baby their mother was carrying was for another couple. They were asked whether they felt their feelings about the experience had changed over time. They were asked whether or not they had a relationship with the surrogate child and to describe this relationship (if any). The children were also asked what advice they might give other children whose mothers were considering surrogacy.

Answers on the survey were placed into categories for responses, such as "positive", "negative", "neutral/ambivalent", or "anxious". Percentages were calculated for responses.

#### **2.3.2. Standardized measures**

The goal of the standardized measures was to capture a broad picture of the children from a behavioral perspective and with regards to how they felt about themselves (self-concept).

#### **2.3.3. Strengths and Difficulties Questionnaire**

Children in the study were administered the Strengths and Difficulties Questionnaire (SDQ), which is a short behavioral screening measure including 25 items on psychological attributes (including emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, and prosocial behavior). There are 2 forms for the SDQ. One is a parent version to be filled out by parents about their child if their child is between the ages of 4–10 years. The other form is for children over the age of 10. Both forms ask the same questions, but the parent form asks the parent to answer the questions based on their observations of their child, rather than self-report. The parent form instructs the subject to read a series of statements about their child and mark whether the statement is "Not True", "Somewhat True", or "Certainly True" for their child. For children between the ages of 11–17, statements are answered based on the child's opinion of themselves.

### 2.3.4. Piers–Harris Children’s Self-Concept Scale, Second Edition (Piers–Harris 2) “The way I feel about myself”

The Piers–Harris 2 is a 60-item self-report measure for children ages 7–18. This scale seeks to measure self-concept, which the authors describe as self-evaluation about one’s own behaviors and attitudes (Piers & Herzberg, 2002). The statements on this instrument are designed to assess how people feel about themselves. Individuals are asked to answer “yes” or “no” to the statements on the measure as they apply to themselves. This is a self-administered survey which provides directions that instruct the child to read the statements provided and decide whether it tells them the way that they feel about themselves. The child is instructed to choose “yes” if the statement is “True” or “Mostly True” about themselves. They are instructed to choose “no” if the statement is “False” or “Mostly False” about themselves.

## 3. Results

### 3.1. Standardized measures

#### 3.1.1. Strengths and Difficulties Questionnaire

There was SDQ data on a total of 12 children. Although there were 13 children in the study, only 12 SDQs were returned and, because identifiers were removed, it was not possible to follow up. 33% ( $n = 4$ ) children had the SDQ filled out by their mother since they fell into the age range of 7–10 years. There is a self-report completion form for children ages 11–17 and the remaining 67% ( $n = 8$ ) filled out the self-report version of the SDQ. There are 25 items on the scale that break down into 5 areas (emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, and prosocial behavior). Five items on the scale represent each area. Adding scales 1–4 generate a total stress score together (emotional problems, conduct problems, hyperactivity/inattention, and peer relationship problems).

All scores fell within normal limits. This included both the total stress score and the individual scales. Diagnostic predictions for this sample are that the children are at low risk for developing any disorder including emotional disorders (such as anxiety and depression), behavioral disorders, or hyperactivity/inattention disorders.

#### 3.1.2. Piers–Harris Children’s Self-Concept Scale, Second Edition (Piers–Harris 2)

Validity Scales on the Piers–Harris 2 (Exaggeration, Response Bias, and Random Responding) fell within normal limits, allowing for interpretation of the Self-Concept Scales. The first of these is the Total Score, which is a measure of general self-concept. This is the single most reliable measure and has the most research support. The total score is the number of items endorsed in the direction of positive self-appraisal with higher scores indicating more positive self-concept. Thirty-eight percent ( $n = 5$ ) of respondents had  $T$ -scores that either approached or exceeded the Very High Range of scores while the other 62% ( $n = 8$ ) fell within the Average Range. The mean scale scores for both the Total Score and individual Domain Scales can be found in Table 3.

**Table 3. Summary of domain scales for Piers–Harris 2**

	Mean	Range
Behavioral adjustment (BEH)	54	43–62
Intellectual and school status (INT)	57	44–65
Physical appearance/attributes (PHY)	54	42–65
Freedom from anxiety (FRE)	56	46–65
Popularity (POP)	54	44–68
Happiness and satisfaction (HAP)	51	40–59

Notes:  $T$ -scores  $\geq 56$  (high average).

$T$ -scores 45–55 (average).

$T$ -scores 40–44 (low average).

## 4. Survey data

### 4.1. Surrogates' perceptions of children's experiences

According to the surrogates, 61% ( $n = 8$ ) of the children had a positive response to their mother's surrogate pregnancy. Responses characterized as positive included responses such as "excited" and "supportive". Thirty-one percent ( $n = 4$ ) of children had a neutral/ambivalent response. Neutral responses were characterized by responses such as (the child) "didn't care" or seemed "indifferent". Only 1 child (8%) was identified as having had a negative response. This child's mother stated, "She was very upset about the pregnancy—some jealousy issues occurred—she refused initially to see the newborn".

Seventy-five percent ( $n = 10$ ) of children were identified by surrogates as having been positively impacted by the experience. Some examples of the positive impact the surrogates felt their child experienced were:

She has witnessed the pure happiness that can be given to a couple unable to have their own (*sic*) children.

I think the more they grow—the impact on how they see the situation will change for the better—understanding it is the ultimate gift.

Surrogates were asked if they had any concerns or questions about how the experience may have impacted their child. Surrogates expressed concerns for 23% ( $n = 3$ ) of the children. Concerns were:

I will always wonder with my son (as a boy) who is more susceptible to suppressing their feelings (*sic*) if it impacted him more than we know. I think about it from time to time but he never tells us anything negative.

I had seen my oldest child pull away from me initially after the birth. She tends to be intolerant of the child born and mean at times which concerns me.

I'd like to know if he would care as an adult.

Surrogates were asked, "What advice would you give to another woman considering surrogacy with regards to how she should handle the information with her children?" Some examples of their advice to other potential surrogates were:

I would recommend that it is something you do while your own children are too young to remember.

It is important to discuss the reason behind why it is happening.

Inform yourself about the entire process before you jump in.

Keep communication open [with children]—explain what will happen at the end (we aren't bringing him/her home).

One surrogate mentioned that she wished there had been more resources for her to use to talk to her children about it:

I did look for books and we found one that I read. I wanted to do everything right. I do wish there were more resources online or books written.

## 5. Children

### 5.1. Feelings about surrogate pregnancy

Children were asked, “How did you feel when you found out that the baby your mother was carrying was for someone else?” OR, if they didn’t remember, “How do you feel now that you know that she carried a baby for another family? Have your feelings changed?” Thirty-eight percent ( $n = 5$ ) of the children reported positive feelings, such as being “happy”, “glad”, and “excited”. Twenty-three percent ( $n = 3$ ) reported neutral responses, such as “I didn’t care” or “I don’t remember”. Thirty-eight percent ( $n = 5$ ) reported experiencing negative emotion with regards to their mother’s surrogate pregnancy. In the hopes that these responses will generate hypotheses about factors influencing negative emotion among children of surrogates and because each response is unique, the responses characterized as “negative” are listed below. The age of the child at the time of the mother’s surrogate pregnancy is in parentheses after each statement.

Sad because I wanted a baby brother or sister (age 8)

I felt jealous because 2 babies with different parents were getting more attention than me (age 4)

I did not like the idea at all—I was mad that she [mother] did not tell us before she became pregnant (age 7)

Mad most of the time because every time I see her [child relinquished by surrogate], she brings it up that my mommy had her and that she is my sister, and I don’t think that she is (age 4)

I felt OK in the beginning—I was pretty sad because I thought the baby was going to die in your stomach—I wanted him to be safe (age 5)

It would be interesting to look at whether the age of the child at the time of their mother’s surrogate pregnancy is related to having either a positive or negative response. The age range of the children who made the statements categorized as negative is ages 4–8, with 3 of the 5 children falling between the ages of 4 and 5 years. There is not enough data to speculate on a relationship between these things, but it is something that should be looked at in future research.

### 5.2. Questions posed by children

All questions generated by the children ( $n = 17$ ) about their mother’s surrogate pregnancy were included in the analysis. Children’s questions were categorized as Neutral, Don’t Remember, or Anxious.

Fifty-three percent ( $n = 9$ ) of the questions posed by children to their mother were categorized as Neutral. These responses included questions like, “is it a boy or a girl?”, “who is the family?”, “Will we see him/her?” Eighteen percent ( $n = 3$ ) of the questions had a response of “I don’t remember”. Twenty-nine percent ( $n = 5$ ) of the questions generated were characterized as being anxious. These included questions such as “Mommy, are you OK?” (age 5), “Will I ever get to see them again?” (age 8), and “Will other people know?” (age 10). Again, there is not enough data to speculate on age in relation to a child asking questions of their mother that indicate some degree of anxiety over the pregnancy.

### 5.3. Feelings about relinquishment

Children were asked, “How do you feel about your mom giving a child to another couple?” Responses to this were coded as Positive, Neutral, and Negative. Sixty two percent ( $n = 8$ ) of children responded that they had positive feelings about it. These responses were characterized by answers such as “Good”, “Happy”, and “Proud”. Fifteen percent ( $n = 2$ ) of the children had neutral responses. These responses were “I don’t mind” and “Technically it isn’t hers, so I don’t mind”. Twenty-three percent ( $n = 3$ ) of the children expressed negative feelings about their mother’s surrogate pregnancy. These

responses were, “I feel weird about it” (age 4), “I didn’t want her to have a baby in general, much less have one then give it away” (age 7), “I don’t think about it” (this response was categorized as negative as this child expressed negative emotion about the experience in several realms, so the interpretation of this response was “I don’t think about it (because I don’t want to)” (age 4). Here again, we have an age range of age 4–7 for children who reported negative feelings about the relinquishment. Whether younger children are more vulnerable to experiencing this more negatively will be important to consider in future study design.

Children were asked what advice they might give to other children whose mothers were considering surrogacy. Some examples of the advice that the children in the study would give other children were:

You can take care of a baby until you get on a plane

I was always excited and thought, ‘at least I don’t have to change her’

Your mom is gonna (*sic*) get fat

It wasn’t hard until Mom got grumpy

It was a cool experience

That it’s a good thing

I would tell them to try not to be jealous

I would tell them to ask their mom to tell them what she is doing and that they should share their honest feelings about this before their mother does anything.

Not to be scared and to look at it in a good way

Be supportive

Everything is going to be alright (*sic*).

## 6. Discussion

This is the first study in the US to examine the psychological well-being of surrogates’ own children. The standardized measures administered to the participants of this study all fell within normal limits and suggest overall psychological health. However, survey data suggest that a subset of children, although functioning well in most areas of their life as measured by standardized scales, report negative emotional responses to their mother’s surrogate pregnancy as assessed by open-ended survey questions. In this sample of children, positive and negative emotion are equally split in the sample with 38% reporting positive responses and 38% reporting negative responses. That some children may struggle with this experience is very important to consider when evaluating any surrogacy arrangement. Additionally, 29% of the questions these children asked their mothers contained themes of anxiety around their mother’s health and what other people might think. Twenty-three percent of the sample expressed negative emotion around the relinquishment of the child to another couple.

Interestingly, the majority of children (61%) were identified by their mothers as having had a positive response to the surrogate pregnancy. Additionally, 75% of the children were identified by the surrogates been positively impacted by the experience. This raises the question of whether this overall perception that the children react positively to the experience is held only by the surrogates and not by their children. Could it be that the desire to serve as a surrogate colors the surrogate’s perception of how her children are doing?

This research generates some additional questions that should be addressed in future research. Do certain factors impact how a child expresses emotion about their mother's surrogate pregnancy, such as age at the time of assessment or age at the time of the mother's pregnancy? Does the amount of time that has passed since the mother's surrogate pregnancy impact outcome? These variables differed in this study from the only other study on this population (Jadva & Imrie, 2014), which raises the question as to whether these are factors that may impact how a child processes the event. Children in the present study were older on average at the time that their mother was pregnant than in the UK study (Jadva & Imrie, 2014). Is it possible that they were more aware of the pregnancy and implications of the surrogacy? Less time had elapsed since the mother's surrogacy in the present study than in the UK study (Jadva & Imrie, 2014). Is it possible that being closer to the experience impacts the memory of the experience? Perhaps the passage of time lessens the emotional response. Another factor to consider is the number of times a woman has served as a surrogate. More women had served as surrogates multiple times in the UK study (Jadva & Imrie, 2014). Is it possible that this experience normalizes over time if a child is exposed to the situation multiple times? If the situation is normalized, is it possible that children are less likely to have negative feelings about it?

Another interesting factor to consider is that in the present sample, the children who expressed negative emotion around their mother's surrogate pregnancy fell within the ages of 4–8 years of age at the time of the mother's pregnancy. Three of the 5 children were between the ages of 4 and 5. It might be important to look at the ages of children to determine if younger children are more vulnerable to experiencing negative emotion around their mother's surrogate pregnancy.

It is possible that there is a cultural influence on how children experience this process. Unlike the UK, US surrogates may not know their intended parents prior to the arrangement, or may live great distances from each other. Because of this, fewer children may have ongoing relationships with the surrogate child. In the present study, all who expressed negative emotion around their mother's surrogate pregnancy have some kind of relationship with the surrogate child. However, this sample is too small to adequately determine whether there is any significance to ongoing contact with a surrogate child and experiencing the event more negatively. Moreover, in the UK, there is a greater likelihood of an ongoing relationship with the surrogate children and there were no findings that indicated that any of those children experienced negative emotion around their mother's surrogate pregnancy. So the relationship between having an ongoing relationship with surrogate children and the way in which a surrogate's own child experiences the surrogacy is another important factor to consider in future research.

Limitations of the present study include sample size and the fact that not all participants who committed to the study returned study data. This is a small sample and therefore it is difficult to generalize these findings. Another limitation is that although an introductory letter was provided to all participants, it is not known whether the research materials were explained and presented to all the children in a standardized fashion. Therefore, we cannot know if this may have impacted outcome. For the next phase of research, it would be ideal to be able to meet with the children face-to-face or to provide a specific standardization for presentation of study materials.

Additional limitations include the fact that all identifiers were removed upon receipt of the research packets. Therefore, we don't know how many children who responded with negative emotion may have come from the same family. We also don't know if the mothers who filled out their children's questionnaires didn't unintentionally influence their responses in some way. Lastly, given the small sample size, it is difficult to ascertain whether there is a relationship between the age of child at the time of the mother's surrogate pregnancy and the type of emotion the child experienced. Although it appears that younger children were more likely to respond negatively or anxiously, we can't draw any conclusions from this data. This will be an important point to consider in future research, as there are implications to how a surrogate pregnancy is introduced within the family system.

The impact of surrogacy on a surrogate's family, in particular their children, remains an important consideration for clinicians who evaluate these arrangements. It is critical for mental health professionals who evaluate and counsel potential surrogates to have information on the impact this experience may have on their family. This will help guide mental health professionals in the conversation about how the surrogates think about their decision and how the information might best be shared within their own family system. It may also lead to the development of interventions that may help identify children who might be at higher risk to experience negative emotion. This would allow both mental health professionals and surrogates help guide the children through the process and help them integrate this event within their family.

#### Current knowledge on this subject

- Very little is known about surrogates' own children, despite international ethics committee recommendations that their welfare be considered within any surrogacy arrangement.
- A handful of studies have included data on surrogates' perceptions of their children's experiences, with all the studies suggesting that children were positively impacted by their mother having been a surrogate.
- Only one study in the UK has looked at this population. Results from the study suggest there are no long-term negative psychological consequences for children of surrogates.

#### What this study adds

- This is the first study that has looked at the psychological well-being of the biological children of surrogates in the United States.
- This study reveals poignant commentary from children of surrogates and suggests that some of these children have intense feelings about their mother's surrogate pregnancy.
- This study reveals that a subset of children may be vulnerable to experiencing their mother's surrogate pregnancy in a negative way and that this should be carefully considered within the context of any surrogacy arrangement.

#### Funding

The author received no direct funding for this research.

#### Competing Interest

The author declare no competing interests.

#### Author details

Mary P. Riddle<sup>1</sup>  
E-mails: [mpr12@psu.edu](mailto:mpr12@psu.edu), [maryriddle@aol.com](mailto:maryriddle@aol.com)

<sup>1</sup> Department of Psychology, The Pennsylvania State University, University Park, PA, USA.

#### Citation information

Cite this article as: An investigation into the psychological well-being of the biological children of surrogates, Mary P. Riddle, *Cogent Psychology* (2017), 4: 1305035.

#### References

Appleton, T. C. (2002). Surrogacy. In J. C. Boivin & H. Kertenich (Eds.), *ESHRE monographs: Guidelines to counseling in infertility* (pp. 37–38). Oxford: Oxford University Press.

British Medical Association. (1996). *Changing conceptions of motherhood, the practice of surrogacy in Britain*. London: BMA.

Ciccarelli, J. C., & Beckman, L. J. (2005). Navigating rough waters: An overview of psychological aspects of surrogacy. *Journal of Social Issues*, 61, 21–43. <http://dx.doi.org/10.1111/josi.2005.61.issue-1>

Edelmann, R. J. (2004). Surrogacy: The psychological issues. *Journal of Reproductive and Infant Psychology*, 22, 123–136. <http://dx.doi.org/10.1080/0264683042000205981>

Ethics Committee of the American Society of Reproductive Medicine. (2013). Consideration of the gestational carrier: A committee opinion. *Fertility and Sterility*, 19, 1838–1841.

Imrie, S., & Jadva, V. (2014). The long-term experiences of surrogates: Relationships and contact with surrogacy families in genetic and gestational surrogacy arrangements. *Reproductive BioMedicine Online*, 29, 424–435. <http://dx.doi.org/10.1016/j.rbmo.2014.06.004>

Jadva, V., & Imrie, S. (2014). Children of surrogate mothers: Psychological well-being, family relationships and experiences of surrogacy. *Human Reproduction*, 29, 90–96. <http://dx.doi.org/10.1093/humrep/det410>

Jadva, V., Murray, C., Lycett, E., MacCallum, F., & Golombok, S. (2003). Surrogacy: The experiences of surrogate mothers. *Human Reproduction*, 18, 2196–2204. <http://dx.doi.org/10.1093/humrep/deg397>

Metzger, B. M., & Murphy, R. E. (Eds.). (1991). *The new Oxford annotated Bible with the Apocrypha*. New York, NY: Oxford University Press.

Parkinson, J., Tran, C., Tan, T., Nelson, J., Batsofin, J., & Serafini, P. (1998). Perinatal outcome after *in vitro* fertilization-surrogacy. *Human Reproduction*, 14, 671–676.

Piers, E. V., & Herzberg, D. S. (2002). *Piers-Harris children's self concept scale* (2nd ed.). Los Angeles, CA: Western Psychological Services.

Shenfield, F., Pennings, G., Cohen, J., Devroey, P., de Wert, G., & Tarlatzis, B. (2005). ESHRE task force on ethics and law 10: Surrogacy. *Human Reproduction*, 20, 2705–2707.

Söderström-Anttila, V., Wennerholm, U. B., Loft, A., Pinborg, A., Aittomäki, K., Romundstad, L. B., & Bergh, C. (2016). Surrogacy: Outcomes for surrogate mothers, children, and the resulting families—A systematic review. *Human Reproduction Update*, 22, 260–276.

Tehran, H. A., Tashi, S., Mehran, N., Eskandari, N., & Tehrani, T. D. (2014). Emotional experiences in surrogate mothers: A qualitative study. *Iranian Journal of Reproductive Medicine*, 12, 471–480.

van den Akker, O. B. A. (2007). Psychological trait and state characteristics, social support and attitudes to the surrogate pregnancy and baby. *Human Reproduction*, 22, 2287–2295. <http://dx.doi.org/10.1093/humrep/dem155>



© 2017 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 4.0 license.

You are free to:

Share — copy and redistribute the material in any medium or format

Adapt — remix, transform, and build upon the material for any purpose, even commercially.

The licensor cannot revoke these freedoms as long as you follow the license terms.

Under the following terms:

Attribution — You must give appropriate credit, provide a link to the license, and indicate if changes were made.

You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

No additional restrictions

You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits.



**Cogent Psychology (ISSN: 2331-1908) is published by Cogent OA, part of Taylor & Francis Group.**

**Publishing with Cogent OA ensures:**

- Immediate, universal access to your article on publication
- High visibility and discoverability via the Cogent OA website as well as Taylor & Francis Online
- Download and citation statistics for your article
- Rapid online publication
- Input from, and dialog with, expert editors and editorial boards
- Retention of full copyright of your article
- Guaranteed legacy preservation of your article
- Discounts and waivers for authors in developing regions

**Submit your manuscript to a Cogent OA journal at [www.CogentOA.com](http://www.CogentOA.com)**

