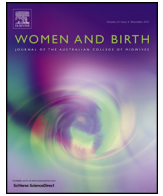




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ORIGINAL RESEARCH – QUANTITATIVE

A cross-cultural study on surrogate mother's empathy and maternal–foetal attachment

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ABSTRACT

Background: Traditional and gestational surrogate mothers assist infertile couples by carrying their children. In 2005, a meta-analysis on surrogacy was conducted but no study had examined empathy and maternal–foetal attachment of surrogate mothers. Assessments of surrogate mothers show no sign of psychopathology, but one study showed differences on several MMPI-2 scales compared to a normative sample: surrogate mothers identified with stereotypically masculine traits such as assertiveness and competition. They had a higher self-esteem and lower levels of anxiety and depression.

Research objective: To determine if there is a difference in empathy and maternal–foetal attachment of surrogate mothers compared to a comparison group of mothers.

Methods: Three groups of European traditional and gestational surrogate mothers ($n = 10$), Anglo-Saxon traditional and gestational surrogate mothers ($n = 34$) and a European normative sample of mothers ($n = 32$) completed four published psychometric instruments: the Interpersonal Reactivity Index (empathy index), the Hospital Anxiety and Depressions Scale and the MC20, a social desirability scale. Pregnant surrogate mothers filled the Maternal Antenatal Attachment Scale ($n = 11$). Statistical non-parametric analyses of variance were conducted.

Findings: Depending on cultural background, surrogate mothers present differences in terms of empathy, anxiety and depression, social desirability and quality of attachment to the foetus compared to a normative sample.

Conclusions: Environment plays a role for traditional and gestational surrogacy. Surrogate mothers of both groups are less anxious and depressed than normative samples. Maternal–foetal attachment is strong with a slightly lower quality of attachment. Surrogate mother's empathy indexes are similar to normative samples, sometimes higher.

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1. Introduction

A rising number of couples worldwide face difficulties bearing children due to different reasons: decreased fertility due to later in life conception, genital malformations/dysfunctions of the reproduction system of women, congenital or acquired genetic diseases, and gender (homosexual male couples). Recent societal evolutions (family rights based on equality) and bioethics legislations have brought into light the process of surrogacy, sometimes with positive recollections, sometimes not. Media portrays almost essentially extreme situations about surrogacy. This depiction does

not reflect the personalities and the most frequent experiences of surrogate mothers; it reinforces the societal ambivalence about contractual parenting. However, surrogacy is a worldwide reality, rising with globalization. Even though certain countries, including France, remain fiercely opposed to legislate and regularise surrogacy, it appears to be an alternative solution to unsuccessful medical infertility treatments, or yet the impossibility for homosexual male couples to conceive children. There are two types of surrogacy arrangements: traditional surrogacy in which the woman becomes pregnant with her own ovum and donated sperm through artificial insemination, she will then be biologically linked to the child. With gestational surrogacy, the woman goes through the process of in vitro fertilisation (IVF) with a donated ovum and donated sperm. Like in any classical IVF treatment,

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creating an embryo is completed outside of her body and with the help of the medical world. She will then carry the embryo to term and will not be related biologically to the child. Previous studies^{1,2} have emphasised the altruistic motivations of surrogate mothers. Altruism is defined as the desire to help others unselfishly, which requires empathy. The aim of this study is to assess surrogate mothers' empathy compared to normative samples and to assess their attachment to the child they carry.

2. Literature review

The focus of attention towards surrogate mothers has mostly been on their motivations and on their personality structure. The research results^{1,2,3,5} show a picture of women who have an important sense of altruism and feel empowered by surrogacy, who are more outspoken and assertive than average females. Surrogate mothers tend to have lower levels of anxiety and are more content than normative samples, they also identify with stereotypically masculine traits such as assertiveness and competition.³ A meta-analysis on surrogacy was completed in 2005⁴ in which 27 empirical studies were found between 1983 and 2003. It included 7 studies regarding surrogate mother's motivations, 4 studies of which used standardised tests, 4 studies examined the interactions of intended parents and surrogate mothers and 7 studies explored the general attitudes towards surrogacy arrangements. Only 4 studies used comparison groups. Since 2003, mainly British researchers have conducted new studies. One such study researched the experience, motivations and psychological consequences of surrogate mothers one year after having relinquished the child,⁵ others were longitudinal studies on families created through surrogacy, looking into parent–child relationships at 1 year of age,⁶ at age 2⁷ and at age 10.⁸ A pre-pregnancy and post-delivery comparison of surrogate mothers, both traditional and gestational, and intended mothers was also published in 2005.⁹ This research showed the confidence and self-efficacy about the arrangement and the importance given to the genetic link by surrogate mothers and intended parents. Counselling on genealogy was advised for the attachment/detachment process.

Another component of surrogacy is empathy. Empathy is a notion that has been discussed for over 200 years. In 1759, Smith¹⁰ made the initial differentiation between instinctive sympathy (or empathy), which he described as a quick, involuntary, seemingly emotional reaction to the experiences of others, and intellectualised sympathy, or the ability to recognise the emotional experiences of others without any vicarious experiencing of that state. Spencer in 1870¹¹ drew the same distinction, and this instinctive/intellectual, or cognitive/emotional partitioning of empathy has continued to this day. This dichotomy led Davis¹² to develop a multidimensional approach to individual differences in empathy, with the Interpersonal Reactivity Index (IRI), which consists of four different subscales, integrating affective and cognitive empathy. This instrument has been validated and used in many studies worldwide.

Maternal–foetal attachment (MFA) is described as the emotional bond or tie of affection experienced by the mother towards the infant. These feelings start as early as 10 weeks of gestation and grow stronger with pregnancy. Developing a relationship with the foetus is critical for the physical and psychological adjustments to pregnancy; they also increase better health practices of the mother.¹³ Condon¹⁴ developed a Maternal Antenatal Attachment Scale (MAAS), which measures surrogate mothers' attachment to the foetus. It focuses exclusively on the woman's thoughts and feelings about the foetus. The only existing study assessing surrogate mother's attachment to the foetus was conducted in 1991¹⁵ and found that surrogate mothers were less attached to the

foetus than a comparison group of mothers. In that study the Maternal Fetal Attachment Scale¹⁶ (MFAS) was used, which Condon criticised in his research since several items of the MFAS were not related to the attachment to the foetus but rather to the *pregnancy state*, a disenchanting state which Condon had found compatible with a high level of attachment to the foetus.¹⁷

There have been countless writings and discussions regarding the cultural differences and its impact on the well being of women. Different continents, different experiences and different support systems impact surrogate mothers' pregnancies. Recently surrogacy is becoming a worldwide possibility for intended parents. It is therefore important to understand the different experiences that surrogate mothers encounter, so that both the medical world and the intended parents can be better informed about surrogate mothers' reactions, needs and experiences. There is an absence of research comparing surrogate mothers in different cultural backgrounds to one another; this research contributes to the surrogate mother research by examining the important variable of culture.

In 2008, the UK passed the Human Fertilisation and Embryology Act (HFE) that allow same-sex unmarried couples to apply for parental orders. Burrell and O'Connor¹⁸ proposed ethical guidelines for healthcare professionals in order to avoid exploitation of the surrogate mother; they gave a pro forma guideline for medical professionals and midwives. They refer to the American College of Obstetricians and Gynaecologists (ACOG)¹⁹ that wrote Surrogate Guidelines to avoid emotional or financial coercion. Canadian guidelines for surrogacy²⁰ advise midwives caring for the surrogate mother during pregnancy to have no duty or other responsibilities for the commissioner(s) because each health care provider must be free to pursue the best interest of the patient.

3. Participants

This research began as a qualitative study, conducting semi-structured interviews with 10 surrogate mothers (France ($n = 2$), UK ($n = 5$), Belgium ($n = 2$), Netherlands ($n = 1$)). Each participant signed a consent form and the relevant authorities of the Saint-Pierre University Hospital in Brussels, Belgium, gave ethical approval to conduct the research in March 2011. Subsequently, the authors of this study began a quantitative study, recruiting 44 surrogate mothers (traditional and gestational) through Internet forums, surrogacy contact associations and with the help of one Australian and one American surrogacy agency. The samples were set to a minimum of 30 surrogate mothers, in order to perform solid statistical analyses. The inclusive criteria consisted of: having had children of their own, having had children previously through surrogacy and/or having completed or in the primary stages of becoming a surrogate. A comparison group of 32 mothers was recruited on parenthood forums in France and Luxembourg. The inclusive criteria for the comparison group were adult mothers having had one or more healthy children born at term (39 weeks; ± 3 weeks). The study was presented as a research on mother's empathy to the comparison group with no mention of surrogacy in order to control possible bias against surrogacy. The data presented here is exclusively about the quantitative part of this study.

Each participant received and signed a consent form, after which they received an email with general questions about their surrogacy/pregnancy experience. The only demographic questions asked were about the age of first pregnancy/surrogacy and their citizenship. No questions regarding income and level of education were asked. Once the consent form was completed and the general questions were answered, the participants were sent 3 or 4 (if pregnant) self-report questionnaires to complete. Descriptive analysis of the surrogate mothers and the comparison group of normative mothers can be seen here (Table 1).

Table 1
Characteristics of surrogate mothers and comparison group ($n=76$).

	Gestational		Traditional		Comparison Group	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Nationality						
European Union						
Belgium	1	10%	0	◆	0	◆
UK	1	20%	3	30%	0	◆
Netherlands	0	◆	1	10%	0	◆
France	1	10%	3	30%	30	93%
Luxembourg	0	◆	0	◆	2	7%
Anglo-Saxon						
Australia	2	8%	2	22%	0	◆
USA	22	88%	7	78%	0	◆
Canada	1	4%	0	◆	0	◆
Total	$n=28$		$n=16$		$n=32$	
Age of first surrogacy/pregnancy (comparison group)						
20–25	1	3%	0	◆	13	40.6%
26–30	3	10%	9	56%	14	43.8%
31–35	17	60%	4	25%	5	15.6%
36–40	7	25%	2	12%	0	◆
41–45	0	◆	1	6%	0	◆
Type of surrogacy						
Gestational	59	100%	8 ^a	20%	◆	◆
Traditional	0	◆	32	80%	◆	◆
Number of children per type of surrogacy						
Gestational	61	100%	8	22%	◆	◆
Traditional	0	◆	29	78%	◆	◆
Number of twins	11	69%	5	31%	◆	◆
Number of own children						
0	0	◆	0	◆	0	◆
1	5	18%	2	13%	16	50%
2	15	54%	3	19%	10	31.3%
3	5	18%	6	38%	4	12.5%
4 and more	3	10%	5	31%	2	6.3%
Number of children depending gender of intended parents						
Homosexual	7	22%	7	30%	◆	◆
Heterosexual	25	78%	16	70%	◆	◆
Surrogacy for related or non related intended parents						
Related	2	6%	2	20%	◆	◆
Non related	32	94%	8	80%	◆	◆
Desire to repeat the experience of surrogacy						
Yes	21	70%	15	94%	◆	◆
No	7	30%	1	6%	◆	◆
Loss before surrogacy						
None	19	68%	9	56%	◆	◆
Surrogate's loss	2	7%	2	13%	◆	◆
Surrogate's parents loss	4	14%	1	6%	◆	◆
Loss for both	3	11%	4	25%	◆	◆

^a Eight surrogates were both traditional and gestational mothers.

4. Methods

The participants ($n=76$) received and completed self-report standardised questionnaires: the Interpersonal Reactivity Index (IRI), an empathy index that has four subscales with 7 items each. *Personal Distress* is the subscale measuring the individual's own feelings of fear, apprehension and discomfort at witnessing the negative experiences of others; *Empathic Concern* is the subscale that measures the degree to which the respondent experiences feelings of warmth, compassion and concern for the observed individual; *Perspective Taking* assesses spontaneous attempts to adopt the perspectives of other people and see things from their point of view; the *Fantasy scale* measures the tendency to identify with characters in movies, novels, plays and other fictional situations. Empathic Concern and Personal Distress are emotional scales, Perspective Taking is a cognitive scale and the Fantasy Scale taps the tendency to transpose oneself into fictional situations.

To verify the emotional state of the surrogate mothers and the comparison group, we sent the Hospital Anxiety and Depression Scale²¹ (HADS), which is a short self-rated scale on depression and anxiety. It contains two subscales that measure anxiety and

depression, each having 7 items. The HADS has been used in general research, out of hospital and clinical contexts and shows good reliability, sometimes even better than diagnoses made by non-psychiatric practitioners.²² Many studies in different settings (psychiatric, somatic diseases, healthy subjects, and cross-sectional studies (men versus women)) showed differences in the means, but the general consensus is to take a cut-off score at 10/11 for 'probable depression/anxiety'.

Since the participants were not interviewed in-person, the authors added a desirability scale, a short version of the Marlowe–Crowne Desirability Scale (MCDS). Research has shown that the MC20²³ reliability is between 0.73 and 0.83 for women. Social desirability scales are used to determine if participants fake or present themselves too positively. A tendency of inflating or exaggerating one's positive behaviours or on the contrary trying to stick to the socially accepted norms has been seen in self-report questionnaires. The surrogate mothers who were pregnant ($n=11$) received the Maternal Antenatal Attachment Scale (MAAS) which assesses the attachment to the foetus during the pregnancy. It inquires about two factors: quality of attachment (affective experiences) and quantity of attachment (time spent thinking of foetus). This questionnaire has been used widely and has demonstrated its reliability.²⁴

The self-report scales were sent in the language of each participant (English, French, Dutch) since validated versions of each scale existed. When questions arose about specific items, those inquired were answered by email. One pregnant surrogate mother declined filling the MAAS since the way the sentences were written included the term 'mother' and she said she 'wasn't the mother of the child'. The whole process of the research (finding participants, sending, collecting and rating the questionnaires) took place over two and half years. The participants were offered the possibility of having a feedback of the results at the end of the study if desired.

5. Data analysis and findings

Considering the important amount of data and the many variables in place, an exploratory statistical data analysis was performed first to ensure the use of proper tests. Statistical normality tests were made to see if the data followed a normal distribution (skewness, kurtosis and Kolmogorov–Smirnov tests). Distributions did not follow a Gaussian shaped curve; therefore non-parametric analysis of variance was necessary. Correlations coefficients were calculated with Spearman's Rho (ρ) coefficient test and a Kruskal–Wallis' ANOVA was performed for inference. In order to measure the magnitude effect size and orientation of eventual differences, a Cohen's contrast test ($\delta = d_{obs}$) was performed. Statistical analyses were made using SPSS 20.0, SAS 9.4 and Statistica 10.0.

The inter groups differences (traditional/gestational surrogate mothers, comparison group and the scale norms) were examined first. As shown in Table 2, which compares European and Anglo-Saxon gestational surrogate mothers, almost all of the scales showed significant differences. Anglo-Saxon gestational surrogate mothers have significantly lower scores on the subscale HADS D measuring depression compared to both the European gestational surrogate mothers and to the scale norms ($A_{GEST} \delta = 1.99 > E_{GEST} \delta = 0.86$), the same can be seen about anxiety ($A_{GEST} \delta = 1.96 > E_{GEST} \delta = 0.67$). The social desirability is significantly higher for both gestational groups ($A_{GEST} \delta = 1.18 > E_{GEST} \delta = 0.89$). Another interesting result is the large effect on maternal–foetal attachment for Anglo-Saxon gestational surrogate mothers (MAAS); intensity ($A_{GEST} \delta = 0.95$) and quality ($A_{GEST} \delta = 1.52$) of attachment are lower than the scale norms but we were not able to calculate statistical differences for European gestational surrogate mothers because their scores were identical (no standard deviation). If we compare

Table 2
Comparative analyses (Cohen's *d*). Differences inter-group: gestational surrogate mothers.

Scales	European					Anglo-Saxon					Scale norms	
	\bar{x}	σ	Δ	δ	Sig.	\bar{x}	σ	Δ	δ	Sig.	\bar{x}	σ
IRI FS	15.67	6.56	-3.08	0.473	SE ^a	14.2	4.583	-4.55	0.993	LE	18.75	5.17
IRI EC	19.67	4.93	-2	0.405	SE	22	3.617	0.33	0.091	NS	21.67	3.83
IRI PT	19.33	2.57	1.37	0.544	ME ^b	19.76	3.551	1.8	0.507	ME	17.96	4.85
IRI PD	10.33	2.87	-1.95	0.675	ME	7.72	4.364	-4.56	1.045	LE	12.28	5.01
HADS D	2.33	2.02	-1.79	0.860	LE ^c	1.36	1.381	-2.76	1.996	LE	4.12	3.78
HADS A	5	2.66	-1.78	0.672	ME	2.88	1.986	-3.9	1.963	LE	6.78	4.23
MC-20	13	4.39	3.9	0.895	LE	12.52	2.888	3.42	1.184	LE	9.1	3.9
MAAS IA	24	0* ^d	-2.5	0*	◆	23.8	2.843	-2.7	0.950	LE	26.5	4.8
MAAS QA	46	0*	-3.2	0*	◆	46.64	1.68	-2.56	1.524	LE	49.2	4.9
MAAS TOT	71	0*	-4.7	0*	◆	71.4	2.769	-4.3	1.552	LE	75.7	8.1

^a SE: Cohen's *d* small effect ≤ 0.3 .
^b ME: Cohen's *d* medium effect ≥ 0.5 .
^c LE: Cohen's *d* large effect ≥ 0.8 .
^d 0*: identical scores, no standard deviation.

the means of European and Anglo-Saxon gestational surrogate mothers to the norms, we see that there is a real attachment to the foetus (MAAS TOT: $E_{GEST} = 71 < A_{GEST} 71.4 < \text{Scale}_{norms} 75.7$). Surrogate mothers do attach to the child they carry, with almost no difference between the European and Anglo-Saxon group. The biggest difference in the empathy subscales for the Anglo-Saxon gestational group can be seen in Personal Distress (IRI PD) ($A_{GEST} \delta = 1.04$), they feel a lot less distressed by other's problems than the average women. This effect is true for European gestational surrogate mothers too, but to a lesser degree ($E_{GEST} \delta = 0.675$). The ability to fantasize and identify to fictitious characters (IRI FS) is lower for gestational surrogate mothers, both European and Anglo-Saxon ($E_{GEST} \delta = 0.47 < A_{GEST} \delta = 0.99$).

The results of the traditional surrogate mothers' groups are shown in Table 3. Depression is significantly and substantially lower for the Anglo-Saxon traditional surrogate mothers than the European ($A_{TRAD} \delta = -4.009 > E_{TRAD} \delta = 0.080$), the latter having results in the scale norms; anxiety is also lower for Anglo-Saxon traditional surrogate mothers ($A_{TRAD} \delta = -1.173 > E_{TRAD} \delta = 0.414$). The results about maternal-foetal attachment are the same as for the gestational group; attachment in terms of quality and quantity there is, despite being slightly less than the norms ($\text{Scale}_{norms} \bar{x} = 75.7 > A_{TRAD} \bar{x} = 71 > E_{TRAD} \bar{x} = 69.86$). Social desirability is very high, coinciding with the gestational group. The empathy subscale results are interesting for traditional Anglo-Saxon surrogate mothers since they show the most significant differences of the four groups. All four IRI subscales for Anglo-Saxon traditional surrogate mothers are significantly different, three largely so (IRI EC, IRI PT, IRI PD) and one having a small effect (IRI FS). The Anglo-Saxon traditional surrogate mothers' group seems highly empathic both emotionally and cognitively and not at all distressed by other's suffering. European traditional surrogate mothers are more comparable to normative samples.

Table 3
Comparative analyses (Cohen's *d*). Differences inter-group traditional surrogate mothers.

Scales	European					Anglo-Saxon					Scale norms	
	\bar{x}	σ	Δ	δ	Sig.	\bar{x}	σ	Δ	δ	Sig.	\bar{x}	σ
IRI FS	14.29	5.85	-4.46	0.762	ME	16	6.65	-2.75	0.413	SE	18.75	5.1
IRI EC	21.86	4.74	0.19	0.040	NS	24.22	2.39	2.55	1.067	LE	21.67	3.83
IRI PT	15.71	3.95	-2.25	0.570	ME	22.44	4.16	4.48	1.078	LE	17.96	4.85
IRI PD	12.57	3.65	0.29	0.080	NS	7.11	3.33	-5.17	1.551	LE	12.28	5.01
HADS D	4.29	2.14	0.17	0.080	NS	0.78	0.83	-3.34	-4.009	LE	4.12	3.78
HADS A	5.43	3.26	-1.35	0.414	ME	3.56	2.74	-3.22	-1.173	LE	6.78	4.23
MC-20	12.14	3.13	3.04	0.970	LE	13.67	4.12	4.57	1.108	LE	9.1	3.9
MAAS IA	23.71	0.76	-2.79	3.690	LE	24	0*	-2.5	0*	◆	26.5	4.8
MAAS QA	45.14	1.57	-4.06	2.579	LE	46	0*	-3.2	0*	◆	49.2	4.9
MAAS TOT	69.86	2.04	-5.84	2.870	LE	71	0*	-4.7	0*	◆	75.7	8.1

Table 4 shows the results of the comparison group with almost no significant differences. The only medium effect (IRI PD $\delta = 0.509$) is seen in the Personal Distress scale being slightly lower than the scale norms. This confirms the results of the traditional and gestational surrogate mothers being different from both our comparison group and the scale norms.

In order to infer the above results to a larger population of surrogate mothers, a Kruskal-Wallis ANOVA was performed. Analysis of the results is presented in Table 5. Four independent variables explain significant differences for all the surrogate mothers.

- **Nationality:** the HADS D (depression subscale) ($H_{(6)} = 17.909$ $p < 0.006$) results are significantly different depending on the country they live in.
- **Age:** has an effect on gestational and traditional surrogacy and on how many gestational children are born. Age has also an effect on surrogacy for homosexual couples.
- **Type of surrogacy:** depending on which kind of surrogacy, there will be an effect on how many gestational or traditional children will be born. It also has an effect on how many own children the surrogate mothers have. Finally, the type of surrogacy has an effect on the quality of maternal-foetal attachment.
- **Related (or not) to intended parents:** this variable has an effect on the number of gestational children born.

The same analysis was conducted for the surrogate mothers and the comparison group combined (Kruskal-Wallis ANOVA). Results are seen in Table 6. Here we see two explicative variables:

- **Nationality:** depending where they live there is an effect on the age at which they got pregnant the first time for themselves (comparison group) or for their first surrogacy, on the capacity

Table 4
Comparative analyses (Cohen's *d*).

Scales	Comparison group					Scale norms	
	\bar{x}	σ	Δ	δ	Sig.	\bar{x}	σ
IRI FS	17.16	5.01	-1.59	0.318	SE	18.75	5.17
IRI EC	21.62	2.98	-0.05	0.015	NS	21.67	3.83
IRI PT	20.06	4.45	2.10	0.472	SE	17.96	4.85
IRI PD	10	4.47	-2.28	0.509	ME	12.28	5.01
HADS D	4.56	2.49	0.44	0.177	NS	4.12	3.78
HADS A	7.78	4.13	1.00	0.242	NS	6.78	4.23
MC-20	10	3.27	0.9	0.275	NS	9.1	3.9
MAAS IA	0**a	0**	0**	0**	◆	26.5	4.8
MAAS QA	0**	0**	0**	0**	◆	49.2	4.9
MAAS TOT	0**	0**	0**	0**	◆	75.7	8.1

a **: no MAAS data: comparison group not pregnant.

to fantasise (IRI FS), on depression, anxiety and social desirability.

- *Type of surrogacy*: when it comes to the type of surrogacy, it is the age and the number of surrogate's own children that appear to make a difference.

6. Discussion

This research took place over four years. European surrogate mothers were more difficult to find and more reluctant to participate. This explains the restrained number of participants of certain nationalities and re-sampling to two groups (European versus Anglo-Saxon), to be able to conduct statistical analyses. This dichotomy does have some sense in terms of experience for surrogate mothers since Anglo-Saxon countries legalised surrogacy, in our European group the only country legalising surrogacy is the UK. Social-demographic data of the participants, such as the level of income and education was not asked for several reasons: the scarcity and difficulty of finding surrogate mothers and the important body of instruments that were sent. The authors did not want to over burden the surrogate mothers with too much research paperwork. Some participants filled part of the instruments and despite several requests, did not return all of the questionnaires. These participants were not included. Regarding the sexual orientation of intended parents, both groups of surrogate mothers carried more children for heterosexual couples. The traditional surrogate mothers carried slightly more children for homosexual intended parents. Most of the surrogate mothers are not related to the intended parents. Surrogate mothers wish to

Table 5
Kruskal–Wallis ANOVA.

European and Anglo-Saxon surrogates (n=44)			
Explicative variable	Dependant variable	KW test	p <
Nationality	HADS depression	H ₍₆₎ = 17.909	0.006
Age classes	Gestational surrogacy	H ₍₄₎ = 11.472	0.021
	Traditional surrogacy	H ₍₄₎ = 12.030	0.017
	Gestational children	H ₍₄₎ = 09.709	0.045
	Homosexual intended parents	H ₍₄₎ = 11.270	0.023
Type of surrogacy	Gestational	H ₍₁₎ = 32.302	0.000
	Traditional	H ₍₁₎ = 40.731	0.000
	Gestational children	H ₍₁₎ = 10.880	0.001
	Traditional children	H ₍₁₎ = 27.391	0.000
	Own children	H ₍₁₎ = 04.946	0.026
	MAAS quality attachment	H ₍₁₎ = 04.128	0.042
Related or not to intended parents	Gestational children	H ₍₁₎ = 05.256	0.021

Table 6
Kruskal–Wallis ANOVA.

European, Anglo-Saxon surrogates and comparison group (n = 76)			
Explicative variable	Dependant variable	KW test	p <
Nationality	Age	H ₍₄₎ = 17.465	0.025
	IRI fantasy scale	H ₍₂₎ = 11.774	0.035
	HADS depression scale	H ₍₂₎ = 38.692	0.000
	HADS anxiety scale	H ₍₂₎ = 27.359	0.000
Type of surrogacy	MC20 social desirability	H ₍₂₎ = 22.465	0.004
	Age	H ₍₂₎ = 24.825	0.000
	Own children	H ₍₂₎ = 13.833	0.001

repeat the experience of surrogacy, conveying the gratification they take away from it. The loss of someone close/dear in their family or their parent's family was instrumental in the decision of becoming a surrogate mother for 32% of gestational surrogate mothers and for 44% of traditional surrogate mothers.

As it is observed above, both groups of surrogate mothers are less depressed and anxious than average and this difference increases with age. In general, gestational surrogate mothers do not become traditional surrogate mothers after a first experience. However the opposite is true for traditional surrogate mothers who might need the help of IVF later in life, or to comply with a specific demand of the intended parents to have a genetic link. Maternal–foetal attachment is solid, almost as strong as for the general population. Only the quality of attachment is lower, and not by much. This is a very interesting result since the only previous research on surrogate's foetal attachment showed an importantly lower attachment and confirms that in order to carry a child for someone else, one needs to attach to the foetus. Controversies are strong in that field since anti-surrogacy groups argue that surrogacy is a violent process for both the woman who has to separate artificially from the child at birth and for the child who will be brought up by a woman with whom he did not have a close relationship with through pregnancy. We might argue that in order to carry a pregnancy to term, a woman needs to be invested in the child she carries, she cannot only be an 'oven'. The difference seen in terms of quality of attachment might be just the quantum of implication necessary in order to bring the child to birth without having important difficulties disengaging from it at birth.

This study was mainly directed towards the empathy and the maternal–foetal attachment of surrogate mothers and we can see with our results that there is a difference with normative samples in terms of empathy but not in terms of mother–foetus attachment. Surrogate mothers have a high emotional empathy, but also a higher cognitive capability of not being submerged with the distress of others, which might help surrogates imagine they will be able to help an infertile couple while being confident for themselves, something that is seen clinically by professionals who meet with them. As Pizitz et al.,³ we see that they have a bold personality and are not easily pressured by others despite their high scores on the social desirability scale. We might hypothesise that surrogate mothers are 'experienced' mothers since they have been through their own pregnancies and surrogacy, and are therefore well prepared for the experience of surrogacy, contrary to first-time mothers who can be overwhelmed by a first pregnancy and birth.

The surrogates' high scores on the social desirability scale could be explained by the strong societal ambivalence they often face which in turn might impact their need of social recognition, which is consistent with what Javda et al.⁵ pointed out in their research on the experience of surrogate mothers.

Surrogate mothers being often older (over 30) when expecting surrogate babies, it may explain some of the differences in the empathy scores with the comparison group who were mainly under 30. This is has been pointed out by Sjöström et al.²⁵ who

have shown in their research on breastfeeding that older mothers breastfeed longer than younger and first-time mothers.

Different factors are to be taken into consideration to modulate the results: the participants were not met in person, the age of the participants was not controlled, nor their socio-demographic characteristics. The research's focus presented to the participants being empathy and maternal–foetal attachment, underlining positiveness and altruism, no surrogate mothers having had a bad experience or ambivalent feelings responded, which may not reflect the reality of all surrogate mothers' experiences.

7. Study limitations

The groups are not equivalent, some are undersized therefore results for the traditional surrogate mother's group are weaker statistically. Surrogacy in countries like India or eastern European countries, where financial issues are prevalent, is not investigated. The surrogate mothers' social support, including her partner/husband's view is not enquired. No questions on the monetary aspects of surrogacy were asked. Big differences exist in terms of the overall experience of surrogacy depending if the country/state legalised it or not. Despite our samples coming from different environments, we could not assess the weight of the legality of surrogacy on the experience of the surrogate mothers.

8. Conclusion

Surrogacy has become sensationalised in the media with the rise of infertility and the few experiences that have been problematic; this goes against a fair and real representation of surrogate mothers. A lot of ambivalence takes place even in the countries where surrogacy is legal which puts them in a difficult place. Midwives and health professionals, who support these women during these particular pregnancies and births, benefit of data closer to reality on the difficulties these women might encounter and who they really are. They can help promote a more realistic picture and why they choose to do it. In the future, studies with larger groups could portray a more precise view on cross-cultural surrogacy. Looking into differences of experiences between surrogate mothers who were counselled and the ones that were not might be of great interest. Assessing maternal–foetal attachment with more surrogate mothers, to confirm or infirm our results could be paramount for all party of contractual parenting.

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