Sex differences in fertility and parenting knowledge and their importance for child health outcomes

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Abstract

We used a cross sectional data set of survey responses to explore key differences in fertility and parenting knowledge between men and women. We asked participants about their own, and their partner's contribution to fertility and parenting knowledge, as well as contribution to parenting itself. We also determine gaps in fertility knowledge by asking basic fertility questions, of which we compare responses from males and females. Descriptive analysis reveals that both sexes, but females in particular, overestimate the age in which female fertility decline (see Table 3). Females reported significantly higher levels than males of both contribution to parenting ($z=5.219$, $p<0.001$) and contribution to fertility and parenting knowledge ($z=4.649$, $p<0.001$). The effect size was revealed in multivariate analysis; being male significantly predicted lower contribution to parenting and fertility knowledge ($\beta = -28.10$, $p<.01$) as well as parenting itself ($\beta = -22.08$, $p<.01$). Differences were also observed between those currently in relationships, with offspring or currently expecting, age groups and other socio-demographic groups, both in terms of accuracy and perceived contribution.

Method

Data Capture

This data set was compiled in the field at the 2018 Toowoomba Baby Expo (21 July, 2018). Data capture was performed with the Queensland University of Technology mobile iPad lab, using KeySurvey software. Participants completed an online survey that asked a range of questions relating to demographics including relationship status and offspring, socioeconomic status, fertility knowledge, perceived parenting self-efficacy and risk behaviours. A $15 gift card was provided as compensation for participants who completed the survey. All research was conducted in accordance with Queensland University of Technology human research ethics clearance approval number 1800000446.

Data Analysis

The empirical analysis employed both OLS regression and probit regression estimates that controlled for factors such as age, sex, ethnicity, sexuality, education level, income and offspring. Model assumptions and fit were tested, and necessary adjustments were made. This included using robust standard errors were used in OLS modelling to correct for heteroscedasticity, and relying on the non-parametric Wilcoxon test due to non-normality. Marginal analysis on independent categorical variables used in the probit models, provided more reliable insights as to how predicted probabilities change as the binary independent variable changes from 0-1.

Participants

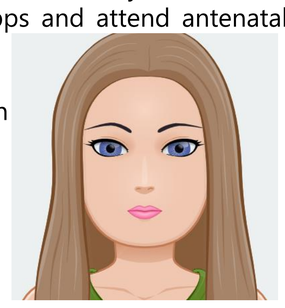
Table 1

Sociodemographic characteristics of survey participants (n=126)

Age, mean (SD)	32.18
Level of education, %	
Did not complete secondary school (year 12)	16.67
Completed secondary school (year 12)	19.84
Technical college or trade	14.29
Undergraduate degree	33.33
Postgraduate degree	15.87
Annual Household Income, %	
<$36 000	11.91
$36 001 - $84 000	38.88
$84 001 - $180 000	27.77
>$180 000	7.94
Unsure/no response	13.49
Relationship Status, %	
Married	61.90
In a committed relationship	19.84
Single	18.26
Have one or more children, %	78.57

Average Participant:

Caucasian female aged 32 with 1-2 children and currently in a committed relationship. Her annual household income is most likely to fall within $72000 - $96 000. Her perception of own health is inflated, characterized by a self reported health score 75/100 despite a BMI score of 28 (high end of overweight). She is most likely to have attended public school, have no formal sex education and not attend parenting class or use parenting books. She was however, more likely than not to use pregnancy apps and attend antenatal class. Her fertility knowledge was slightly better than average although she was likely to overestimate the age at which her fertility begins to decline.



Accuracy of Fertility Knowledge

Table 2

Correctly identified timing of conception related events (%)

	Females (n=105)	Males (n=21)
Length of average menstrual cycle	51.43	38.10
Day in which ovulation occurs in a 28 day menstrual cycle	58.10	33.33

Table 3

Age when female fertility begins to decline: participant's responses, (%)

Age	Females (n=105)	Males (n=21)
<30	19.98	19.04
30-34*	25.70	23.81
35-39	26.66	28.57
40-44	20.95	28.57
≥45	6.66	0

Table 4

Age when male fertility begins to decline: participant's responses (%)

Age	Females (n=105)	Males (n=21)
<40	27.62	33.33
40-44*	23.81	33.33
45-49	8.57	4.76
≥50	40.00	28.56

Table 5

Types of resources used by parents* (%)

	Females (n=93)	Males (n=20)
Antenatal Class	59.14	65.00
Pregnancy Apps	72.04	30.00
Parenting Class	26.88	35.00
Parenting Apps	33.33	20.00
Parenting Books	48.39	35.00
Online Parenting Communities	48.39	15.00
Parenting Groups	33.33	20.00

* Includes those with offspring and those currently expecting

Background Information

Deciding whether or not to have a child, as well as the timing and manner of having children should be a matter of choice[1]. Access to accurate information, especially that relating to conception and fertility, is an important aspect of this choice. Several studies have revealed a relationship between parental knowledge and child outcomes[2,3]. For instance, relative to their less-informed counterparts, mothers with greater knowledge of child development were less likely to experience behavioural problems with their 12-month-old infants. Further, maternal knowledge was found to be significantly associated with higher child IQ scores at 36 months of age Alongside parental attitudes and ability, parental knowledge has been found to be associated with improved parenting and ultimately better child outcomes[4,5,6].Hence, we are interested in understanding how both men and women utilise traditional resources such as books and classes, as well as newer technology such as smartphone apps to further their knowledge of parenting. Given the multitude of research highlighting the benefits associated with family planning, specifically those pertaining to child outcomes[7] fertility knowledge is considered critically important and will therefore be examined in the current study.

Objectives

- To explore how male and female parents and prospective parents differ in their fertility and parenting knowledge and acquisition thereof
- It is hypothesized that due to biological factors, females will have more accurate fertility knowledge than males, and will also therefore overstate their contribution to knowledge in their relationships

Resource Use by Sex and Age

Figure 1 Probability of Using Parenting Books

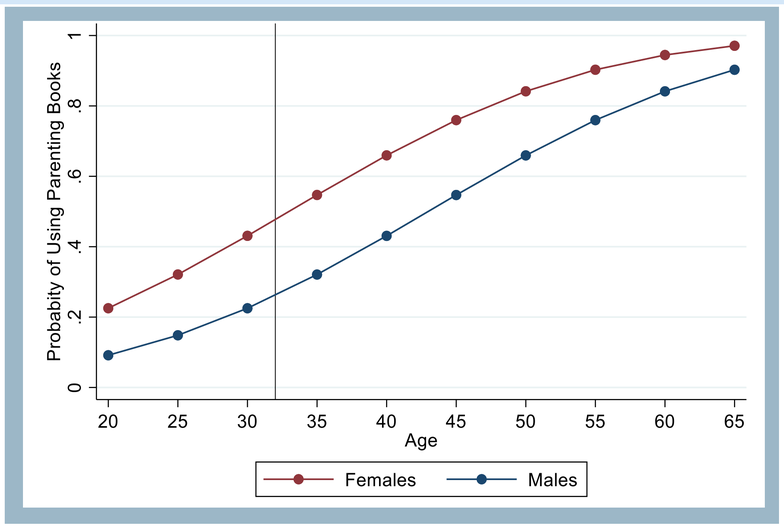


Figure 2 Probability of Using Pregnancy Apps

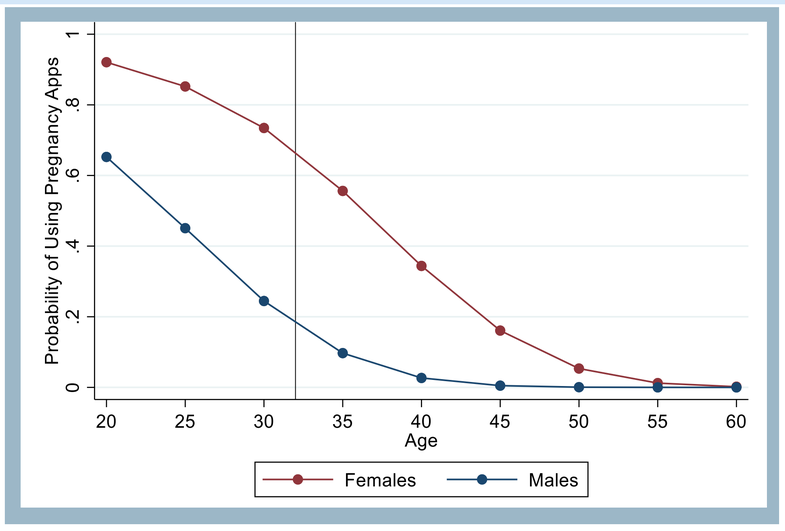


Table 6 Use of Parenting Books

	β	t	$\partial y/\partial x$
Male	-0.66*	(-1.74)	-0.19*
Age	0.07***	(3.55)	0.02***
Healthy BMI	0.56*	(1.82)	0.18*
Caucasian	0.24	(0.58)	0.07
Heterosexual	-0.95**	(-2.42)	-0.29**
Household Income	0.02	(0.56)	0.01
Parent	0.14	(1.41)	0.04
Education	-0.65	(-1.57)	-0.20
Relationship	-2.05***	(-2.71)	
N (Obs.)	109		
Pseudo R^2	0.224		
Prob. > chi^2	0.000		

Table 7 Use of Pregnancy Apps

	β	t	$\partial y/\partial x$
Male	-1.94***	(-3.73)	-0.42***
Age	-0.16***	(-4.34)	-0.03***
Healthy BMI	-0.96**	(-2.26)	-0.18**
Caucasian	0.63	(1.25)	0.12
Heterosexual	0.11	(0.22)	0.02
Household Income	0.09**	(2.07)	0.02**
Parent	3.18***	(4.20)	0.61***
Education	0.36**	(2.52)	0.07**
Relationship	0.95*	(1.82)	0.18*
Constant	-1.10	(-1.01)	
N (Obs.)	109		
Pseudo R^2	0.490		
Prob. > chi^2	0.000		

Notes: t-statistics in parentheses. Marginal effects in italics. The symbols *, **, *** represent statistical significance at the 10%, 5% and 1% levels, respectively.

Table 8 Contribution to Parenting

	(1) b/se	(2) b/se	(3) b/se
Age	-0.39*	0.01	-0.06
	(0.22)	(0.19)	(0.19)
Male	-25.98***	-23.15***	-22.08***
	(3.36)	(4.55)	(4.36)
Heterosexual	-1.43	6.26	5.83
	(5.18)	(5.03)	(4.78)
Caucasian	-4.32	-1.52	-1.46
	(4.90)	(4.44)	(4.43)
Public School		-7.50*	-6.84*
		(4.01)	(3.88)
Individual Income		-0.75	-0.93*
		(0.54)	(0.55)
Education		-1.19	-1.23
		(0.99)	(0.97)
Relationship		-20.46***	-20.42***
		(5.17)	(5.31)
Life Satisfaction			0.20*
			(0.11)
Parenting Class			1.65
			(3.97)
Constant	91.01***	101.82***	87.95***
	(9.18)	(10.16)	(12.90)
N (Obs.)	99	83	83
R2	0.271	0.448	0.473

Table 9 Contribution to Knowledge

	(1) b/se	(2) b/se	(3) b/se
Age	-0.23	-0.12	-0.27
	(0.22)	(0.26)	(0.34)
Male	-31.47***	-28.67***	-28.10***
	(5.42)	(5.98)	(6.10)
Heterosexual	7.67	3.85	4.30
	(7.27)	(9.53)	(10.50)
Caucasian	-0.44	-1.31	-2.31
	(6.82)	(7.13)	(7.06)
Public School		0.70	1.09
		(5.53)	(5.59)
Individual Income		-0.61	-0.49
		(0.57)	(0.54)
Education		2.20	2.50
		(1.67)	(1.56)
Life Satisfaction			-0.07
			(0.19)
Sex Education			-2.25
			(4.79)
Number of offspring			2.04
			(2.79)
Constant	74.54***	65.84***	72.09***
	(12.02)	(15.36)	(18.43)
N (Obs.)	103	90	90
R2	0.246	0.244	0.252

Notes: t-statistics in parentheses. Marginal effects in italics. The symbols *, **, *** represent statistical significance at the 10%, 5% and 1% levels, respectively.

Implications, Limitations and Future Directions

Although fertility, pregnancy and parenting knowledge play important roles in determining child outcomes, many current and prospective parents lack the necessary knowledge and as such remain in states of ignorance. This is potentially the result of insufficient sexual education, weak information seeking behaviours or preferred ignorance amongst a multitude of other factors.

Many people seem overconfident with regards to their level of preparedness and lack of worry, which is concerning. Research shows that people who recognize their ignorance or lack of knowledge, particularly in situations associated with risk, are more likely to actively seek information[8].
The data supports the idea that apps are considered a valuable health information resource. Parents of both sexes, especially those in the 20-30 years age group are active users of apps relating to fertility and conception, monitoring child milestones and many other aspects of child rearing. As such, there is potential to help overcome behavioural biases that affect the decision making of parents and prospective parents. Making health information more accessible enables end-users to overcome many of the barriers traditionally faced such as booking appointments or searching through parenting books, and has potential to effect behaviour change.

A significant limitations of this study exists in the presence of self-selection bias. Future research would aim to analyse data from a more representative sample in terms of sex ratio and sample size. Conducting a survey of the general population and comparing results from this survey would provide valuable insights into how those who have self selected into/ self identified as being interested in parenting and family compared to the general population.

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